



# **NIDA** International Business Conference 2016 Sustainability in Business

**Bangkok, THAILAND**

**March 12, 2016**

An aerial photograph of the NIDA campus in Bangkok, Thailand, showing several modern high-rise buildings with glass facades and green spaces. The sky is blue with scattered white clouds.

**Conference Proceedings**

**PROCEEDINGS OF NIDA  
INTERNATIONAL BUSINESS  
CONFERENCE 2016  
SUSTAINABILITY IN BUSINESS**

Bangkok, Thailand

March 12, 2016



**NIDA International Business Conference 2016  
Bangkok, Thailand**

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## FOREWORDS

### Dean's Welcome Message



Welcome to NIDA Business School and thank you for participating in the NIDA International Business Conference 2016.

This conference is being brought to you in part by the School's initiative for corporate social responsibility and engagement with society. By engaging in activities in its areas of expertise the School would like to contribute to laying of the foundation of knowledge and training for the initial development of the AEC, as well as in supporting training and knowledge development for local companies and the community, through the development of knowledge through everyone's research efforts

Through its international network development, the school has been able to create links for the cross flow of knowledge to support its mission. For this, we thank our entire network of partners for our success.

Most of all, we hope that everyone will enjoy and benefit from the conference.



Dean, NIDA Business School

### Chair's Welcome Message



Welcome to the NIDA International Business Conference 2016, in Bangkok, Thailand. This conference is being held in celebration of NIDA Business School's 50th anniversary and has the theme of sustainability in business.

It is a goal of the conference to have an impact on businesses becoming better organizations with greater efficiency and to be ready for AEC and globalization.

With this in mind, we have utilized our best efforts in preparing an exciting and diverse program of keynote, plenary session and invited speakers from various fields, made up of not only academics and scholars but also business leaders, practitioners and promising students, who have all taken great efforts to come here to share ideas and visions about sustainability in business and management.

We would like to have the conference serve as a get together where leading academics, business leaders, practitioners and students can share their ideas and experiences to help each other in their careers and businesses.

On behalf of the conference committee, we thank all of you for your support and efforts.



Danuvasin Charoen, PhD, PMP  
Conference Chair  
Associate Dean, NIDA Business School



## About NIDA Business School



NIDA Business School was established in 1966, following the inception of the National Institute of Development Administration (NIDA) on April 1, 1966. NIDA was conceived and developed by His Majesty the King Bhumibol Adulyadej, and His Majesty the King's discussions of the country's development with Mr. David Rockefeller of the Rockefeller Foundation of

the United States of America, in 1963, for the purpose of concentrating exclusively on graduate studies in fields related to national development.

The School has developed over the years to enlarge its purpose to include the region, in light of AEC and globalization. It was AACSB accredited in 2013 and now has a core faculty comprised of greater than 95% having Doctorate degrees; with all faculty members having obtained their degrees from AACSB accredited schools.

**NIDA Business School** has an active and productive alumni network. We have more than 6000 alumni who actively involve with the school in lecturing, speaking and inspiring the younger MBA students. Financial contribution from alumni network to support MBA and Ph.D. students is generously sponsored. Our alumni have shown pride in being part of NIDA Business School success.



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**NIDA International Business Conference 2016**  
**Bangkok, Thailand**

# CORPORATE SUSTAINABILITY PRACTICES IN THAI SUGAR INDUSTRY

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## ABSTRACT

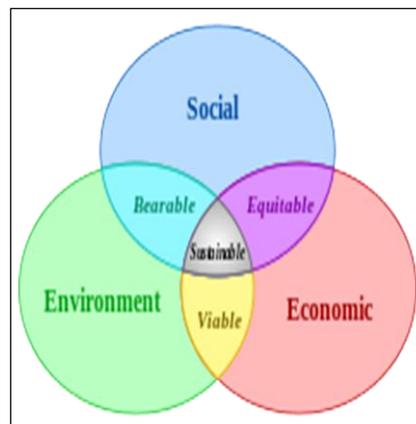
In recent years there has been significant discussion in the business, academic, and popular press about “corporate sustainability.” This term is often used in conjunction with, and in some cases as a synonym for, other terms such as “business sustainability,” and “sustainable development.” This paper reviews the concepts of corporate sustainability and explores leading sugarcane producers in Thailand on how they implement their corporate sustainability initiatives and practices.

**Keyword:** Sustainability, Sugar Industry

## INTRODUCTION

In recent years there has been significant discussion in the business, academic, and popular press about “corporate sustainability.” This term is often used in conjunction with, and in some cases as a synonym for, other terms such as “business sustainability,” and “sustainable development.” This paper reviews the concepts of corporate sustainability and explores leading sugarcane producers in Thailand on how they implement their corporate sustainability initiatives and practices.

What is Corporate Sustainability?



While corporate sustainability recognizes that corporate growth and profitability are important, it also requires the corporation to pursue societal goals, specifically those relating to sustainable development — environmental protection, social justice and equity, and economic development. A review of the literature suggests that the concept of corporate sustainability borrows elements from several established concepts. One of which is the concept of sustainable development. Sustainable development is a broad, dialectical concept that balances the need for economic growth with environmental protection and social equity. The term was first popularized in 1987, in *Our Common Future*, a book published by the World Commission for Environment and Development (WCED). The WCED described sustainable development as development that meet the needs of present generations without compromising the ability of future generations to meet their needs. As described in the book, it is “a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.” Sustainable development is a broad concept in that it combines economics, social justice, environmental science and management,

business management, politics and law. It is a dialectical concept in that, like justice, democracy, fairness, and other important societal concepts, it defies a concise analytical definition, although one can often point to examples that illustrate its principles.

According to Mel Wilson (2003), he stated that the contribution of sustainable development to corporate sustainability is twofold. First, it helps set out the areas that companies should focus on: environmental, social, and economic performance. Second, it provides a common societal goal for corporations, governments, and civil society to work toward: ecological, social, and economic sustainability. However, sustainable development by itself does not provide the necessary arguments for why companies in action should look like.

### Why is Corporate Sustainability Important?

#### Sustainability and Business

For those working in business, sustainability will involve considering the long-term consequences of industry and manufacture. Economic sustainability involves developing long-lasting systems of trade, while ensuring that these systems have a lesser impact on the environment than previous methods. Corporate sustainability, meanwhile, focuses upon the environmental and social impact of business actions.

#### Sustainability and Investment

One reason for business becoming so interested in sustainability is that good business practices are sought out by investors. Some investors look for a worthy project, so improving sustainability measures can bring them in. Investors may also look at the Life Cycle analysis of a business, which examines the long-term environmental and carbon footprint of a product. Investors can decide not to invest in a company if its carbon dioxide footprint is too large. Companies with proven records in global and local sustainability can make profit through employee productivity, better long-term public following, and investments due to good public reputations.

#### Sustainability and Competitiveness

In recent years, as the public has become more aware of the pressure on the environment, it has become clear that businesses that practice sustainability strategies are in fact getting greater profits, and creating their own consumer path.

Sustainability regulation can also assist competitiveness in business, as it forces industry to innovate and create new solutions, driving up profits for those companies that provide the best products. Sustainability has also been shown to produce new demands and markets for businesses.

The rise in consumer demand for sustainability improvements has led to businesses that were not previously interested in green issues suddenly improving their sustainability practices. Experts suggest that this is to improve their competitiveness against other companies.

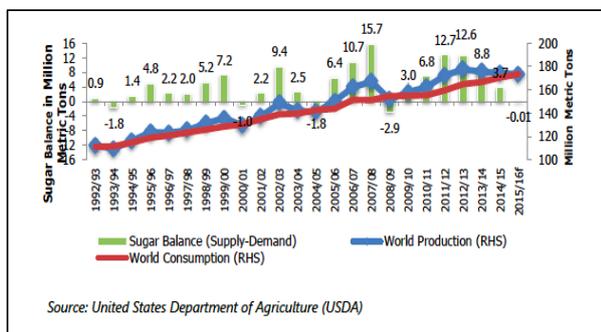
#### Sustainability and Government Grants

Another reason for improving sustainability is the recent raft of legislation from governments around the world, designed to encourage businesses to reduce their environmental impact. Carbon emissions, water supply, and energy security are now linked with business costs. Government bodies have also become more persistent at prosecuting businesses that pollute water or air.

#### Sustainability and Business Practice

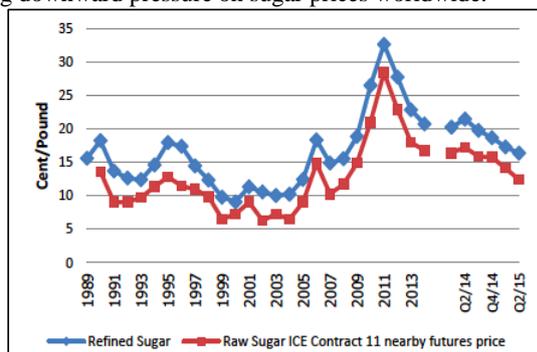
Sustainability is good for businesses both as a long-term strategy to improve employee confidence, and as a short term response to government legislation. Businesses responding to demands for clearly visible sustainability practices are also more attractive to the new class of ethical investors, and regain the costs of managing sustainability through government grants and increased sales to green activists and other members of the community. Ethical business practices may also improve competitiveness between businesses, encouraging growth and bigger profits.

#### Current Status of Thai Sugar Industry



Sugar consumption worldwide is expected to grow by 1.7% in the 2015/16 season to 173.4 million MT. Supply and demand are expected to be in balance. Demand is expected to rise in India and China because the soft drink industry and the food industry have been growing in these two countries. However, demand for sugar could be affected by an economic slowdown. The IMF cut its projection of worldwide GDP growth in 2015 to 3.3%, from an earlier projection of 3.5%. China's economy is projected to grow by 6.8% in 2015, a slower growth rate than in previous years.

In June 2015, the prices of raw sugar and refined sugar reached record lows of 11.75 cents per pound and 16.00 cents per pound, respectively, as reported by the USDA. The prices for raw sugar and refined peaked at 28.42 cents per pound and 32.63 cents per pound, respectively, in 2011. There remain large inventories of sugar worldwide, pushing prices down for over three years. In addition, the Brazilian real (BRL) has weakened against the US dollar. Brazil is the world's largest producer and exporter of sugar. The real, relative to the US dollar, has been depreciated by around 39% since September 2014, putting downward pressure on sugar prices worldwide.



Sugarcane and sugar play an important role in Thai economy. According to a report from the Office of the Cane and Sugar Board (OCSB), the sugarcane cultivation area in the 2014/15 season increased by 4.5% from a year earlier to about 10.5 million rai. The plantation area expanded as a result of a government policy that encourages farmers to switch from rice fields to sugarcane cultivation. In addition, the relatively lower prices of other crops made sugarcane more attractive to farmers. The OCSB expected that the sugarcane cultivation area in 2015/16 will rise further in the 2015/16 season. The plantation area is forecasted to reach a record of 11 million rai, a 4.8% y-o-y rise.

In the 2014/15 crop year, the Thai sugar industry produced 11.3 million MT of sugar, a 0.3% drop from the amount produced in the 2013/14 season because of unfavorable weather. However, the USDA estimated sugar production in Thailand for the next season will grow to 10.4 million MT due to higher yields.

In general, Thailand's sugar cane industry still tend to be acceptably good in terms of both production and marketing. Thai sugar industry ranks number 4 in the world behind Brazil, China, and India as raw sugar producers and ranks number 2 behind Brazil as raw sugar and refined sugar exporters. Although overall demands for sugar worldwide are increasing, the prices of sugar on the world market

continue to fluctuate. Meanwhile, sugarcane, cane juice and molasses has been also used as raw materials to produce renewable energy. Molasses which are by-product from the sugar production process are used in ethanol production process. Because of renewable energy tend to play an important role in the development of the sugar industry at the present and in the future, the world sugar market now supports the alternative usages of sugar more than sugar product itself.

#### International Market

Thai sugar manufacturers sell their sugar through major traders such as Cargill, Tate & Lyle, Kerry, etc. The traders then sell their sugar to other oversea buyers. This channel of distribution has been in place and accepted for a long period of time since the risk of failure to collect payments and complications in export management are minimized. Thai sugar manufacturers' only responsibility is to transport their sugar to ports of exports, such as FOB ports of Bangkok and Lamchabang. Thai sugar manufacturers also export their products to neighboring countries, such as Laos and Cambodia, through borders. However, the quantity of sugar exported to neighboring countries is still small comparing with other export markets, but continuing to increase.

Thai sugar manufacturers also sell their sugar to manufacturers who use sugar in production of their products to be exported. When domestic sugar prices are higher than those in international markets, the export manufacturers who use sugar as a production material lose their competitiveness in the world market. To promote investment in the food industry and competitiveness, the government allows those who manufacture exports to buy sugar at the world' market prices conditionally.

#### Domestic Market

Domestic sugarcane and sugar industries are governed by Thai Sugarcane and Sugar Industry Act B.E. 2527. Office of the Cane and Sugar Board is in charge of ensuring adequacy of sugar for the domestic demand. Every year the board estimates the domestic sugar consumption amount and determines quotas for sugar factories according to their capacity. Domestic sugar prices are controlled by Goods and Services Act B.E. 2542. Current domestic sugar price is mandated that:

- Prices of regular white sugar purchased at sugar factories do not exceed Baht 1,900 per 100-kilogram sack.
- Prices of refined white sugar purchased at sugar factories do not exceed Baht 2,000 per 100-kilogram sack.

Wholesale prices of regular white sugar at all domestic wholesale businesses do not exceed Baht 1,965 per 100-kilogram sack, and those of refined white sugar do not exceed Baht 2,065 per 100-kilogram sack.

Retail prices of regular white sugar at retail businesses in Bangkok, Nonthaburi, Pahunthani, Samutprakarn, and Samutsakorn do not exceed Baht 21.50 per kilogram; and those of refined white sugar do not exceed Baht 22.50 per kilogram. (included VAT) The price control does not apply to sugar cubes in boxes or packets that do not weigh over 10 grams.

In 2014, domestic sugar consumption reached 2.47 million MT, 0.3% more than in the previous year. For the first quarter of 2015, domestic demand for sugar declined by 4.1% y-o-y to 0.6 million MT, as reported by the OCSB. Sugar consumption in Thailand is classified as direct and indirect consumption. The ratio was 53% direct consumption versus 47% indirect consumption during the first three months in 2015. The proportion remained the same as in the previous year. Domestic sugar consumption in Thailand could be affected by the state of the economy. Real GDP grew by 0.9% in 2014 and 3.0% y-o-y in the first quarter of 2015, as reported by the Office of the National Economic and Social Development Board (NESDB).

In Thailand, the regulators control the industry sugarcane production capacity, domestic sales quotas, and domestic sugar prices. There are five major groups of sugar processors: Mitr Phol Group, Thai Roong Ruang Group, Thai Ekkalak Group, KSL Group, and Wangkanai Group. These sugar manufacturers produce and sell more than 60% of the domestic sugar sales under the Quota A1

allocation. In order to avoid fierce competition, the government has for some time limited the number of sugar mill licenses. There are 51 plants as of February 2015. In April 2015, the Cabinet changed the factory license requirement. The minimum distance between sugar mills was cut from 80 kilometers to 50 kilometers. The construction of any new sugar mill must be completed within five years.

#### Environmental Impacts of the Sugar Industry

More than 145 million tons of sugar (sucrose) is produced per year in about 120 countries. The main impacts identified are summarized below.

#### Habitat Destruction for Sugarcane Cultivation

The production of sugarcane has probably caused a greater loss of biodiversity on the planet than any other single crop. There are fifteen countries around the world which devote between ten and 50 percent of their land area and seven more countries which devote more than 50 percent of the land for sugarcane cultivation. Substantial areas of biodiversity-rich habitat such as tropical rain forest and tropical seasonal forest have been cleared for sugarcane cultivation. Land clearance not only results in the direct loss of species and habitats, but also underlies a range of wider impacts on ecosystem function, including changes to hydrology and increased soil erosion.

#### Overuse of Water

Although sugarcane is an efficient converter of biomass from water, it still needs about 1500-2000 mm/ha/year. It is one of the crops that require a significant amount of water to cultivate. Other crops that consume a significant amount of water to grow are rice and cotton. Sugarcane is a deep-rooted crop which remains in the soil all year round and is able to extract soil water to depths well below one meter. The growth of sugarcane relies on an amount of rainfall. Sugarcane can also affect river flows as it intercepts run-off from the catchment into rivers and taps into ground water resources.

#### Intensive Use of Pesticides and Fertilizers

Long-term agrochemical, microbiological and ecological experiments on the use of pesticides on sugar beet in Russia have demonstrated accumulation of toxic substances in roots and aerial parts of the crop plants, resulting in retardation of growth and a decrease in sugar content when maximum doses were used. In cane cultivation, a growth regulator, such as Ethephon, or an herbicide, such as Glyphosate, is applied 45 days before burning to desiccate the plant. When harvesting is delayed, the yield loss can be as high as five percent due to the reduction of sugar content.

Inorganic fertilizers typically supply nitrogen, phosphorus and/or potassium in mineral form. Environmental impacts generally arise because the nutrients in the fertilizers are not entirely taken up by the crop but move into the environment. The overuse of fertilizers on sugarcane or beet crops is typical of farming in general.

#### Discharge of Mill Effluents

Perhaps the most significant impact from cane and beet processing is related to polluted effluent. In some countries with weak environmental laws, when sugar mills are annually cleaned, a tremendous amount of matter is released, which is usually discharged straight into streams. Cane mill effluents tend to be relatively rich in organic matter compared to other sources, and the decomposition of this matter reduces the oxygen levels in the water, affecting natural biochemical processes and the species inhabiting those freshwater systems. Potential pollutants in these effluents include heavy metals, oil, grease and cleaning agents.

#### Pre-harvest Cane Burning

In many sugar producing countries including Thailand, the cane fields are burnt immediately before harvesting for easier cutting, post-harvest cultivation and pest control. 'Green cane' harvesting (without burning) is also practiced. Although pre-harvest cane burning has some benefits, as noted above, pre-harvest burning leads to air pollution, soil degradation, and loss in productivity. Once the cane fields are burnt, substantial levels of carbon monoxide and carbon dioxide are released into

atmosphere. This can cause health problems for people in communities nearby. There is also evidence that sustained pre-harvest burning of sugar cane can contribute to a decrease in soil quality, by causing a decline in soil microbial activity and the physical and chemical properties of the soil. Pre-harvest burning may be responsible for as much as 30 percent of the annual nitrogen removal in a cane crop. Nevertheless, Cane burning can reduce the quality of sugar recovered from the cane as well as reduce the quantity of cane retrieved by as much as five percent.

#### Social Impacts of the Sugar Industry

The sugar sector contributes towards social development by producing employment for many as well as providing primary schools and clinics in many poor areas. Nevertheless, there are a range of negative social issues associated with sugar production that undermine the sustainability of its production, particularly in developing countries.

#### Low Prices and Development Outcomes

Sugar production plays a key role in the economies and employment of a number of developing countries. However production and export subsidies provided to sugar farmers by the EU and the US Government have been singled out for criticism (and campaigns) by a range of development organizations because farmers in poor countries cannot compete. Where production is predominantly small scale, producers are particularly at risk of disruption to their livelihoods.

#### Poor Working Conditions

Jobs in cane production, are among the most hazardous in the agricultural industry. In some cases cane cultivation wages do not provide enough food to cover the calories burned on the job. In northeast Brazil sugarcane workers have the lowest life expectancy of any group and their children the highest infant mortality rate.

#### Child Labor and Indentured Labor

According to the International Labor Organization and the Central Bureau of Statistics there are 1.9 million child laborers in Western Kenya but the number of child laborers could be as high as five million. Child and bonded labor is also reported to be a significant issue in the Dominican Republic, Maharashtra (India) and in El Salvador.

#### Water Scarcity

Water use for sugar cultivation reduces availability for social needs in water-scarce countries. By 2025, 40 percent of the world's people will face a chronic water shortage. For example, in the Maharashtra province of India sugarcane is grown on just four percent of the cultivated area but consumes about 50 percent of the state irrigation supply. Women in surrounding villages walk up to 15km to collect water for drinking, cooking and hygiene. Reduced flow into the Indus Delta as a result of abstraction for irrigation, coupled with drought, has compromised the health of the mangrove forest leading to a decline in fish and shrimp which contribute to the livelihoods of many. About 80 percent of the five million people who once earned a living from fishing or river boat work in the Sindh Province have now left – most in search of work in Pakistan's biggest city, Karachi.

#### Sustainability Strategies and Practices in Thai Sugar Industry

Sustainability does not necessarily mean reduced productivity and profits. Measures introduced to reduce environmental impacts can deliver economic benefits to farmers and to mills. This provides an opportunity to reconcile the needs of environment and people with the long-term development of the sugar industry.

#### Responsible Uses of Natural Resources

Irrigation efficiency can be greatly improved resulting in decreased water use, increased yields and reduced problems such as water-logging and soil salinization. At least 30-40 percent of the water used for sugar cultivation could be saved by applying irrigation solutions such as skip-furrow irrigation, or over 50 percent with drip irrigation. With drip irrigation, fertilizer use can also be decreased dramatically, reducing input costs and decreasing polluted run-off.

Trash mulching is where cane is not burned prior to harvest and the leaves are cut from the plant and left on the soil. This provides various benefits, such as improving the organic content of the soil, preventing evaporation and reducing soil erosion.

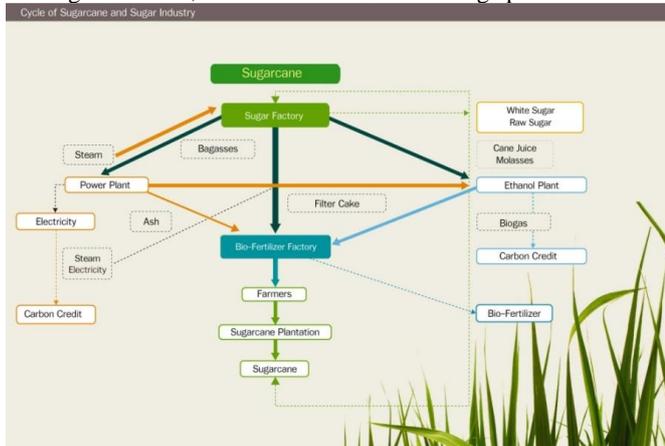
Crop rotation with soybeans or peanuts add nutrients to the soil as well as reduce the need for chemical fertilizers.

### Biodiversity Conservation

On-farm biodiversity can be conserved through the maintenance of natural buffers, such as wildlife corridors and riparian zones. These are often marginal areas for farming and help conserve water and prevent soil loss. Riparian zones also act as bio-filters, trapping and removing nutrients so they do not run into river systems.

### Mechanization of Sugarcane Cultivation

Mechanization of sugarcane cultivation eases the works in the fields, increase the crop productivity, improve worker working conditions, and resolve the labor shortage problem.

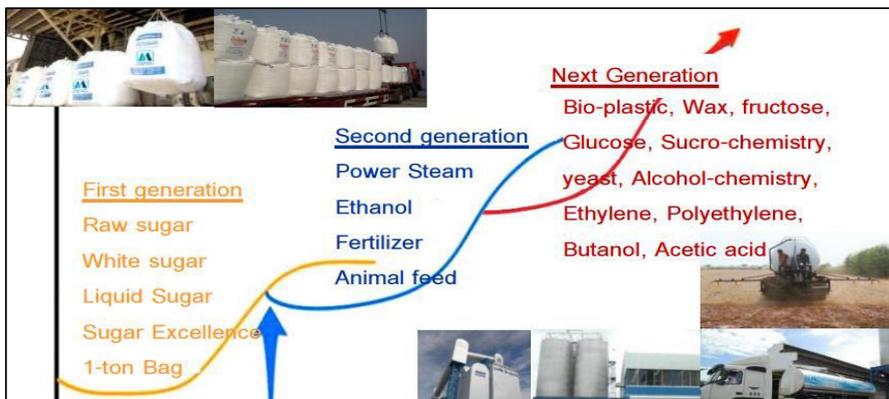


### Value Added and Sustainable Supply Chain

Zero pollution milling which involves totally recycling treated effluents for use in cooling towers and spray ponds is also becoming more common. By-products can be used by the farmer as bio-fertilizers in place of chemical products. Filter cake (press mud) can be used as a phosphorus-rich fertilizer or in cement manufacture. Boiler ash can be used as a soil conditioner or for road compaction. Bagasse can be used to fuel the boilers, or for chipboard manufacture. Excess electricity generated from steam can be sold to power companies.

### Development of Cane Derived Product Variety

The product derived from sugarcane can be categorized into 3 generations. For most of sugar producers in Thailand are in the second generation.



### Corporate Governance

Thai sugar manufacturing firms, especially those listed in the Stock Exchange of Thailand, are required to comply with corporate governance principles and practices. Corporate governance essentially involves balancing the interests of the many stakeholders in a company - these include its shareholders, management, customers, suppliers, financiers, government and the community. Since corporate governance also provides the framework for attaining a company's objectives, it encompasses practically every sphere of management, from action plans and internal controls to performance measurement and corporate disclosure.

### Sustainability Measurements and Reporting

Although the companies in the sugar sector are not required to establish sustainability measurement systems and provide sustainability reports annually to public, Mitr Phol Sugar Group is the first Thai sugar producer that provides the sustainability report and received “Bonsucro Sustainability Award 2015” for its commitment to sustainably grow business together with cane growers, communities, and environment.

### Corporate Social Responsibilities

The aim of corporate social responsibilities (CSR) is to increase long-term profits through positive public relations, high ethical standards to reduce business and legal risk, and shareholder trust by taking responsibility for corporate actions. CSR strategies encourage the company to make a positive impact on the environment and stakeholders including consumers, employees, investors, communities, and others. Thai sugar producers have demonstrated their commitment to social responsibilities. For example, Mitr Phol has launched many CSR projects, namely Mitr Phol’s Smart Youth Camp, One Company...One Community, and Mitr Phol Learning Park.

## SUMMARY AND CONCLUSION

The success of the sugar industry in Thailand is built upon best practices in sustainability development that balances three objective dimensions – economic, social, and environment. It is impossible that sugar industry and any other industries can grow and prosper in weakened communities and polluted environments.

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# SAILING ACROSS THE WHITE OCEAN: VIEWING CORPORATE SOCIAL RESPONSIBILITY FROM A HR PERSPECTIVE

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## ABSTRACT

The purpose of this paper is to examine the good corporate and social responsibility practices and models. The basic drivers of CSR programs concerns the ethical responsibility of business that is not necessarily imposed by law, but consists of what is expected by society over and above legislated economic and legal compliance. The paper identifies key CSR stakeholders that include more than just Board members, executives, and customers; but also covering legal interest groups, communities, peer industry, competitors, and individual employees. An Analogy of the White Ocean is introduced as a viable option for businesses to balance the people, planet and profits with a passion for 'doing good' and creating a sustainable and positive impact on both the company and the society.

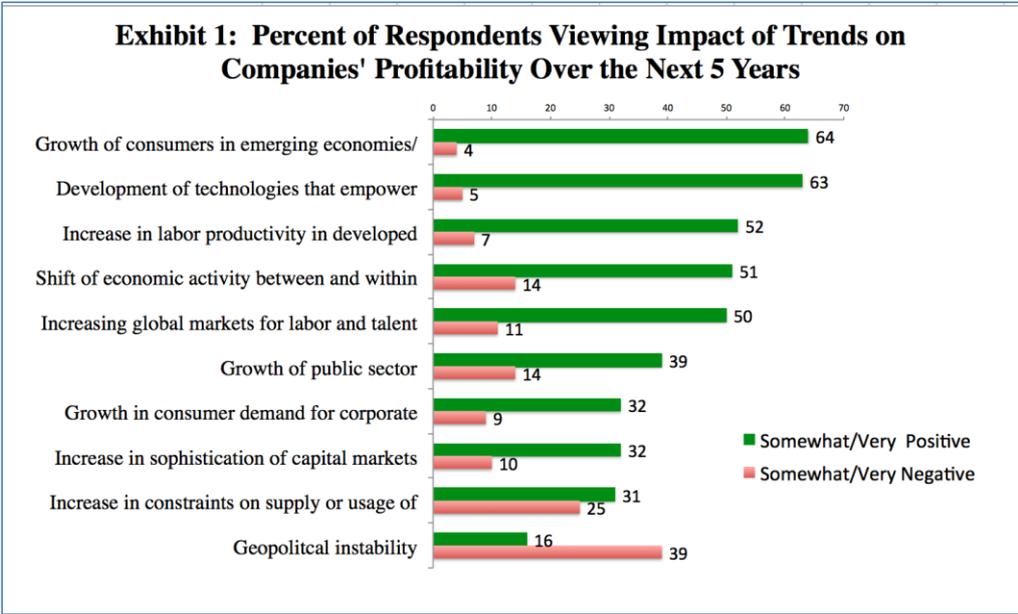
## INTRODUCTION

Much has been said about the necessity of business corporations to demonstrate social responsibilities. From the classic quote of an Economic guru, Milton Friedman (1970) who encouraged business to use its resources and engage in activities to increase its profits in open and free competition without deception or fraud, to Gandhi's seven sins that clearly spelled out the prohibition of business without ethics, and lastly Michael E. Porter's novel concept of Creating Shared Value (CSV) which spoke of the deep links that should be developed between business strategies and corporate social responsibility, all lead to the communication of a key concern. What kind of impacts do CSR have on employees and how should best to go about increasing CSR amid the reality of corporate scandals and CEO misconduct? Of the major issues confronting corporations, namely, the corruption and bribery too often found business partners appear to be the prime suspects and inducers. This realization has made the notion of corporate responsibility in today's practice not only hypocritical but also less attainable. This paper explores the current situation and examines the good business responsibility models and the application of HRM so as to enhance CSR in actual practice.

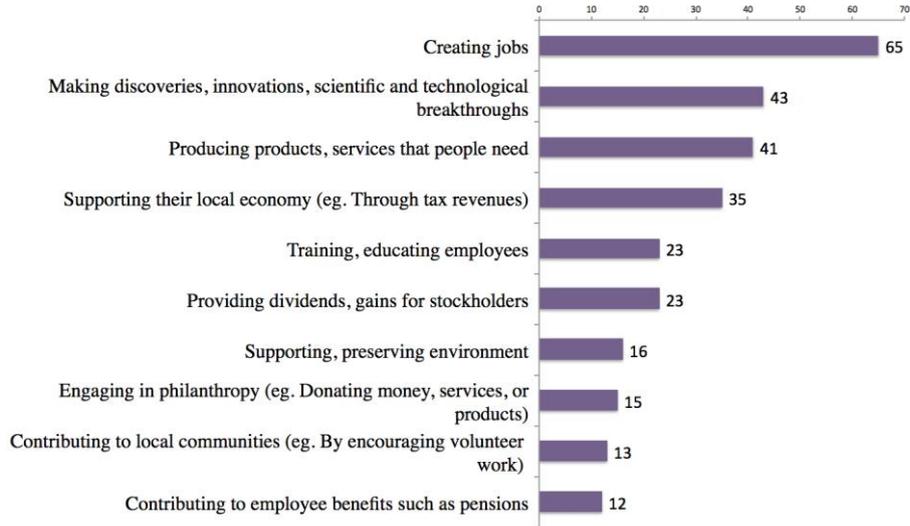
What's going on? : Mapping the troubled waters

Amidst today's economic downturn, corporate scandals, and natural-resource constraints, the business world is facing these threats more than ever. Key stakeholders for businesses, including their customers and employees, today have increasingly high expectations of business. Customers have more choices and are becoming less dependent on any single product. With the shift from Generation X to Y, working people now make decisions based on several new factors rather simply than traditional monetary rewards and job security. Both customers and employees now choose to buy products or work with companies that matter to them and the world. In this scenario, strategic CSR is seen as the practical win-win tool for all those involved; both responsible businesses and societal stakeholders.

In a report prepared by McKinsey (2010), respondents saw a negative impact on company profitability in the growth in consumer demand for corporate contributions to the broader public good and the increase in constraints on supplier use of natural resources (e.g., regulations) (See Exhibit 1).

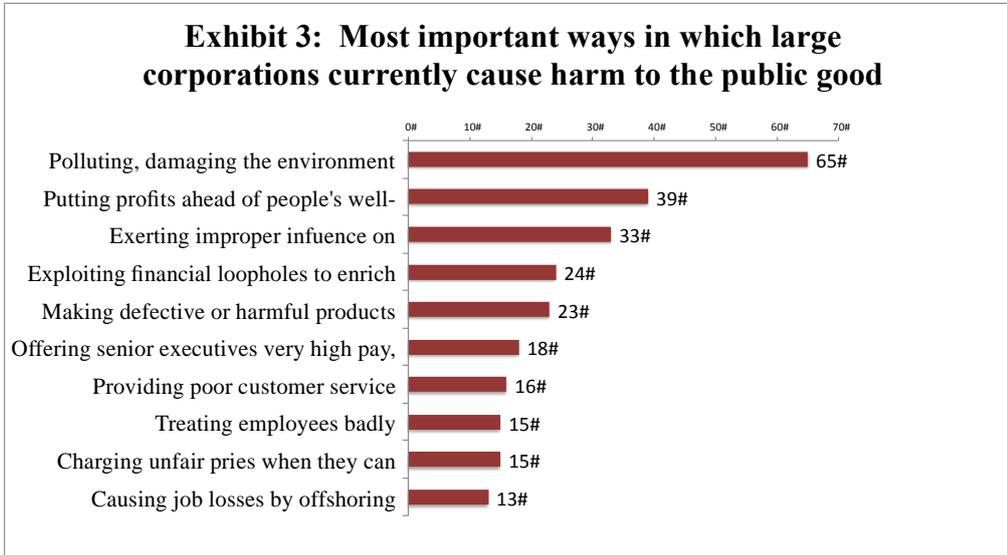


**Exhibit 2: Most important ways in which large corporations currently contribute to the public good**



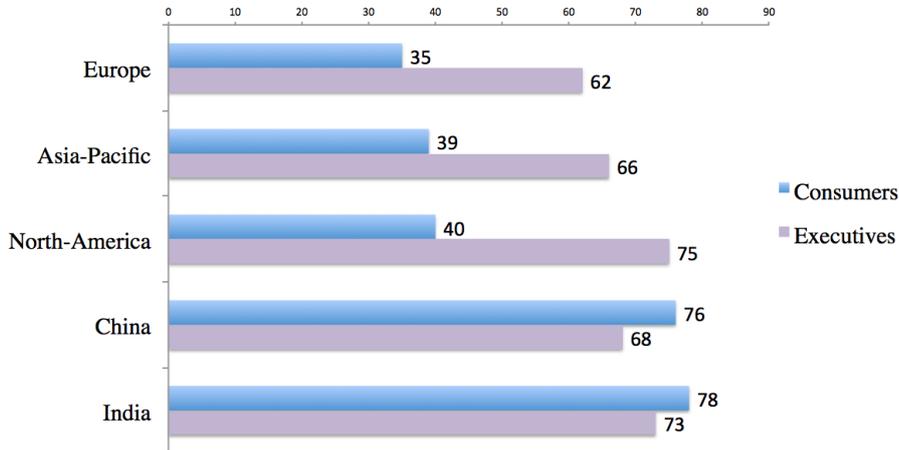
Many businesses have addressed this issue and integrated corporate social responsibility in their operations. It is known as the 'In Process' approach. Exhibit 2 shows the results of a survey conducted by McKinsey ("Assessing the impact of societal issue," n.d.) that reflected executives' views on 'doing good' and 'doing harm' to society. In the survey, executives gave higher value to the regular course of their business by creating jobs (65%), making scientific and technological breakthroughs (43%), producing necessary/needed products and services (41%), and paying taxes to support the local economy (35%). When asked about the most important ways that large corporations caused harm to the public good, 65% named polluting and damaging the environment. Almost 40% chose putting profits ahead of the people's well-being, followed by exerting improper influence on

government (33%), and exploiting the financial loopholes to enrich themselves (24%) as shown in Exhibit 3.



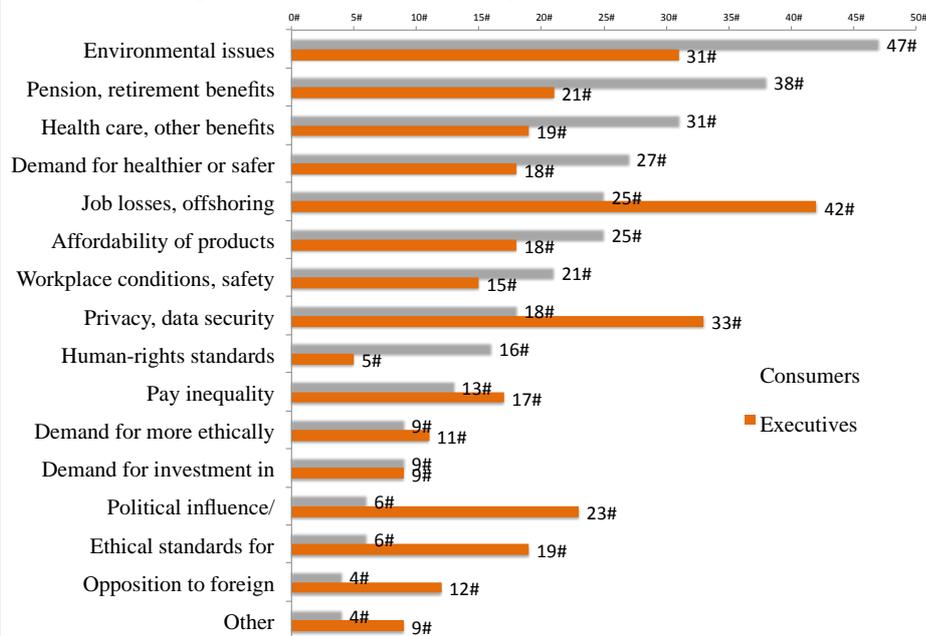
In a follow-up survey by McKinsey, consumers and executives viewed the overall contribution that large corporations (public and private) make to the public good as 'generally' or 'somewhat' positive. These results showed that there a trust gap does exist between these two entities as consumers are less positive than executives. On average, 68% of executives said that large corporations make a general or somewhat positive contribution to the public good. Yet only 48% of consumers agreed. These differences suggest that there is a lack of understanding among business executives on what consumers really expect from companies. The gap perhaps widened due to the corporate misconduct widely publicized in recent years. Interestingly, consumers in China and India had a positive view about the social contributions of corporations more so than did their executives. (see Exhibit 4). Only 35% of European consumers, for instance, said that business makes a generally or somewhat positive contribution compared to 62% of executives on a similar issue. In terms of the perception gap, North America (USA) had the highest gap at 35%.

**Exhibit 4: Percent of respondents who describe the overall contribution that large corporations make to the public good as 'generally' or 'somewhat' positive**



A similar disconnect emerged in those issues that were considered to be most important to society over the next five years. Here 47% of the consumers picked environmental issues, followed by pension and other retirement benefits (38%), and health care/other benefits (31%). In contrast, executives viewed job losses and offshoring (42%) as issues that will attract the most public and political attention, followed by privacy and data security (33%), and then the environment (31%). (see Exhibit 5)

**Exhibit 5: Percent of respondents selecting given issue as 1 of top 3 that will be most important in the next 5 years?**



**Why CSR? : Meaning and Modelling**

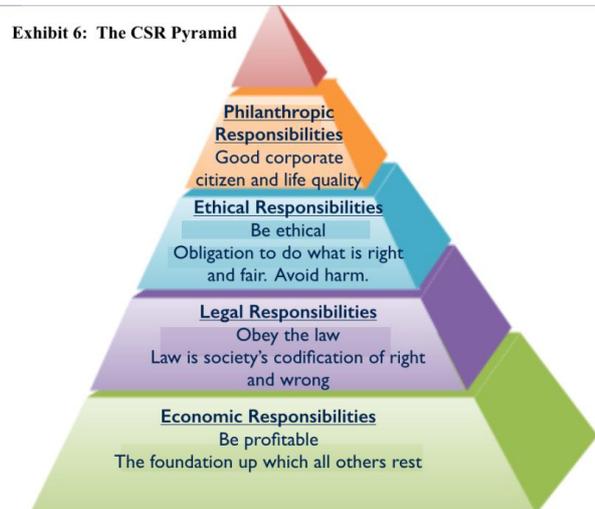
Corporate social responsibility also is referred to as "corporate citizenship." It is the initiatives a corporation makes to take responsibility for its corporate effects on environmental and social wellbeing concerns. The term generally applies to efforts that go beyond regulators or environmental requirements and instead covers costs that do not provide an immediate financial benefit to the company. CSR thus is variously defined as

“The continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large”. (World Business Council for sustainable Development, para.4).

“ Being socially responsible means not only fulfilling social expectations, but also going beyond compliance and investing more into human capital, the environment and relation with stake holders.” (The European commission, para. 5).

According to Carroll (1983:608), “corporate social responsibility involves the conduct of a business so that it is economically profitable, law abiding, ethical and socially supportive. To be socially responsible then means that profitability and obedience to the law are foremost conditions when discussing the firm’s ethics and the extent to which it supports the society in which it exists with contributions of money, time and talent.” Further, the different layers of the pyramid help managers see the different types of obligations that society expects of businesses. To illustrate, Economic responsibility in this Pyramid concerns the responsibility of business producing goods and services needed by society and selling them to make a profit. Legal responsibility demands that businesses abide by the law and play by the rules of the game. Ethical Responsibility, however, is not necessarily imposed by law, but rather consists of what is generally expected by society over and above legislated economic and legal expectations. Philanthropic responsibility focuses more on luxurious

contributions, such as improving the quality of life of employees, their local communities, and ultimately society in general. (see Exhibit 6)



To determine what constitutes a CSR activity, the following illustration shows an array definition of CSR based on a dual benefit— business alone or society as well —and the range of potential benefits in each instance (Exhibit 7). Beginning with the minimal benefits to either business or society there are pet projects, which often reflect the personal interests of individual senior executives. Next are those areas that can generate a limited or often one-sided benefits. With philanthropy, for example, corporate donations confer the majority of benefits on society (with a potential, but often questionable, reputational benefits to the business). Similarly, in what's best referred to as propaganda, CSR activities often focus first on building a company's reputation with little real benefit to society. Some cynics suggest that this form of CSR is at best only a form of advertising—and even potentially dangerous if it exposes the gap between a company's words and its actions.

**Exhibit 7: CSR Dual Benefits**

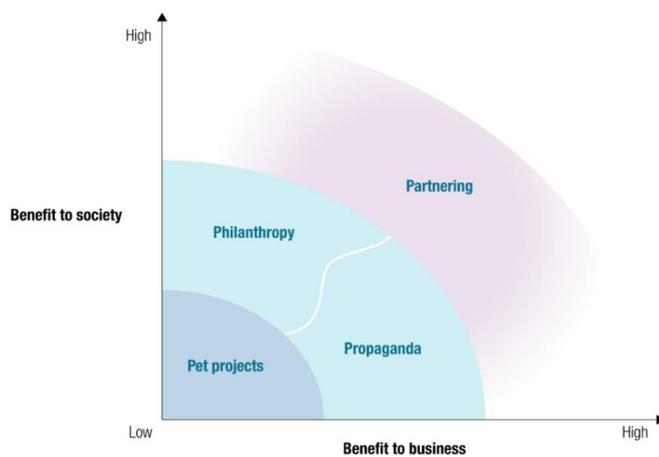
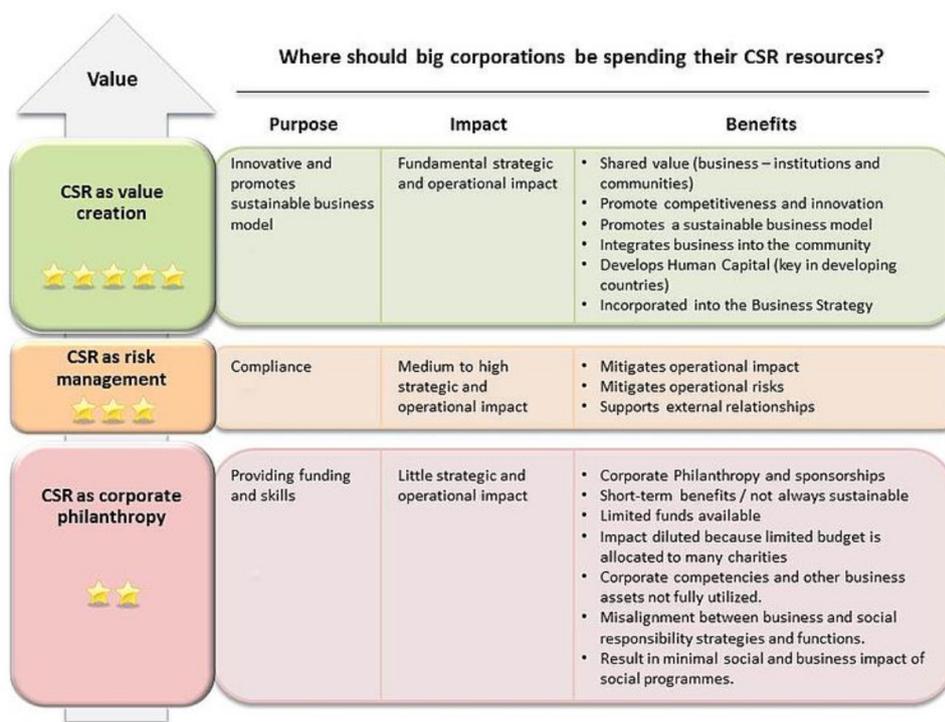


Exhibit 8: CSR Value Chain



The above exhibit (Exhibit 8) shows another view of CSR which moves from an initial philanthropy to risk management and value creation as well as the impact and benefits of each CSR. Beneficial results from effectively communicating CSR can include: Higher levels of customer satisfaction and loyalty, an improved company brand and product reputation, more motivated and productive employees, better relationships with the local community and public authorities, and finally, increased cost savings over the long term. In practice, the more closely tied a social issue is to a company's operations and strategy, the greater will be the opportunity to leverage that company's capabilities to help both society and itself.

The basic driver of CSR consists of the followings:

1. Corporate Values –Doing good to help the society, global ecology and human rights
2. Strategic Alignment– Being more responsible toward both internal and external stakeholders, the community and the environment and using that alignment as a strategy for growth, profits, and harm minimization.
3. Public compliance – Refers to consumers, media, government, inspection, legislation, industry standards, and international trade codes of conduct and regulators

In illustrate the nature of CSR modelling companies, the Reputation Institute, a private global consulting firm based in New York, invited about 47,000 consumers across 15 markets to participate in a study that ranked the world's 100 most reputable companies—all of which were multinational businesses with a global presence. The study found that 42% of people's feeling about a company is based on their perceptions of that firm's corporate social responsibility (CSR). Knowing how important this view can be to a corporation's overall reputation, the Reputation Institute then separately rank and honor those firms with the best CSR. Of the 10 Companies with the Best CSR

Reputations, Microsoft ranked first for its reputed Corporate Citizenship project that aims at empowering every person and every organization on the planet to achieve more. Cumulatively, Microsoft has invested \$75 million to expand access to computer science education for global youth worldwide, under the name of YouthSpark Hub, as well as giving \$2 million a day in product donations to nonprofits around the world. The CSR program at Walt Disney corresponded with the CFO Jay Rasulo saying that “If we don’t act in accordance with the stories we tell, the experiences we offer, and the images we project, we lose our authenticity. You can’t entertain a family on the one hand and then totally disregard the world and circumstances in which they live. Acting responsibly is core to our brand.” (Connor, 2013). Thus, Disney has been listed by FORTUNE’s as the most admired company in the world for its notable environmental stewardship that focuses on using resources wisely and protecting the planet as the company operates and grows its business.

As mentioned earlier, of McKinsey’s top CSR activities, creating jobs has been put into practice at OMRON, a Japanese manufacturer of industrial automation products. In conformance with the OMRON, “To improve lives and contribute to a better society”, OMRON Corporation respects diversity at work under the wish of its founder—Dr. Kazuma Tateisi —by declaring, “At work for a better life, A better world for all.” (Social Welfare, para. 5). As part of this initiative, Dr. Yutaka Nakamura from the Social Welfare organization for integrating people with disabilities into society helped set up a prototype OMRON Taiyo factory in Beppu (1972) and Kyoto (1986) that allowed disabled persons to work with regular workers. The belief was that “no one is so disabled as to be unable to work at all.” Since then, OMRON Corporation has become known as the first factory in Japan specifically designed for workers with various physical needs and a workplace for persons with disabilities. Its clear motto is, “Not a Charity but a Chance.” As of June 2014, the percentage of its employees with disabilities was 3.42%, indeed above the legally mandated level of 2.0%. This level includes employees working at special subsidiaries charged with providing particular consideration for employees with disabilities. The average disabled employee ratio at OMRON Corporation and its 24 Group companies in Japan was 2.45% as of June 2014, indeed among the highest in the Japanese manufacturing industry.

In summary, the Kenan Institute recognises the importance of CSR of 5 dimensions of CSR as follows:

1. Moral obligation -- Do the right thing
2. Sustainability -- Emphasize environmental and community stewardship, provide for long-term continuation of the business
3. License to operate -- Derives from the fact that every company needs tacit or explicit permission from governments, communities, and numerous other stakeholders to do business.
4. Reputation -- CSR can improve a company’s image, strengthen its brand, enhance staff morale, and raise the value of its stock.
5. Risk Reduction -- Strong programs for operational excellence, advance planning, safety, environmental monitoring, community relations, NGO partnering and media relations reduce the risk of disaster, mitigate the impacts of disasters and make it easier to recover from those disasters quickly.

CSR and Business Ethics: It’s all about the People

In the book, *Winners Never Cheat: Everyday Values We Learned As Children (But May Have Forgotten)*, Jon M Huntsman introduces a “moral compass” for business leaders and explains the principle of his own business success that include the following:

Compete fiercely and fairly — but no cutting in line

Set the example - risk, responsibility, reliability

Revenge is unproductive: Learn to move on

Operate businesses and organizations as if they were family-owned

An interesting example from this book is a case that happened in 1980 when Huntsman opened a plant in Thailand under a joint venture with Mitsubishi known as HMT. With about \$30 million invested, HMT planned to open the second factory, but Huntsman learned that HMT had to pay various

officials kickbacks annually, and the share of this joint obligation for that year was \$250,000. According to Huntsman, he had no intention of paying even five cents toward what was nothing more than extortion. The next day, Huntsman sold all the interest. In Huntsman's words, "In America and Western Europe, we proclaim high standards when it comes to things, such as paying bribes, but we don't always practice what we preach. Ethical decisions can often be cumbersome and unprofitable in the near term. Once you compromise your values by agreeing to bribes or payoffs, it is difficult ever to re-establish your reputation or credibility. Competition is an integral part of the entrepreneurial spirit and the free market as well. Cheating and lying are not. If the immoral nature of cheating and lying and not being honest particularly bothers you, think about this: They eventually lead to failure. Remember the old chant as well: "Winners never cheat; cheaters never win!" (Winners Never Cheat, 2005).

A Global Workforce Study by Towers Perrin showed that CSR has become one of the top drivers in terms of attracting, retaining, and engaging employees. A survey by the Net Impact showed that 53 % of workers and 72 % of students about to enter the workforce believe that "a job where I can make an impact" is important to their happiness. Without question, all other things being equal, they would take a 15% pay cut to work for a company committed to CSR, and indeed 35% agreed to do just that. This phenomenon is even more becoming apparent in the younger generations, where the focus on the 3Ps — People, Planet, and Profits is increasingly becoming the key attraction to gain and retain employees. Research by Hewitt Associates showed there was a high correlations between the percentage of employees who are engaged and the percentage of respondents who agreed strongly that their organization was socially and environmentally responsible.

Research conducted by the Cone Millennial Cause group found that 80% of a sample of 1,800, between 18-25 year in age, preferred to work for a company that cares about how it impacts and contributes to society. More than 50% said they would refuse to work for an irresponsible corporation. The truth is that by the year 2020, Millennials (ages 18-30) will be 50% of the workforce, and they are hyperaware of, and have high expectations for corporate social responsibility efforts to make the world a better place.

According to the 2013 Cone Communications Social Impact Study, CSR does more than simply shape Millennial brand perceptions – it influences a variety of personal decisions as well, from what these individuals buy to where they work. When companies support social and environmental issues, Millennials respond with increased trust (91%) and loyalty (89%) as well as a stronger overall likelihood to buy the products and services of those companies (89%).

#### How to Deploy CSR : Who's Joining the Bandwagon

CSR stakeholders include more than just the Board members, administrators, and customers; they also covering legal interest groups, communities, peer industry, competitors, and individual employees — the latter which should not ever be overlooked. To secure these CSR initiatives, a company needs to generate internal buy-in among its employees. Also avoid being hypocritical which is being seen as transparent to all the people outside while executives abuse the corporate wealth and mistreat and neglect its employees internally. The collapse of ENRON is an all time classic case of internal corporate irresponsibility that became external.

The 4-V Model of Ethical Leadership demonstrates a good framework that aligns the corporate beliefs and values with the external behaviors and actions to achieve the common good. Created by Dr. Bill Grace, the founder of the Center for Ethical Leadership, this model is grounded in the development theories for moral, human, leadership and community actions.

Values & Vision give a group purpose and direction. For leaders, keeping both values and vision is a most essential dimension. Ethical leadership begins with an understanding of and commitment to the corporate deep core values. Both values and a vision to serve others and doing the right things identify a group by giving that group clear purpose and direction. Effective leadership requires the ability to give voice to these values and having a vision that adds dynamics to group activities and concerted movement to realize a vision. Virtue, a blend of principle, sensitivity to relationships, and

commitment to the common good, distinguishes the ethical leadership that will transform society, from having leadership that is merely effective. Using the 4-V definition, the burden seems to fall hardest on the shoulders of corporate top executives who must act as social responsible actors by providing an ethical work climate and embrace the positive processes of moral behavior.

Suggestions include making the upper management act not just dictate as higher long-term champions of CSR activities. According to Carroll, social responsibility can only become a reality if more managers become moral instead of being amoral or immoral. Among the employees, when they notice that managers or customers support the company's CSR initiatives, they will be more likely to feel associated with and become part of such good endeavors. In terms of the company stakeholders, the customers need to be engaged in the same CSR programs as employees, such as joining forces on volunteering sites to create a strong bond that leads to both happy employees and happy customers.

#### Last But Also Important: Don't Forget the Millennials

As suggested by Cone Communications, Millennials are a must-engage group when it comes to CSR because not only are they today's consumers – they are tomorrow's leaders and thus shaping the very way businesses will operate in the future. Three tips for engaging Millennials in CSR efforts are the followings:

1. Millennials have a distinctive passion and a personal drivers to be “always connected”. For a generation for whom information is available at the swipe of a finger, CSR information should be made readily available and easily shareable on a variety of channels and serve as a new group of influencers that can magnify good CSR efforts and accelerate further positive change.
2. Millennials want to be involved in CSR that is different from the traditional donation or volunteer models. Thus, lower all possible barriers and allow this group to see a spectrum of participation opportunities that can advocate for by sharing information with their diverse networks, and communicating new ways to deliver CSR by a company showing who they are and what they support.
3. Millennials like to question corporate and personal ability to create more positive change. Accept their cynical views and let them know what's in it for them through real collective actions that do deliver desirable impacts. Communicate the personal benefits from their ongoing engagement to maintain their motivation.

Contrary to the notable business concept of a new 'blue' or competitive 'red' ocean, Danai Chanchaochai wrote a book on the White Ocean Strategy for business sustainability. White refers to moral and conscience, not wealth nor competition. In a white ocean business, the company will set the long-term goal of creating a net positive impact on both the company and the society, balance the people, planet, and profits with a passion for doing good. At an individual level, CSR needs to be ingrained into ISR or Individual Social Responsibility wherein every member accepts the duty and is committed to do good business with integrity. One may ponder naturally who has sailed across this ideal 'White Ocean.' The best answer can be found in Jon M Huntsman's life and work, a living proof of one sailing across the White Ocean by accumulating wealth and giving much of it back to make the people's lives better. Huntsman's famous quote, namely, that “There is no moral shortcut in the game of business - or life, “demonstrates clearly that CSR is the most viable way for business to be successful and the society to flourish.

In this new era, CSR will be more important then ever because of two driving forces — the scarcity of resources and the increase in the people's voice. No matter how difficult and frustration CSR may seem to some, the last call has come for all to become responsible and help take care of this good old planet in whatever way they can so as to leave it in good shape for the next generation. CSR is not just a mandate; it is the conscience of good business. Now is the time to reconsider ROI not only for a positive return on investment, but also for a welcome return on personal and corporate integrity as well. With effective CSR practices, the business ship will assuredly sail in the white ocean. After all, that is what sustainability is truly all about.

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## MODELING FIRM COMPETITIVENESS FOR STRATEGY FORMULATION

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### ABSTRACT

This paper presents a process of modeling competitiveness at the firm level for strategy formulation purposes. The modeling process consists of four interactive components: managerial situation, conceptual model, formal model, and strategy. These four components are interacted through four sub-processes named, conceptualization, modeling, obtaining solution, and implementation. Although all the components and sub-processes will be discussed, the emphasis however will be more on managerial situation and conceptual model within the context of firm competition. The industrial competitiveness model developed using the proposed modeling process will be explained and how it can be used in SWOT analysis, building decision support system, marketing strategy, likely market share estimation, and technology selection.

**Key words:** Competitiveness, Strategy, Conceptualization, Modeling, Potential and Actual Competitiveness, Performance Management.

### AN INDUSTRIAL COMPETITIVENESS MODEL

We shall introduce and define a “unit of competitiveness analysis” for strategy formulation at the firm level. To talk about competitiveness at the firm level, we need a “firm” and a “competitor” offering the same group of products and services to meet the expectations of customers in a given “market”. The “firm” could be located, although not necessarily, in an environment that is different than that of the “competitor” and the “market”. If all three of them are in the same political economic environment, then two local firms are competing against each other in their own domestic market

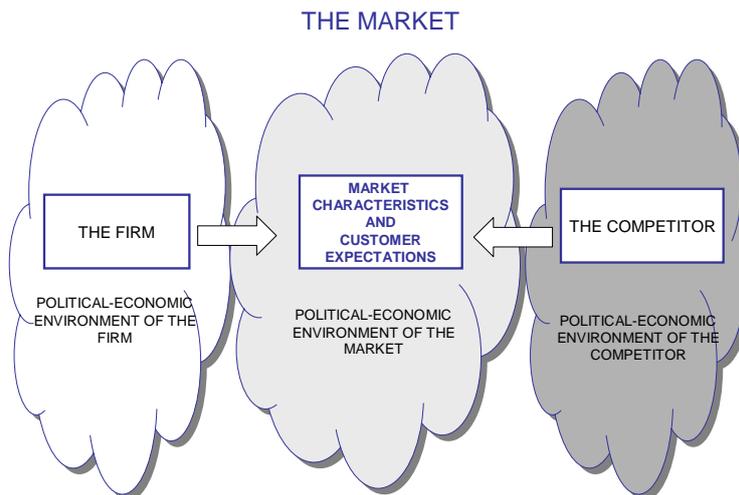


Figure 1: The Unit of Competitiveness Analysis

The unit of competitiveness analysis in Figure 1 necessitates a clear understanding what customer expectations are and how they are relatively met by the firm and the competitor. As a function of market characteristics, customer expectations related to the attributes of products and services such as price, quality, quantity, delivery period, functionality, design, and packaging might vary considerably. However, once a market is chosen for the unit of competitiveness analysis, all these attributes are fixed in the sense that both the firm and the competitor strive to meet the expectations of customers in that market.

The primary objective of the modeling process presented in this paper is to formulate competitive strategies. According to the “conceptual model” in Figure 2, competitive strategy is guided by analyzing the difference between two types of competitiveness level. As a function of the difference between actual and potential competitiveness levels, we define eight strategic states. Each strategic state indicates in which direction the decisions need to be taken and implemented in order to improve the competitiveness level of the firm.

“Actual competitiveness” is an index which typically takes values on greater 1 or smaller than 1, when it is greater than 1 the firm is more competitive than its competitor; otherwise the competitor is better and ahead in competition. The actual competitiveness index is formulated to measure how good the firm is in terms of providing competitive weapons and advantages and actually utilizing these weapons and advantages when compared with its competitor. Therefore, this index, as its name implies, is based on the actual performance of the firm when compared with that of the competitor. The actual competitiveness level is determined by three factors; namely, “actual industrial mastery”, “actual cost superiority”, and “political-economic environment.”

“Actual cost superiority” is an index that measures the degree of the advantage the firm possesses against its competitor in terms of actual input prices and actual input usage rates. The value of the cost superiority index varies around 1. When it is greater than 1 the firm has cost advantage, otherwise the competitor has the upper hand. “Actual Industrial Mastery” is again an index that is formulated to measure the extent to which the firm is actually able to utilize its capital resources and capabilities vis-à-vis the competitor. The actual industrial mastery  $\theta_A$ , in fact the ratio of “actual output” to “comparative actual output”, takes on values around 1; and when it is greater than 1, the firm is superior, otherwise the competitor is better. “Actual competitiveness” level of a firm,  $\mathbf{LA}$ , is determined by both its “actual cost superiority”,  $\pi_A$ , and “actual industrial mastery”,  $\theta_A$ , by using a multiplicative model; that is,

$$\mathbf{LA} = \theta_A \pi_A . \quad (1)$$

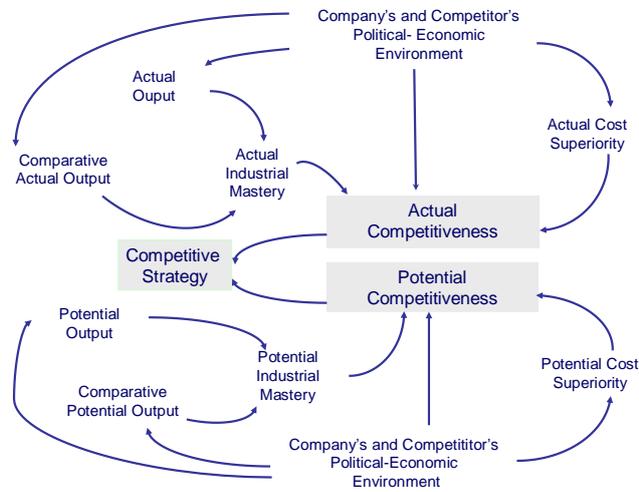


Figure 2: Conceptual Model

“Actual output”, denoted by  $Q_F$ , corresponds to the optimal output produced or being planned by the firm under the prevailing actual conditions. It could be measured in monetary terms or in non-monetary terms, depending on the nature of competition and industry. The concept of “comparative actual output”,  $Q_C$ , deserves a more careful explanation, for it reflects a comparison of the firm with the competitor in terms of capital resources (machinery and equipment, technical know how, distribution system, etc.) and capabilities. The comparative actual output  $Q_C$  is the output that could have optimally produced had the firm possessed the actual technological and managerial characteristics of its competitor. This concept will be clear with the numerical examples that follow.

The lower part of the conceptual model in Figure 2 depicts how the factors of “potential competitiveness” are related to one another. It should be noted that “potential competitiveness” has the same causal relationships as in the case of “actual competitiveness”. More specifically, the “potential competitiveness” level, denoted by  $LP$ , is the product of “potential industrial mastery”  $\theta_p$  and “potential cost superiority”  $\pi_p$ : that is,

$$LP = \theta_p \pi_p \quad (2)$$

Examining the differences between actual and competitiveness levels leads to the identification of eight strategic states, as seen in Figure 3.

**Strategic State 1: Good Potential – Moderate Management:** This strategic state indicates that the firm is actually competitive (because  $LA$  is greater than 1) and in fact could have done even much better had it utilized its full potential (because  $LP$  is greater than  $LA$ , therefore  $LP$  is much greater than 1). The strategic implication of this state is that the firm must take a set of managerial measures to bring its actual performance to the level indicated by its potentiality.

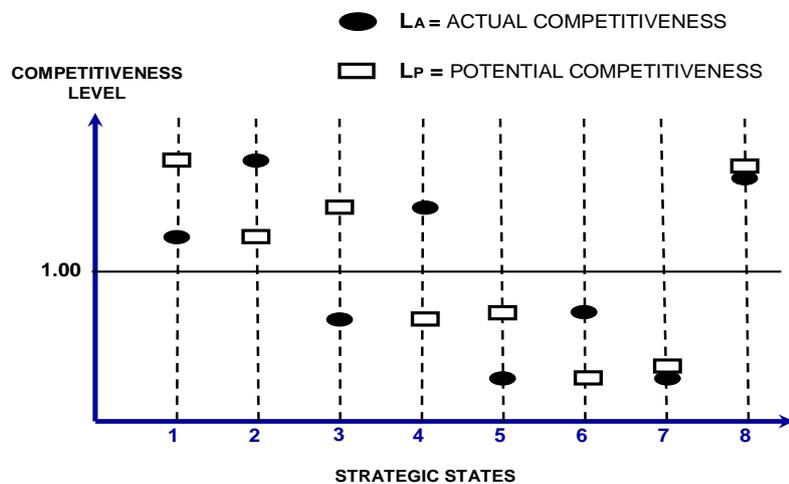


Figure 3: Competitiveness Level and Strategic States

**Strategic State 2: Good Management – Moderate Potential:** In such a strategic state, it is most meaningful decision is to make new investments in order to further improve the potentiality of the firm, knowing that it has a good management team and the chances are very high in the sense that the managers can fully utilize new resources and capabilities added to the benefit of the firm.

**Strategic State 3: Good Potential – Poor Management:** This situation suggests that there are questions as to the effectiveness of the current management team and therefore some serious managerial measures need to be taken, and rather urgently.

**Strategic State 4: Poor Potential – Good Management:** This necessitates on the part of the firm to make new investment rather urgently to bring its potential level to somewhere close to its actual competitiveness level. Knowing that the management team is good and actually performing well, the investment plans need be devised and implemented in a relatively short period of time.

**Strategic State 5: Poor Potential – Very Poor Management:** A two-stage approach is called for here. The first stage needs to deal with the managerial measures in order to improve actual performance level, whereas the second stage should deal with plans of investments to bring the potential competitiveness of the firm to a level that is higher than 1, assuming that managerial measures taken in stage one will justify such new investments.

**Strategic State 6: Very Poor Potential – Moderate Management:** Again we are facing a two-stage approach in this state too. First, new investments are most urgently required to improve the potential of the firm to an acceptable level, and then a series of management development plans are to be put in place to fully activate the potential generated by the new investments.

**Strategic State 7: Very Poor Potential – Very Poor Management:** In this case there are two basic options for the firm to take: (1) get out of that business soon, or (2) make urgent investment to increase the potentiality of the firm considerably, and also at the same time, take managerial measures to improve the efficiency and effectiveness of management.

**Strategic State 8: Good Potential – Good Management:** The management of the firm is able to fully utilize the high potential provided to their disposal. This state is an enviable position for any firm to be in and the objective is to stay in that state as long as possible.

The conceptual model depicted in Figure 2 necessitates the development of four sub-models and the formulations of six indices; namely,

- Actual Output Sub-Model
- Comparative Actual Sub-Model
- Potential Sub-Model
- Comparative Potential Sub-Model
- Actual Mastery Index
- Actual Cost Superiority Index
- Potential Industrial Mastery Index
- Potential Cost Superiority Index
- Actual Competitiveness Index
- Potential Competitiveness Index

**Actual Output Sub-Model:** This is the optimal output the firm is able to produce and sell under the current prevailing conditions. The currently prevailing conditions refer to actual technological and managerial characteristics of the firm, the goals and objectives presently being pursued, market conditions and customer expectations, the constraints imposed by the firm's production and distribution system in terms of capacity limitations, and the like. It is possible to suggest different optimization models that will sufficiently represent the actual output of a firm.

The actual output of the firm  $Q_F$  can be obtained from the actual output sub-model below:  
Actual Output Sub-Model

$$Q_F = \text{Max} \sum_j \alpha_j x_j$$

subject to:

$$\sum_j a_{ij} x_j \leq A_i, i = 1, 2, \dots, m$$

$$x_j \geq 0, j = 1, 2, \dots, n$$

where  $x_j$  = the actually planned quantity of Product  $j$  per planning period,

$\alpha_j$  = the coefficient that converts the unit of Product  $j$  into a "standard" unit of output,

$a_{ij}$  = the actual usage rate of capital resource  $i$  to produce one unit of Product  $j$ ,

$A_i$  = the actual availability level of capital resource  $i$ .

It is important to attach a managerial meaning to this seemingly standard Actual Output Sub-Model from the perspective of competitiveness analysis. The Actual Output Sub-Model above represents at least the following: (1) The optimal value of the objective function,  $Q_F$ , reflects the maximum output the firm is able to produce under the current prevailing conditions; (2) the conversion coefficients,  $\alpha_j$ 's, account for attributes such as quality, firm image, marketing effectiveness; (3) the actual usage rates of capital resources,  $a_{ij}$ 's, correspond to the technological characteristics of the firm; and (4) the availability of capital resources,  $A_i$ 's, are indicators of how intensively (1 shift versus 3 shifts a day, for instance) the capital resources are used in the firm.

**Comparative Actual Output Sub-Model:** The objective of this sub-model is to be able to compare the firm's actual output performance with that of the competitor. For this purpose, it assumed that the

actual technological and managerial capabilities of the competitor apply to the case of the firm. The question then becomes what could have been the optimal output of the firm had it the characteristics of the competitor. For instance, suppose that the competitor has an actual labor productivity of 2 tons of certain output per worker per month. Had the firm the same actual labor productivity, what could have been the actual output with its 300 workers? The answer is 600 tons per month. Then one can assume this amount of output as the comparative actual output,  $Q_C = 600$ , estimated in a pragmatic manner. Rather than relying only on labor productivity, we can expand this concept to include all factors or characteristics of production to the formulation of a measure that reflects the entirety of managerial and technological characteristic of the competitor when applied to the firm. Such a sub-model can be of the form

Comparative Actual Output Sub-Model

$$Q_C = \text{Max} \sum_j \beta_j y_j$$

subject to:

$$\sum_j b_{ij} y_j \leq A_i, i = 1, 2, \dots, m$$

$$y_j \geq 0, j = 1, 2, \dots, n$$

where  $y_j$  = the quantity of Product  $j$  that could have been produced per planning period, had the firm possessed the actual technological and managerial parameters of the competitor,

$\beta_j$  = the competitor's actual coefficient (price, unit profit, or any other monetary or non monetary factor) that converts the unit of Product  $j$  into a "standard" unit of output,

$b_{ij}$  = the competitor's actual usage rate of capital resource  $i$  (machinery and equipment, plant space, etc.) to produce one unit of Product  $j$ .

Some observations need to be made about the two sub-models presented above: (1) Both sub-models have exactly the same structure, except the values of the parameters. For instance,  $\alpha_j$ 's in the actual output sub-model are replaced by  $\beta_j$ 's in the comparative actual sub-model, and  $a_{ij}$ 's by  $b_{ij}$ 's. (2)

The availability levels of capital resources  $A_i$ 's are maintained at the same level in both sub-models. The reason for doing this "normalization" is to make the comparison meaningful in the context of competitiveness analysis. Through such a normalization method, in fact scaling up or down compared to the size of the firm, we are able to compare a large company with a small company from the perspective of competition. Otherwise, the comparison of the actual outputs of two firms having a large difference in their outputs might be in fact meaningless.

The concept of comparative actual output is important for competitive strategy formulation since it forces the firm's managers to constantly think about and consider the competitor's characteristics. In other words, the *competitive environment* of the firm is partially incorporated through the construction of comparative actual output sub-model, thus methodically contemplating on the competitor as well, a feature that is most essential in formulating competitive strategies.

**Potential Output Sub-Model:** It is of great importance to know the maximum output that could have been produced if the currently existing potentiality of the firm were fully, most effectively, and efficiently utilized. This sub-model creates awareness, when compared with actual output, about the extent to which the potentiality is currently being successfully used. This kind of awareness is most useful while making operational and investment decisions. Therefore, making use of the potential output sub-model forces managers to constantly think of their potential resources and capabilities that exist and how they are actually being used, and to what extent.

The potential output of the firm  $V_F$ , in a sense, is the maximum amount that could be produced with the competitive weapons provided by the executive management of the firm and it can be obtained from a model of the form:

Potential Output Sub-Model

$$V_F = \text{Max} \sum_j \lambda_j u_j$$

subject to:

$$\sum_j c_{ij} u_j \leq B_i, i = 1, 2, \dots, m$$

$$u_j \geq 0, j = 1, 2, \dots, n$$

where  $u_j$  = the quantity of Product  $j$  that could have been produced per planning period, had the firm were capable of fully utilizing its existing potential,

$\lambda_j$  = the coefficient that converts the unit of Product  $j$  into a “standard” unit of output under the existing potentiality conditions,

$c_{ij}$  = the best usage rate of capital resource  $i$  to produce one unit of Product  $j$ , under the existing potentiality conditions

$B_i$  = the availability level of capital resource  $i$  under the existing potentiality conditions.

There are three observations to be made with respect to actual output sub-model and potential output sub-model: (1) because the objective functions in both sub-models are expressed as “maximization”, the coefficients  $\alpha_j$ ’s and  $\lambda_j$ ’s must comply with the conditions that  $\alpha_j \leq \lambda_j, \forall j$ , implying potential contributions must be at least at the level of actual contributions, which conform to the concept of potentiality. (2) The technological parameters or capital resource usage rates,  $a_{ij}$ ’s and  $c_{ij}$ ’s, on the other hand, must comply with the requirements that  $a_{ij} \geq c_{ij}, \forall i, j$ . (3) The availability levels of capital resources  $A_i$ ’s and  $B_i$ ’s have the relationship  $A_i \leq B_i, \forall i$ , due to the assumption that a firm could potentially have more of capital resources.

**Comparative Potential Output Sub-Model:** The comparative potential output is the maximum amount that could have been produced by the firm had it the potentiality of the competitor, that is, the best possible technological and managerial capabilities of the competitor. This sub-model serves the purpose of analyzing what the competitor’s executives have achieved in terms of creating competitive weapons against the firm and then anticipating their possible consequences. As in the case of “comparative actual output”, this sub-model is also instrumental in creating a systematic awareness about the potential capabilities of the competitor since it forces the firm’s manager to find out how the competitor has prepared itself for competition. The estimate of comparative potential output can be obtained from a model of the form:

**Comparative Potential Output Sub-Model:**

$$V_C = \text{Max} \sum_j \delta_j v_j$$

subject to:

$$\sum_j d_{ij} v_j \leq B_i, i = 1, 2, \dots, m$$

$$v_j \geq 0, j = 1, 2, \dots, n$$

where  $v_j$  = the quantity of Product  $j$  that could have been produced per planning period, had the firm possessed the potential characteristics of the competitor,

$\delta_j$  = the coefficient that converts the unit of Product  $j$  into a “standard” unit of output under the existing potential characteristics of the competitor,

$d_{ij}$  = the best usage rate of capital resource  $i$  to produce one unit of Product  $j$ , under the existing potential characteristics of the competitor,

**Actual Industrial Mastery Index:** This index is defined as one of the two major components of “actual industrial competitiveness index” and measures the management performance of the firm in all functional areas such as production, marketing, finance, human resources, etc. It indicates where the firm’s actual achievement stands in comparison to that of the competitor with respect to the utilizations of the existing capital resources and capabilities, including know-how. This actual industrial mastery index is defined as:

**Actual Industrial Mastery Index**

$$\theta_A = Q_F / Q_C$$

where  $\theta_A$  = the actual industrial mastery,  $Q_F$  = the actual output, and  $Q_C$  = the comparative actual output.

**Potential Industrial Mastery Index:** This is an index that partially measures the firm’s top management performance in providing and deploying assets making the firm potentially competitive against the competitor and it is defined as a major component of the potential competitiveness index. The potential industrial mastery index is defined as

**Potential Industrial Mastery Index**

$$\theta_P = V_F / V_C$$

where  $\theta_P$  = the potential industrial mastery,  $V_F$  = the potential output, and  $V_C$  = the comparative potential output.

The two indices formulated above,  $\theta_A$  and  $\theta_P$ , are indicators that position the firm vis-à-vis the competitor with respect to actual and potential outputs. The production and distribution systems also need, in addition to capital resources, inputs like raw materials, labor, energy, working capital, etc to function. The costs of these inputs and their usage rates considerably shape, especially in price dominant markets, the competitiveness of the firm. To integrate this feature of competition into the industrial competitiveness model two input-related indices are formulated, called “actual cost superiority” and “potential cost superiority, to match the two types of output sub-models.

**Actual Cost Superiority Index:** This index indicates to what extent the firm has comparative advantage over the competitor with respect to unit costs of input and their usage rates. It embodies two types of comparison. First, it compares the unit costs of inputs. Suppose  $P_{kR}$  and  $P_{kF}$  are the unit costs of input  $k$  to the competitor and the firm, respectively. The ratio  $P_{kR} / P_{kF}$  is an indicator of whether the firm has a purchasing cost advantage or not against the competitor in the case of input  $k$ . And also let  $q_{kF}$  and  $q_{kR}$  be the actual usage rates of input  $k$  by the firm and the competitor, respectively, to produce one unit of output. Again the ratio  $q_{kF} / q_{kR}$  indicates whether the firm has an input usage rate advantage in the case of input  $k$ . What we need in fact is a formulation that will reflect both unit costs and usage rates for all inputs. Such a formulation could be of the following form:

$$\pi_A = \sum_k \frac{P_{kR}}{P_{kF} (q_{kF} / q_{kR})} \omega_{kF} \quad (3)$$

where  $\omega_{kF}$  is the “importance” factor of input  $k$  to the firm. Let us define “the unit cost-to-compete” of the firm as  $\sum_k P_{kF} q_{kF}$ . If we assume that the “importance” of the input  $k$  is given by its share in the unit-cost-to-compete; that is,

$$\omega_{kF} = \frac{P_{kF} q_{kF}}{\sum_k P_{kF} q_{kF}},$$

then the actual cost superiority formulation in (3) becomes

$$\pi_A = \frac{\sum_k P_{kR} q_{kR}}{\sum_k P_{kF} q_{kF}} \quad (4)$$

which is basically the ratio of the unit-cost-to-compete of the competitor over that of the firm. With this definition of actual cost superiority index, the value of  $\pi_A$  will vary around 1. Any value of  $\pi_A$  greater than 1 indicates that the firm is in a better position with respect to input costs and usage rates. Otherwise, the competitor has the input cost advantage.

Let  $\pi_{Aj}$  be the actual cost superiority of Product  $j$  and assume that its relative importance to the firm is given by  $Q_{Fj}/Q_F$ , where  $Q_{Fj}$  is the value added by Product  $j$  to the total actual output  $Q_F$ . Then the actual cost superiority is given by

$$\pi_A = \sum_j \Pi_{Aj} (Q_{Fj} / Q_F) \quad (5)$$

**Potential Cost Superiority Index:** This index is useful to analyze and estimate the firm’s potential advantage against the competitor with respect to input costs and input usage rates. As the name implies, the objective here is to become aware of the potential that exists in the firm compared with that of the competitor. For instance, the firm might be currently paying certain prices for its inputs; but the purchasing effectiveness could have been perhaps improved by developing better working partnerships with the suppliers, such as through possible quantity discounts, advanced planning for procurements, etc.

Let  $P_{kR}^*$  and  $P_{kF}^*$  be the potential unit cost of input  $k$  to the competitor and the firm, respectively. Like in the case of the actual cost superiority, the ratio  $P_{kR}^* / P_{kF}^*$  indicates the degree of unit cost advantage the firm potentially has. Also let  $q_{kF}^*$  and  $q_{kR}^*$  be the potential usage rates of input  $k$  by the firm and the competitor, respectively, to produce one unit of output. Again, the ratio  $q_{kF}^* / q_{kR}^*$  indicates whether the firm has potentially an input usage rate advantage or not in the case of input  $k$ . What we need now is a formulation that will reflect both unit costs and usage rates for all inputs and such a formulation could be:

$$\pi_P = \frac{\sum_k P_{kR}^* q_{kR}^*}{\sum_k P_{kF}^* q_{kF}^*} \quad (6)$$

which is equivalent to the formulation in (4), but for the potential cost superiority this time.

With all these formulations, sub-models, and background, we are now ready to restate the formulas for both actual and potential competitiveness levels as:

**Actual Competitiveness:** The actual competitiveness level of the firm against its competitor is given by

$$LA = \theta_A \pi_A \quad (1)$$

**Potential Competitiveness Levels:** The potential competitiveness of the firm against its competitor is given by

$$LP = \theta_p \pi_p \quad (2)$$

First, however, we would like to make some comments on the process of modeling firm competitiveness and the Industrial Competitiveness Model, and ICM henceforth. Comparing Figure 2 (Conceptual Model) and Figure 4 (Formal Model - ICM) reveals that:

- Both the formal model and the conceptual model have exactly the same causal structure, implying in fact a perfect matching between the two. They have the same factors/variables and the way the factors/variables are related to one another remains unchanged in both.
- The formal model – ICM consists of four sub-models and six indices that are related to one another according to the conceptual model. All sub-models are optimization mathematical models and all indices are formulations.
- The formal model – ICM with its two types of competitiveness leads to formulation of competitive strategy according to the nature of the difference between actual and potential competitiveness. This is realized through identifying the strategic state in which the firm finds itself and then formulates the strategy accordingly, as we discussed previously.

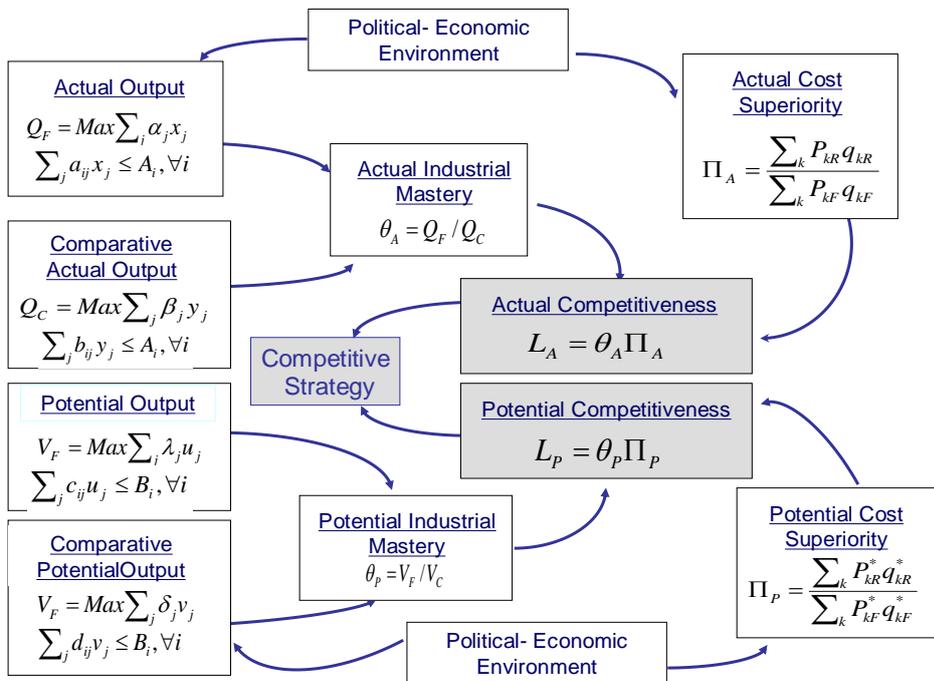


Figure 4: The Formal Industrial Competitiveness Model – ICM

- Competitive strategies formulated according to the strategic states lead to introducing measures to improve either actual competitiveness or potential competitiveness, or both.
- The ICM explained above gives the competitiveness of a firm against a chosen competitor in a given market of interest. Of course, a firm might have more than one competitor in a market and be active in more than one market. In such cases, we repeatedly use the ICM, as many

competitors as we need to survey, to analyze the competitiveness of our firm. The way this analysis is made is explained in the next section.

## ICM AND SOME STRATEGIC DECISION AREAS

We shall present two set of strategic decision areas where the ICM is an instrument. The first group includes those that have already been used in practice, and the second group refers to those that can be of potential use.

**SWOT Analysis:** The SWOT (Strengths, Weaknesses, Opportunities, and Threats) Analysis as a conceptual framework plays an important role in strategy formulation. Although different tools are employed for SWOT Analysis (Porter 1991), the basic objective is to identify the comparative advantages and disadvantages of a firm against its current and potential competitors. From this perspective, the ICM is a most natural tool for analyzing the competitive position of a firm.

**Estimation of Likely Market Shares:** If we assume that the market share of a firm is a function of its competitiveness level, then one must be able to estimate the likely market share of the firm using the industrial competitiveness model. Let us define  $L_{PR}$  as the *potential* competitiveness level of the firm against Competitor  $R$  ( $R=1,2,3,,\dots,N$ ) in the market of interest to the firm. Then the likely market share  $M_S^*$  of Competitor  $S$  can be estimated from

$$M_S^* = \frac{L_{PR}^{-1}}{1 + \sum_R L_{PR}^{-1}} \quad (7)$$

Note that here the competitiveness level of the firm against itself is equal to 1, thus the value 1 in the denominator of the expression in (7).

**Technology Selection:** Technology selection is a strategic issue and covers more than one planning period. The ICM has been discussed for single period only. For strategic decisions, however, the ICM needs to be used for several periods to see how the firm's competitiveness behaves in the long run.

## CONCLUDING REMARKS

This paper is, in a sense, an allegorical writing based on the articles of Oral (1985, 1986, 1987, 1993) and his colleagues (Oral and Ozkan, 1986; Oral and Reisman, 1988, Oral and Dominique, 1989.) Yet, there are so many issues that are still left untouched due to the space limitation normally enforced in an academic article of this kind. One area of particular interest is that how frameworks and models become complementary to one another for a better understanding of firm competition. For instance, the frameworks suggested by Porter (1980 and 1985); namely, the five-force competitive analysis and value chain framework, are useful tools for positioning a firm in its competitive environment vis-à-vis others. The frameworks suggested in the literature could have been even more useful and operational tools if there were formal models based directly on these frameworks. Or, alternatively, it might be interesting to show how well the known frameworks are reflected in some formal models.

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## DESIGN THINKING FOR LEARNING TO MANAGEMENT PRACTICE OF HIGHER EDUCATION

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### ABSTRACT

The recent global financial and economic crisis, which one considered a “crisis of management”, may lead us to rethinking business learning platform. Today business schools are facing intense pressure of answering whether those evidences results from the management education. However, most MBA programs still have placed emphasis on the “maximizing the profit” that focus on adding economic value rather than social value. This might raise more critical question of the future outcomes that would probably remain unsolved. This paper demand highly concerns about relevance to practice call for new approach to management education based on a reconceptualization of management praxis on new design. The article proposed new design thinking for our young manager through a new learning platform. Shifting from the economic value oriented to social constructive value is a main objective to ensure the sustainable growth. This new management learning platform focuses on the dynamic optimum of current business benefits on social constructive ways providing students a broader perspective of what business can, and should accomplish for oneself and society.

**Keywords:** Sustainable growth, educational innovation, social constructive, design thinking, management education and development

“As teachers of the organizational sciences, we should be able to create what we claim we understand. If we want to teach our students to become great leaders, we might consider embedding them in great organizations, meaning great courses. We might consider modeling patterns of transformational power. We could do that if we personally move from the normal state to fundamental state of leadership. We can change our student by changing ourselves, by becoming transformational teachers. In the end it is a question of integrity.” Robert Quinn (personal communication, March 21, 2003)

Knowledge is considered to be one of the most important sources of long-term competitiveness (Stewart, 1997, Nonaka & Takeuchi, 1995). While most researches focus more on the management of knowledge to improve performance, to innovate, and to create sustainable organizational growth, particularly on how well knowledge is shared within the organization (Amabile, 1988). Few focus on how to develop the graduate one who will acquire, assimilate, transform, and exploit that knowledge. Critical questions that needs absolute answers is how adequate that business schools are training and preparing graduate to cope with turbulent business environment (Bennis & O’Toole, 2005; Dyer, Gregerson, & Christensen, 2011). The recent year, “...business schools are on the wrong track...” (Bennis & O’Toole, 2005: p. 96). Most of them focus their emphasis on discipline-based publication. While business schools are hiring professors with no truly real experience to equip their student rather focus on equipping them to go out and maximize a profit. Even some of the research produced is excellent, but not relevance to actual business practices (Bennis & O’Toole, 2005). The lack of a clear vision and purpose of management education have affected on graduate skills to adapt with today and future volatile business environment.

While the globalization of business, the technological revolution and the requirements of the knowledge society in the creative economy is moving very fast, the development of management education seem to be relatively slow. The consequences of the slow educational development effect significantly on our economy and threaten our wellbeing as a whole. The recent global financial and economic crisis occurred, which may consider as a “crisis of management” and that “management education appears to be a significance part” (Mintzberg, 2009). Thus, the radical and rapid reforms in

education of future manager in management higher education become an inevitable. In order to cope with this change, higher institution needs an innovative learning platform. Designing thinking is purpose on a broader scale to shift learning platform. Design thinking is adequate to design management curriculum of higher education that focusing on developing students' innovative capacity and preparing them to success not only in the medium term but also for a lifetime of innovative leadership which consider as a high challenge of visionary higher education institutions.

Empirically, sole reliance on analytic abilities instilled in business school education is proving insufficient for increasing complex business environment (Glen, Suci, & Baughn, 2014). It is a need for design thinking in higher education, particularly business school, to address ill-defined approach and be able to complement analytic perspectives of graduates for their future. In general, three important research questions have to be addressed to strengthen the foundations of management learning, education, and program development: 1) what are an essential managerial competency, knowledge, skills, identity, and inner-drive do educated manager need to perform successfully in today's rapidly changing business environment? 2) what are an appropriate approaches do we teach and evaluate more progressively in this challenging contemporary management education? and 3) how do we inspire future manager to lead change through innovation rather than react to change and cope with it? This paper concentrate on design thinking of learning approach, curriculum theory and development in management education with regard to the importance of developing reflective executive, the alignment of required curricula and managerial competencies (Rubin & Dierdorff, 2009), enhancing transformational leadership development through design thinking (Cross, 1982; Liedtka & Ogilvie, 2011).

Although a number of studies have investigated the "state of art" in management learning, education, and development, identifying key debates and issues that concern management educators today as well as future perspective of design thinking in business school is still lacking behind. In order to develop the challenging comprehensive practical fields and active learning, I proposed the concept of design thinking for learning to management practice of higher education. The focus is on enhancing the active learning platform within dynamic education and development process to prepare young managers to create a better living. Therefore, a major purpose of this study is to propose a management learning model of higher education.

## **THEORETICAL OVERVIEW**

Over the past decade, more demand requested on organizations and their managers to adopt a "design" perspective to incorporate the cognitive processes employed by skilled designers as well as their methods, techniques, and sensibilities for solving a complex situation (Dunne & Martin, 2006; Martin, 2009). Many business schools have endorsed design thinking to elevate learning productivity of their students (Beckman & Barry, 2007; Kimbell, 2011; Liedtka & Ogilvie, 2011). However shifting from prevailing platform, business school would need to overcome an experience of discomfort with the status quo to accommodate new approach. Further, linking the recent studies of human cognition with design thinking is discussed to align new approach with adaptive learning in real-world settings.

## **DESIGN THINKING FOR INNOVATIVE LEARNING TO MANAGEMENT PRACTICE**

It is widely accepted that business school's capability to innovate pedagogy is closely tied to its intellectual, or its ability to utilize its knowledge resources. Herbert Simon argued for such issue over 4 decades ago (1967, 1996). Simon asserted that "professional schools, including business, engineering, law, medicine, an architecture, are all primarily concerned with the process of design-devising courses of action aimed at changing existing situations into preferred ones" (Simon, 1996:111). It is because these professional concern focus on "what ought to be", in contrast with pure science which is concern on "what is". Thus, professional practitioner is concerned with devising actions, processes or physical objects that effectively serve a specified purpose Therefore, learning should develop from both analysis entails dissecting phenomena into their component element and

engage in synthesis and organize those pieces into larger systems and ideas. As Simon noted, synthesis has been generally seen as an art-a process that is not fully explicit, involving intuition and judgement.

Therefore, new business learning should play more attention to integrate discipline-based science as well as practitioner orientation, incorporating both scientific analysis and design (Raelin, 1997, 1982; Amabile, 1988). Especially, the design, itself, should adapt both on process and platform.

### **THE NEED FOR INNOVATIVE-DRIVEN ACTIVE LEARNING**

The core of effective business education lies the need to synthesize knowledge of the functional business with day-to-day challenges faced in practice. Business learning platform have been criticized for their overemphasis on lecture and case method at the expense of clinical training or learning by doing (Pfeffer & Fong, 2002, Rousseau & McCarthy, 2007). As noted by Leavitt (1989: 40), “business schools have been designed without practice fields”. Which lead to a passive absorption of knowledge by student that inadequate to be called education (Gordon & Howell, 1959).

Innovative-driven active learning is the integrative concept of action learning and management innovation to enhance educational learning effectiveness. This study stands to generate the potential contribution of this concept to management learning, education and development application. Thus, innovative-driven active learning can be defined as the designed processes or designed methods, cognitive strategies in design to propose new ways of knowing” (Revans, 1982; Cross, 1982; Lawson, 1979). Innovative-driven active learning was designed to expand into broader method focuses on iterative exploration of the design space where thinking and doing are intertwined. Moreover the solution process extent from ideally conscious based, rational-logical reasoning process, which overtime becomes formalized into a set of rules to the result of interaction with users and the ongoing creation and refinement of possible solutions (Raelin, 1997, 1982). The learning also involved experience-based insights, judgement, and intuition. Thus, the well-designed process encompasses a variety of the methodology to enhancing better learning under the dynamic environment.

### **DESIGN THINKING FOR PEDAGOGY IN MANAGEMENT HIGHER EDUCATION**

Higher education institution, business school, normally belief on the method that develop students’ abilities to cope with increasingly complex environments by providing a grounded theory on fundamental disciplines from which business cases can be provided, and by the application of such knowledge through systematic analysis. While valuable, this approach has proven to be insufficient (Glen, Suci, & Baughn ., 2014). Design thinking propose the student centered platform, rather than on formal lecture or other didactic practices. Design thinking pedagogy emphasizes on project-based learning using student teams (Backman & Barry, 2007), experiential learning, reflection in learning, collaborative learning, and team-based learning. Which students learn through active experimentation where business simulation and prototypes are used to aid in sense making and initiating discussion. Over the learning session, students receive multiple opportunities for feedback and suggestion from others who appropriate from business executive, investors, supplier, and one who have an interest in the issues.

In this impressive approach, it simply imply the need to review and develop new learning model and ideas that highlight the value of soft management skills such as team skills, ethical behavior, reflexivity and reflective practice, and emotional intelligence that allowing for more holistic-human-social-business and management education. Therefore, management pedagogy in higher education should balance the business interest on economics and social benefits.

## **DESIGN THINKING FOR LEARNING TO CREATE TRANSFORMATIONAL LEADER**

This article can be considered as an attempt to shift major cornerstone of moving toward an integrated management curricula and innovative pedagogy that supersedes the traditional business school model, assisting to strengthen the field's foundation and shaping the direction of management education, particularly on developing future business leader (Boyatzis, Smith, & Blaize, 2006). The main reason is because the purpose of business remains unclear such as the central purpose of physicians is to save lives. While the central of scientist is to make new discoveries and educators define answer to teach next generation (Khurana & Spender, 2012). On the other hand, businessmen do not have the same core purpose on what they do or why they do. It is because business school have placed less emphasis on the main reason of doing business while focus more on how to maximize profit than creating transformational output.

Therefore, creating future leader should be the first priority of business school. Transformational leadership is currently the most widely accepted leadership paradigm (Tejeda, 2001). The reason is that transformational leadership influences the fundamental attitudes and assumptions of an organizational member, creating a common direction to achieve goals. Especially the characteristics of transformational leader on creating the vision, enhancing group-engagement work, fostering high expectations, challenging follower's ambition, supporting follower's individual needs, and acting as a role model (Podsakoff, MacKenzie, Moorman, & Fetter, 1990; Avolio, 1999). Even though transformational leadership has strongly influence individuals and organizational outcomes. The literature of design learning on management learning has been relatively lack of emphasis concerning the foundation of transformational leadership behavior (Bommer, Rubin, & Baldwin, 2004). In this article, the focus of transformation not only economic benefits rather on social benefits through new platform of transformational leadership to ensure a sustainable growth.

After exploring the gap of higher education on management practice, it is a critical challenge of higher education institution to specifically design business management curriculum to both undergraduates and MBA. Therefore, design thinking should address and involves the role of visualization, active experimentation, concrete experience, reflective observation, and abstract conceptualization (Glen, Suci, and Baughn, 2014). The purpose is to nurture young leader by leading them involve in the process of new dynamic evolution which much more relative to the typical of daily management practice than highly constrained "problem sets" used in case business classroom discussion (Quinn, 1996, 2000). To enrich the causal path of effective transformational leadership, the design-thinking approach provides a foundation and support for its wider dissemination beyond the traditional design leadership program.

## **CONCLUSION OF DESIGN THINKING FOR MANAGEMENT PRACTICE LEARNING**

Apart from previous comprehensive design of business management education, this article proposed the new management learning platform on innovative-driven action learning, pedagogy in management higher education, and design thinking to develop young transformational leadership to deal with complex situation in the near future. An understanding of design thinking can connect the dots of management education, additionally can elevate management practices with higher impacts. With regard to the importance of developing effective leadership, identifying key issues that energize management educators and institutions should integrate a perspective of this interdisciplinary into the curriculum and management pedagogy. Redesigning role of management teaching and learning on introducing alternative modes of learning, and provides practical implication for management education is recommended to embrace theoretical aspects of individual and collective learning.

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## **BRINGING SERVICE INNOVATION THROUGH SERVANT LEADERSHIP AND INNOVATION CLIMATE: A MULTILEVEL MEDIATION MODEL**

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### **ABSTRACT**

A multilevel mediation model is proposed that service innovative behavior is predicted by servant leadership and mediating role of innovation climate therein. Based on previous literature, we proposed that servant leaders set the favorable conditions and facilitates necessary resources which builds the positive perception about the supportive innovation climate which in turn promote service innovative behavior amongst the service employees. The study contributed to the existing literature by multilevel integration of servant leadership as predictor of service innovative behavior. The proposed propositions call for empirical investigation to draw support from future research.

### **INTRODUCTION**

Responding to the increasing importance for employee's innovative behavior, leadership for creativity and innovation has growingly attracted researchers to find out the more accurate way of leading employees towards innovative endeavors (Shalley & Gilson, 2004; Hirst et al., 2009; Isaksen & Akkermans, 2011; García-Granero et al., 2015). Not surprisingly, previous studies investigating the impact of supervisors' leadership style on employees' innovative behavior has typically produce significant evidences, supporting the relationship (Kao et al., 2015; Wisse et al., 2015). Literature, in turn, strongly suggest that by following an appropriate leadership style, supervisors can drive the subordinate's performance towards the innovative behavior i.e., the production of novel and useful ideas, and translation of those ideas into viable products and services (Kao et al., 2015; Wisse et al., 2015). In attempts of testing and validating this assertion, various leadership styles; including transformational leadership (Afsar et al., 2014), ethical leadership (Yidong, & Xinxin, 2013), shared leadership (Hoch, 2013) and many others were linked with employee innovative behavior.

More recently, both academicians and practitioners substantively highlighted the need for more people-centered leadership style that forced leadership scholars to revisit the caring style of leadership such as servant leadership. (Peterson et al., 2012; Udani & Lorenzo-Molo, 2013; Hunter et al., 2013). Despite most of other leadership theories have 'leaders first' approach, servant leadership is originally founded on 'followers first' (Greenleaf, 2008, 1977). Servant leaders' concern for the success of all stakeholders while putting the follower's interest first (van Dierendonck, 2011; Sun, 2013; Liden, Wayne, Liao, & Meuser, 2014). Servant leaders serve their followers to develop themselves to play key role in organizational success and achieve better results. More recently, studies have begun to relate servant leadership with employee creative and innovative behavior (Yoshida et al., 2014; Jaiswal & Dhar, 2015). To effectively foster employee service innovation, more research evidence is needed to facilitate clear insights to the managers about the role of servant leadership.

Although, there is a dearth of empirical evidences on the possible mediating variables which directly or indirectly determines employee attitude and behavior, in the leadership-employee behavior relationship (Neubert, et al., 2008), it is just recently, studies those have started considering the variables at the different levels (Jaiswal & Dhar, In press). For example, servant leadership (group level) and employee innovative behavior (individual level) stand out at different level and needs multi-level treatment while investigating the relationship.

Therefore, in order to enhance our understanding about how follower-focused leaders drive employee's discretionary behavior and attitudes, this study proposed a multilevel model fostering service innovative behavior through servant leadership and mediating role of innovation climate

therein. Our model presents an interesting phenomenon—servant leadership may be more effective in building supportive innovation climate for promoting service innovation.

## **THEORETICAL FOUNDATION**

### **Servant Leadership and Service Innovative Behavior**

Servant leadership is defined as “an understanding and leadership practice that places the good of those led over the self-interest of the leader, emphasizing leader behaviors that ultimately focus on follower development, and de-emphasizing glorification of the leader” (Hale and Fields, 2007, p. 397). Servant leadership is a multidimensional construct (Liden et al., 2008); consists of seven distinct behavioral dimensions i.e., *Putting subordinates first*, refers the degree to which leader prioritizes the interests and needs of the followers before going for his or her own needs. *Helping subordinates to grow and succeed* the extent to which a leader helps and guide followers for achieving career goals. *Emotional healing*, through which leader demonstrates his/her concern about followers' problems and well-being. *Conceptual skills*, demonstrates the leader's competence to understand and solve the subordinate's work-related problems and communicate clear goals. *Empowering*, refers the degree to which leader facilitates autonomy, responsibility and decision-making to the followers. *Creating value for the community*, which reflects to the leader's interest in helping the community as well as encouraging the followers for the same. *Behaving ethically*, demonstrates leader's honesty, trustworthiness, and integrity.

Service innovative behavior is defined as a “Frontline employee's introduction or application of new ideas, skills, technologies, processes, and procedures to his/her customers” (Kao et al. 2015, p. 451). This includes development of new ideas and thoughts to improve the services by incorporating advance technologies and processes (Gallouj & Savona, 2009). Servant leader can play an important role in fostering innovative behavior in service settings. For example, a servant leader can bring altruistic and developmental orientation, which essential for service settings (Chen et al., 2015). Serving service employee, servant leaders oblige them by prioritizing their interests and fulfilling their needs (Chen et al., 2015). Further, innovation in services starts with identification of problems or the scope of improvements in the service process, operations and protocols (Gallouj & Savona, 2009). In this regard, servant leaders offer expert assistance and facilitates to master new knowledge and skills in identifying work related-problems and develop novel solutions (*conceptual skills*). In addition, servant leader help subordinates to grow and succeed, which encouraged them to work for such a high performance like service innovation to attain work goals as well as their own goal (Neubert, et al., 2008). Thus, we also propose that servant leadership positively related with service innovative behavior.

Proposition 1: Servant leadership positively relates to service innovative behavior.

### **Mediating Role of Innovative Climate**

Innovation climate is defined as “a set of employee perceptions about the organization's work environment that encourages risk-taking behavior, allocates sufficient resources and provides a challenging work environment for using a creative approach at work” (Scott & Bruce, 1994, p). The climate at workplace is a collective phenomenon, which distinguishes each work-units and guides employees' behaviors to make sense of work situations and act accordingly to achieve desired outcomes (Wang et al., 2013; Jaiswal & Dhar, 2015). Innovation climate has a great influence in encouraging innovative behavior at work place (Sendjaya, et al., 2008). For instance, a supportive innovation climate facilitates necessary resource and more importantly provides a risk free zone to the employees, which encourage employees to experiment new ideas, work differently and bring creativity and innovation in their work (Cerne et al., 2013).

Although previous studies found innovation climate as a strong mediator between leadership and employee behavior (Cerne et al., 2013), the mediating role of innovation climate is rarely assessed

between servant leadership and service innovative behavior. The study considered innovation climate as mediator between servant leadership and service innovative behavior for two reasons. First, as a social behavioral process, effective leadership emerges within a work climate that meet the favorable requirements or vice versa (Porter & McLaughlin, 2006). Thus, the success of particular leadership style is largely determined by the organization's work environment (i.e. work climate). Second, a leader is an organizational representative and carry the practices which is taken as of organizations, hence he she have a deep influence on building work-unit' innovation climate which encourages risk-taking behavior and allocates enough resources. Accordingly, we propose Proposition 2.

Proposition 2: Innovation climate mediates the **relationship between servant leadership** and service innovative behavior.

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## MULTILEVEL ISSUES IN INNOVATIVE BEHAVIOR RESEARCH

The term innovative and creative behavior of the individual has been used –interchangeably at individual-level (Scott and Bruce, 1994). Previous literature on innovative and creative behavior have strongly contended that the innovative behavior of the employees is frequently influenced by supervisor level and organizational level variables (Jaiswal & Dhar, 2015; Shalley & Gilson, 2004). However, no literature is available till date considering the multilevel aspect in modeling innovative behavior research. Individual's behavior cannot occur in the isolation and they have to work within group and organization (Hox, 2002). Thus, group level and organizational level effects can be ignored while modeling the employee' innovative behavior. Thus we propose a cross level model of service innovative behavior, which subjected to empirical validation of the model.

## IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

The innovative service behavior of the service employees can give a critical upper hand to his/her organization. The significance of service innovation is imperative for hotels as the previous studies recommends that it provide advantages over contending with competitors (Chen, 2011). Considering this, continuous efforts have been made to identify various predictors of innovative behavior. However, service literature lacks about the predictors of service innovative behavior in the service setting like hotels. Thus, we drew the attention of contemporary researchers to focus on this area and bring forth some comprehensive model to foster service innovative behavior amongst the frontline service employees of the hotels.

Further, leadership for innovative efforts has always been a focus of previous studies. These studies often contended that it is the responsibility of the supervisor to facilitate favorable leadership practices, risk free zone and empower employees to promote innovative behavior amongst them. As to foster innovative behavior, albeit past studies have identified significant role of various leadership styles (Afsar et al., 2014; Yidong, & Xinxin, 2013; Hoch, 2013), the evidence regarding the servant leadership as a predictor of employees' service-innovative behavior lacks in the existing literature. To fill this gap, this study models servant leadership as predictor of service innovative behavior and, a key intervening mediator service climate there in. Further, past studies have investigated the impact of transformational on service innovative behavior (Afsar et al., 2014), without considering the variable at different levels. In contrast, the proposed model concentrated on differentiating the variables at different levels (group and individual level). We proposed that servant leadership at the supervisor level positively influences the service innovative behavior of the individual workers by facilitating supportive innovation climate. This proposed model extends the previous studies highlighting the implications of servant leadership on employee related behavioral outcome (Hunter et al., 2013; Ehrhart, 2004). Especially, servant leadership can successfully fulfill the psychological needs of the subordinates (van Dierendonck et al., 2014), and the follower's centric approach of the servant leaders

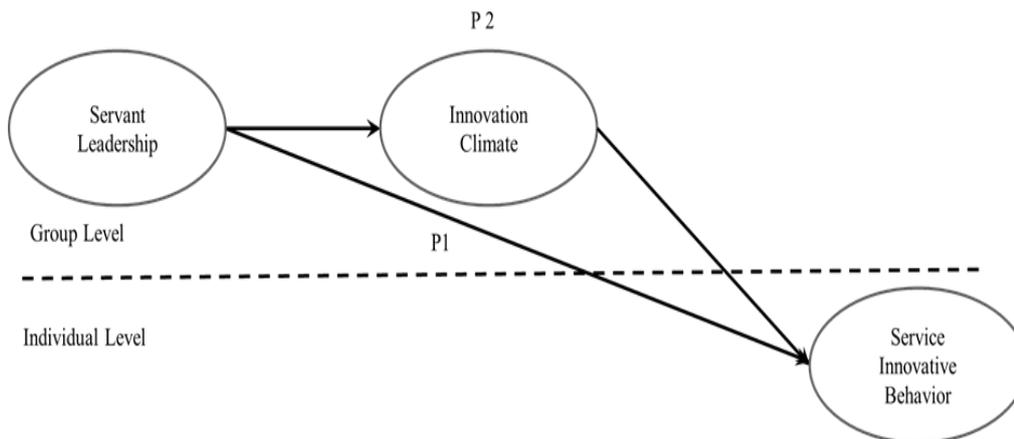
is a key compelling element of their leadership behavior which makes subordinates realize that their interests is always in a safe zone and their development will always in a progressive mode. Leaders who tend to display concern for followers growth and development, have a tendency to exhibit practices that decidedly motivate subordinates for higher level of performance (Avey et al., 2008;).

Highlighting the multilevel issue in innovative behavior modeling, the study call for viable debate to empirical and theoretical discussion to achieve the thoughtful direction of service innovation research. The Actor-Partner (Employees as an Actor and supervisor as a Partner) dyads at work place made it complex to draw the casual relationship between variables at different levels. For example, studies need to consider the multilevel issues while investigating the effects of the supervisors' leadership style on service innovative behavior. Here it is considerable that leadership behavior of the supervisor is assessed from all the subordinates working under him/her.

## CONCLUSION

In short, the proposed model provided a platform for service researchers to investigate the role of servant leadership in predicting service innovative behavior. The proposed model also highlighted the need for multilevel investigation to explore the effects of supervisor's leadership style on subordinate's behavior. By relating service innovative behavior with servant leadership, the study opens a viable platform for future researchers to conduct the empirical studies to validate the model.

Figure 1



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## AN ANALYSIS OF ENGAGEMENT RISK DIFFERENCES IN BIG FOUR AND NON-BIG FOUR FIRMS

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### ABSTRACT

Previous studies reveal that engagement risk, which consist of audit risk, auditor business risk and client business risk, has an important role in audit firms' client acceptance decision. This study examines the engagement risk differences between auditee of Big Four and non-Big Four firms in Malaysia from 2008 to 2010. The results suggest that both of the firms have different types of engagement of risk characteristics. The differences are prevalent in the case of auditor business risk and client business risk. Auditor business risk is higher for large audit firms, and their client business risk is lower than non-Big Four firms. The differences of engagement risk characteristics of both types of the firms might be due to their business strategy adaptation.

**Keywords:** Engagement risk, Audit market, Big Four, non-Big Four audit, Risk management

### INTRODUCTION

One of the factors that contributes to changes in the audit market is risk factor. Due to the impact of risk in business, both companies and auditors are reconsidering their business relationship. The auditor evaluates the possibility of the audit firm facing loss<sup>1</sup> before deciding whether to accept the client or not (i.e. engagement risk) (Johnstone, 2000).

While litigation risk against auditor is common in Western countries, such as in the US, the role of risk in developed countries, such as Malaysia, is slightly different. Since the Malaysian legal systems are modeled after the United Kingdom (UK), which is characterised as not harsh to the auditor, and considered as a less litigious environment compared to the US, (Seetharaman, Gul & Lynn, 2002; Khurana & Raman, 2004), risk is not a major threat to the audit profession.

Recent developments, however, offer some indicators that the role of risk in Malaysia's auditing profession is gaining recognition. Effective 1 July 2012, the Malaysian Institute of Accountants (MIA) has increased the minimum amount of professional indemnity insurance (PII) to RM250,000 (MIA By Laws, Section 510.3 (1)). This is in line with the concern highlighted by the World Bank that the RM100,000 amount of PII is very low and needs to be reviewed (ROSC, 2012). Apart from that, the case of auditor lawsuit is no longer uncommon and it has become a major issue in the Malaysian accounting profession (Krishnan, 2011; Han, 2012).<sup>2</sup> With growing number of financial scandals it is not impossible that in the future, many more users of financial statement may initiate lawsuits against their auditors. As a result, auditors might take precautionary action in deciding their relationship with high risk clients.

The level of litigation risk, however, can depend on audit firm size. This can be explained by deep pocket factor (Krishnan & Zhang, 2005). Krishnan and Zhang (2005) argue that due to deep pocket factor, the litigation risk is high for large audit firms compared to small audit firms. As a large audit firm is more likely to be sued, therefore, litigation is more costly to this firm since it would cause damage to the firm's reputation.

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<sup>1</sup> The loss arises due to lawsuit or reputation damage or lack of profitability (Johnstone, 2000).

<sup>2</sup> A recent case involved legal action taken by a company (Silver Bird Group Bhd. and its subsidiaries) against their external auditor, Crowe Horwath, in 2012.

Related study in the US by Choi, Doogar and Ganguly (2004) reveals that large audit firms respond to the changes in litigation liability environment by adjusting the composition of their client portfolio. Since the market continues to develop from year to year, one might question either large audit firm in relatively less litigious environment, such as Malaysia, also heavily emphasised on risk factor in determining their client portfolio. In order to assess their clientele, it is therefore pertinent to identify the type of client preferences among audit firm. Thus, the present study is mainly set to highlight the differences of risk characteristics between Big Four and non-Big Four firms. This study utilised several types of engagement risk so that it could reveal the risk management strategy employed by audit firm in developing their reputation and stay relevant in the market.

### **RISK AND AUDIT MARKET**

Audit firms need to be dynamic (Folami & Jacobs, 2002), and acclimatise to the changes in the environment (Jeppesen, 2007). Some of the firms' policies or procedures need to be discarded, revised and improved. In fact, the assessment of risk is the main concern among large audit firms (Blokdijs, Drieenhuizen, Simunic & Stein, 2006), as it is suggested that increase in audit risk and client business risk lead to higher auditor business risk (Johnstone, 2000).

Audit firms' decision either to continue or discontinue their relationship with companies depends on the risk evaluation outcome and whether the potential client will be able to bring a desired profitability level to the firms (Johnstone, 2000; Johnstone & Bedard, 2003). If the rate of risk/return is at an acceptable level, the auditor will incorporate the risk in the audit cost. However, if the risk/return is not at an acceptable rate or is unprofitable, the auditor will reject the company or might not offer the service (Johnstone & Beard, 2003).

### **THE EFFECT OF RISK ON AUDIT MARKET**

Previous studies indicate that risk is one of the critical factors contributing to changes in audit market. For instance, Jones and Raghunandan (1998) demonstrate that during low litigation cost period, big audit firms have more risky clients than non-big firms in the US. However, in high litigation cost period, big audit firms' market shares were reduced. Evidence in the US also shows that after the collapse of Enron and Andersen, the process of client continuance decision has slightly changed, becoming more strict and meticulous (Hollingsworth, 2007). The finding of the above studies is in line with the concept of risk avoidance and risk elimination strategies. On the impact of audit regulatory change, such as the introduction of Sarbanes–Oxley Act and Public Company Accounting Oversight Board (PCAOB), it is revealed that half of small audit firms exited the public company audit market (DeFond & Lennox, 2011). DeFond and Lennox (2011) suggest that SOX has “successfully” reduced the number of low quality auditors in the market.

Studies on how audit firms in Malaysia manage risk are scarce. In a survey of 280 audit firms from 2004 to 2008, the MIA, in its audit firms' Practice Review Report (2009), reveals that most of the audit firms are unaware or have not much concern regarding the importance of risk management (Jayaseelan, 2010). The report stated that, amongst others, the decision on auditor appointment or continuance engagement was done informally. The audit appointment mostly done based on the firm partner's evaluation and formal assessment, such as evaluation on client's integrity and audit firm's capability, is less likely undertaken. This indicates that the firms do not assign specific strategy or policies to handle risk matters. The finding is worrying as the survey was carried out not long enough after the collapse of Andersen in 2002. Supposedly, the collapse will make the Malaysian audit firms to be more prudent in their audit tasks and emphasise risk management practices.

The above studies indicates that audit firms are responsive toward risks and large audit firms are perceived to manage risk well. However, the practice of risk management among many Malaysian audit firms is not well established. It is important to note that good risk management practice help audit planning and minimise the risk of audit firm failure.

### **DATA AND METHODS**

The sample of this study consist of public listed companies on Bursa Malaysia from 2008 to 2010. The present study employs data 2008 until 2010 since several major events occurred within this period, namely high number of companies sanctioned by Bursa Malaysia,<sup>3</sup> the effect of subprime crisis on Malaysia's economy and Audit Oversight Board's (AOB) establishment in 2010. According to Nambiar (2009), the subprime crisis had some impacts on Malaysia's economy, such as reduction of export figures (-14.9%) and industrial production index (-15.9%) in December 2008.

After completing the screening process, about 84% of the companies (2,451 companies out of 2,933 companies) were included in the study. Table 1 shows the final sample size.

Table 1: Number of sample size

Screening process / Year	2008	2009	2010	Total
Initial number of listing companies (Source: closing price for all stocks as at 31 December 2008/09/10).	990	972	971	2933
<i>Less:</i>				
Annual reports are not publicly available	(28)	(9)	(23)	(60)
Companies incorporated outside Malaysia	(4)	(7)	(8)	(19)
Finance related companies	(55)	(52)	(51)	(158)
Initial Public Offering (IPO)	(17)	(7)	(20)	(44)
Change in financial year end	(17)	(19)	(5)	(41)
Incomplete information of Chief Executive Officer (CEO) and audit committee	(31)	(38)	(25)	(94)
Incomplete financial information	(0)	(1)	(1)	(2)
Did not disclose internal audit function provider	(37)	(13)	(14)	(64)
Final dataset	801	826	824	2451

For this study, the engagement risk is considered as the main driven of audit decision as suggested by Johnstone (2000; 2004) and Johnstone and Bedard (2003). Engagement risk consist of audit risk, auditor business risk and client business risk.<sup>4</sup>

To meet the definition of audit risk, relevant financial reporting indicators that represent the audit risk are chosen. These indicators imply the auditor's capability to detect material misstatement or auditor's ability to use his or her judgment in performing the audit task. The indicators are: (i) number of subsidiaries (SUBS); (ii) percentage of foreign subsidiaries (FORSUBSP); (iii) subsequent event (SUBEVENT); (iv) inventory and receivables (INVREC); and (v) audit opinion (AUDOP)<sup>5</sup>. As for auditor business risk, two measurements are employed - financial year end (YREND) and non-audit fee services (NAS). Finally, for client business risk, five elements are included: (i) Return on Assets (ROA); (ii) loss (LOSS); (iii) leverage (LEV); (iv) current ratio (CURR); and (v) financial distress (FINDISTRESS). The overall components of engagement risk are derived from previous studies on the effect of risk in audit process and outcome such (i.e. Johnstone, 2000; Johnstone and Bedard, 2004; Gul, 2006; Abdul Wahab, Mat Zain, James & Haron, 2009; and Clatworthy, Makepeace & Peel, 2009).

<sup>3</sup> It is worth noting that in 2008, the number of sanctions due to breach of Listing Requirements of Bursa Malaysia Securities Berhad by listed companies and directors was 160, which increased to 280 in 2010 (Bursa Malaysia Annual Report 2008, 2010).

<sup>4</sup> Audit risk is the risk related to issuing unqualified audit opinions for materially misstated financial statements (Houston, Peters and Pratt, 1999). Auditor business risk is the risk in which the audit firms suffer a loss from the engagement (Bedard & Johnstone, 2004). According to Johnstone (2000), client business risk is the risk that negatively affects the client's economic condition, either in the short or long-terms.

<sup>5</sup> Audit opinion is not reported as unqualified audit opinion

Other than the engagement risk, other relevant variables also included. The variables are corporate governance and size of auditee i.e. total assets (TA). Corporate governance components are chosen based on the recommendation forwarded by Cohen, Krishnamoorthy and Wright (2002) which suggest that these factors have influence on audit process. Corporate governance is represented by BODs (Non-executive directors or NED), audit committee (number of audit committee meetings in a year or ACMEET; and audit committee affiliations with Big Four firm or ACB4), management (CEO substantial ownership or CEOSOS; and new CEO or CEONEW) and internal audit (internal audit function is co-sourced or outsourced to external firm or IAP).

The examination of risk characteristic differences between the two groups of auditees was done by using parametric and non-parametric tests.

## RESULTS AND DISCUSSION

Table 2: Descriptive statistics and univariate analysis  
Panel A: Continuous variable

Variable	Big Four (n=1337)			Non Big Four (n=1114)			Independent Sample Test		Mann Whitney Test	
	Mean	Median	Std Dev	Mean	Median	Std Dev	t	Sig	z	Sig
AUDITFEE (RM'000)	328.25	142	942	139	83	285	6.95	0.000** *	-17.70	0.000**
TA (RM million)	1,848.95	418.96	5,639.61	536.00	154.91	2,578.71	7.61	0.000** *	-18.50	0.000**
<b>Audit risk</b>										
SUBS (n)	16.91	9.00	29.20	11.69	7.00	17.08	5.50	0.000** *	-6.58	0.000**
FORSUBSP (%)	17.70	6.67	23.44	16.53	4.10	23.29	1.24	0.217	-1.70	0.088*
INVREC	0.31	0.30	0.19	0.36	0.34	0.189	-6.45	0.000** *	-6.10	0.000**
<b>Auditor business risk</b>										
NAS (RM'000)	132.86	24	549.60	32.29	3.00	214.40	6.15	0.000** *	-16.46	0.000**
<b>Client business risk</b>										
ROA	0.06	0.06	0.11	0.01	0.04	0.33	5.57	0.000** *	-9.25	0.000**
LEV	0.40	0.38	0.23	0.43	0.41	0.28	-3.03	0.002** *	-2.59	0.100*
CURR	2.98	1.84	7.04	2.82	1.71	4.47	0.66	0.511	-2.64	0.008**
<b>Corporate governance</b>										
NED	0.63	0.63	0.19	0.58	0.60	0.17	6.76	0.000** *	-6.94	0.000**
ACMEET	4.98	5.00	1.36	4.87	5.00	0.96	2.40	0.017**	-1.03	0.304
CEOTENURE (Year)	13.35	12.00	9.99	12.41	11.00	8.96	2.44	0.015**	-1.70	0.090*

\*\*\* significant at 0.01, \*\* significant at 0.05 and \* significant at 0.10 (2 tailed).

Note: CEOTENURE included in the above table offer further informaton on Malaysian corporate practices.

Table 2 (continued)

*Panel B: Dichotomous variables*

Variable	Big Four (n=1337)			Non Big Four (n=1114)			Chi-Square Test	
	Mean	Median	Std Dev	Mean	Median	Std Dev	$\chi^2$	Sig
Audit risk								
SUBEVENT	0.41	0.00	0.49	0.40	0.00	0.49	0.33	0.562
AUDOP	0.02	0.00	0.14	0.03	0.00	0.18	2.66	0.103
Auditor business risk								
BUSY	0.70	1.00	0.44	0.72	1.00	0.45	2.04	0.153
Client business risk								
LOSS	0.18	0.00	0.38	0.32	0.00	0.47	63.27	0.000***
FINDISTRESS	0.45	0.00	0.50	0.57	1.00	0.50	33.95	0.000***
Corporate governance								
ACB4	0.47	0.00	0.50	0.42	0.00	0.50	4.50	0.034**
CEOSOS	0.52	1.00	0.50	0.67	1.00	0.47	53.02	0.000***
CEONEW	0.16	0.00	0.37	0.15	0.00	0.35	0.67	0.412
IAP	0.45	0.00	0.50	0.62	1.00	0.49	64.94	0.000***

\*\*\* significant at 0.01, \*\* significant at 0.05 and \* significant at 0.10 (2 tailed).

Based on Table 2, just 55% of listed companies hired Big Four as company auditor. Overall, auditees of Big Four incurred higher audit expenses ( $p=0.01$ ) than non-Big Four. A similar pattern is also derived on size of companies (TA), where standard deviation of assets for Big Four and non-Big Four auditees is higher than mean. Analysis from the above table indicates that there are significant differences between the size of companies audited by Big Four and non-Big Four firms, where clients of Big Four are more likely bigger than non-Big Four firms.

#### ENGAGEMENT RISK CHARACTERISTICS

By looking at two types of audit firms, it suggests that both of the firms face different types of engagement risk. As for audit risk, differences on risk characteristics between Big Four and non-Big Four firms are not obvious. While Big Four firms have high number of subsidiaries, the ratio of inventories and accounts receivables over total assets is significantly lower than non-Big Four.<sup>6</sup> The high number of subsidiaries among auditee of Big Four firms indicates the need of audit expert in managing client business complexity, especially if the subsidiaries operated outside Malaysia. Meanwhile, the higher ratio of inventories and accounts receivable over total assets among non-Big Four against Big Four auditee indicates the riskiness of these assets. Big Four firms might avoid companies with high ratio as these assets require high level of judgement, and according to Hay, Knechel and Wong (2006), often cause audit failure.

However, for auditor business risk, it is high for Big Four due to a high NAS fees obtained. It is supported by the fact that they have bigger size of clients than non-Big Four firms. This provides an opportunity of making additional income since, in general, the demand of NAS is higher from big companies as compared to small companies. The implication of offering excessive NAS seems acknowledged by the auditor. This is because, the amount of NAS paid by the companies is relatively lower than what they paid for statutory audit services; NAS fees is about one third less than the amount of audit fees.

In terms of client business risk variables, comparison based on all four significant variables (ROA, LOSS, LEV and FINDISTRESS) show auditees of Big Four firms are financially well performing than non-Big Four firms. The composition of Big Four auditee which mainly consist of good financial

<sup>6</sup> Even though FORSUBSP also shows significant differences, it is only in Mann-Whitney Test and is marginally significant ( $p=0.1$ )

position clients indicates that these companies are efficiently utilising their assets to generate profit. Further, by having these type of client in their portfolio, it would minimize the risk of large audit firm's reputational damage since their clients have high ability to meet financial obligation; whether long term or short term liabilities.

(ii) Corporate governance characteristics

Analysis for all corporate governance components suggest that Big Four auditee have better governance practices than non-Big Four auditee, where striking differences are present between auditees of both firms. Clients of Big Four significantly have high number of NEDs and audit committee expertise. Also, in selecting the audit committee members, those with experience from Big Four firms is more preferable by Big Four auditee. Big Four clients also have long-tenured CEOs, and low number of CEOs cum substantial shareholders. The prevalence of internal audit function outsourcing is significantly higher for non-Big Four than Big Four firms.

The major differences exist in the context of corporate governance practice between both of auditee suggest that Big Four firms are more likely to be associated with well managed companies. Good administration would ease the audit procedures performed (such as evaluation of internal control) and minimise auditor business risk.

COMPARISON BETWEEN 2008 AND 2010

There are several major business events occurred between 2008 and 2010 as stated earlier. These events might have affected audit firms' client composition and their client risk characteristics. In this section, a comparison is made between 2008 and 2010 data. The comparison is divided into two categories: (i) Big Four samples in 2008 versus 2010; and (ii) non-Big Four samples in 2008 versus 2010.

(i) Big Four samples in 2008 versus 2010

Table 3 demonstrates the comparison between clients of Big Four in 2008 and 2010 (transformed data).

Table 3: Comparison between auditees of Big Four in 2008 versus 2010

Variable	2008 (n=462)		2010 (n=427)		Paired Sample Statistics		Wilcoxon Signed Rank Test	
	Mean	Median	Mean	Median	t	Sig (2 tailed)	Z	Asymp sig (2 tailed)
lnAUDITFEE	5.04	4.87	5.19	5.02	2.40	0.017**	-2.07	0.039**
<b>Audit risk</b>								
lnSUBS	2.16	2.20	2.21	2.20	0.61	0.546	-0.67	0.503
FORSUBSP (%)	17.4	6.35	17.0	6.25	-	0.814	-0.35	0.729
SUBEVENT	0.37	0.00	0.44	0.00	2.16	0.031**	-2.16	0.031**
INVREC	0.32	0.31	0.31	0.31	-	0.288	-0.87	0.383
AUDOP	0.02	0.00	0.02	0.00	1.07	0.819	-0.23	0.819
					0.23			
<b>Auditor business risk</b>								
BUSY	0.73	1.00	0.75	1.00	0.61	0.540	-0.61	0.539
lnNAS	2.66	2.83	3.14	3.45	3.46	0.001***	-3.49	0.000***
<b>Client business risk</b>								
ROA	0.06	0.06	0.07	0.07	2.26	0.025**	-2.45	0.014**
LOSS	0.17	0.00	0.20	0.00	0.92	0.358	-0.92	0.357
LEV	0.40	0.40	0.37	0.36	-	0.033**	-1.89	0.059*
CURR	2.43	1.72	2.72	1.95	2.14	0.034**	-2.07	0.039**
FINDISTRESS	0.47	0.00	0.38	0.00	2.13	0.011**	-2.55	0.011**

					2.57			
NED	0.64	0.64	0.66	0.67	1.25	0.212	-1.28	0.200
ACMEET	4.91	5.00	4.89	5.00	-	0.749	-4.30	0.668
					3.20			
ACB4	0.45	0.00	0.48	0.00	0.94	0.348	-0.94	0.347
CEOSOS	0.55	1.00	0.51	1.00	-	0.328	-0.98	0.327
					0.98			
CEONEW	0.17	0.00	0.17	0.00	0.28	0.776	-0.29	0.776
IAP	0.43	0.00	0.46	0.00	0.85	0.397	-0.85	0.396
lnTA	12.9	12.92	13.1	13.00	2.01	0.045**	-1.41	0.157
	8		8					

\*\*\* significant at 0.01, \*\* significant at 0.05 and \* significant at 0.10 (2 tailed).

In 2010, the Big Four firms charged higher audit fee than in 2008 (p=0.05). Audit risk is quite constant over these periods except for more subsequent event disclosures (p=0.05). With regards to auditor business risk, the amount of NAS fee received in 2010 is higher than 2008 (p=0.01). Nevertheless, the client business risk shows a negative trend. Big Four auditees are less likely to go bankrupt, report high ROA and low leverage. None of the corporate governance variables shows tremendous differences. As for size, auditees of Big Four are bigger from time to time (p=0.05).

(ii) Non-Big Four samples in 2008 versus 2010.

Table 4 shows comparison between auditees of non-Big Four firms between 2008 and 2010 (transformed data).

Table 4: Comparison between auditees of non-Big Four in 2008 versus 2010

Variable	2008 (n=339)		2010 (n=397)		Paired Sample Statistics		Wilcoxon RankTest	Signed
	Mean	Median	Mean	Median	t	Sig (2 tailed)	Z	Asymp sig (2 tailed)
lnAUDITFEE	4.42	4.36	4.28	4.46	-4.32	0.000** *	-4.32	0.000***
Audit risk								
lnSUBS	2.01	1.95	1.69	1.95	-7.42	0.000** *	-6.81	0.000***
FORSUBSP (%)	16.00	5.13	16.45	4.71	0.26	0.798	-0.12	0.903
SUBEVENT	0.41	0.00	0.37	0.00	-1.17	0.243	-1.17	0.243
INVREC	0.37	0.35	0.36	0.35	-0.60	0.552	-0.28	0.782
AUDOP	0.05	0.00	0.04	0.00	-1.10	0.274	-1.10	0.273
Auditor business risk								
BUSY	0.73	1.00	0.69	1.00	-1.13	0.260	-1.13	0.260
lnNAS	1.55	1.25	1.45	1.39	-0.80	0.427	-0.70	0.484
Client business risk								
ROA	0.03	.041	0.03	0.05	-0.00	0.999	-0.37	0.709
LOSS	0.25	0.00	0.38	0.00	3.87	0.000** *	-3.79	0.000***
LEV	0.44	0.42	0.40	0.39	-2.03	0.043**	-2.25	0.024**
CURR	2.36	1.65	2.59	1.74	1.51	0.133	-1.24	0.214
FINDISTRESS	0.58	1.00	0.53	1.00	-1.35	0.178	-1.35	0.177
NED	0.59	0.58	0.61	0.60	1.41	0.161	-1.00	0.317
ACMEET	4.79	5.00	4.87	5.00	1.10	0.271	-1.54	0.124
ACB4	0.41	0.00	0.42	0.00	0.15	0.882	-0.15	0.881
CEOSOS	0.68	1.00	0.68	1.00	-0.09	0.933	-0.09	0.932

CEONEW	0.15	0.00	0.16	0.00	0.11	0.912	-0.11	0.912
IAP	0.59	1.00	0.67	1.00	2.44	0.015**	-2.43	0.015**
lnTA	12.0	12.08	11.6	11.94	-6.14	0.000**	-5.90	0.000***
	8		3			*		

\*\*\* significant at 0.01, \*\* significant at 0.05 and \* significant at 0.10 (2 tailed).

In 2010, non-Big Four firms charged lower audit fee than 2008 ( $p=0.01$ ). This is in contrast with Big Four's audit pricing practices. Components of audit risk are fairly stable and only lnSUBS has significantly decreased ( $p=0.01$ ). Interestingly, no element of auditor business risk (including lnNAS) has changed significantly. Client business risk of the firm is mixed, where LEV is lower ( $p=0.05$ ) and LOSS is higher than 2008 ( $p=0.01$ ). Also, elements of corporate governance factors almost remain stable between 2008 and 2010, except for positive trend of non-Big Four auditees to outsource internal audit function ( $p=0.05$ ). With regards to size, non-Big Four's clients have become smaller ( $p=0.01$ ). It is different from auditees of Big Four, which is larger from year to year.

The overall results indicates Big Four firms are more concerned with risk than non-Big Four firms. The changes on risk characteristics of non-Big Four from 2008 to 2010 only appear in client business risk factor. As for Big Four firms, the changes occurred in auditor business risk and client business risk, where auditor business risk has increased and client business risk has decreased. In terms of audit fee and client's size, the fees of Big Four is higher and they have bigger client size from year to year. By contrast, the size of clients and fees of non-Big Four firms has become smaller. This suggests that small firms are attracting high number of audits through low pricing strategy. The strategy should be cautiously implemented as it may indicate low quality of audit service.

## CONCLUSION

Audit firms relationship with the client could be determined by the engagement risk evaluation outcome and the whether the client will be able to bring an expected profitability level to the audit firms. The risk evaluation outcome, however, might be different between audit firms due to deep pocket factor and audit litigation liability environment. Therefore, the purpose of this study is to examine the engagement risk differences in less litigious environment among auditee of Big Four and non-Big four firms. The investigation is based on 2,451 sample of Malaysian public listed companies from 2008 to 2010.

Results obtained reveal both Big Four and non-Big Four firms have different types of engagement of risk characteristics. The differences are prevalent in the case of auditor business risk and client business risk. Audit risk, however, is not much different between them. Auditor business risk is higher for large audit firms, and their client business risk is lower than non-Big Four firms. As for corporate governance, companies audited by Big Four have a better governance practice than non-Big Four firms. The differences of engagement risk characteristics of both types of audit firms might be due to their business strategy adaptation.

Comparison between years 2008 and 2010 reveals that changes in business landscape and regulations impact client risk composition. While it is too early to suggest that companies' decision to appoint non-Big Four auditors in 2010 is due to AOB establishment, the result provides preliminary evidence that companies keep distance from Big Four auditors. The appointment of non-Big Four auditor could avoid detailed audit procedures performed by large audit firms which are highly monitored by the AOB. There are also changes in risk characteristics of Big Four and non-Big Four firms, where the changes are more prevalent in Big Four portfolio. The noted changes faced by Big Four firms are reduction in client business risk, increment in auditor business risk and bigger size of clients. The client business risk is reduced because those financially risky clients have shifted to non-Big Four firms. This makes the majority of Big Four clients consist of low client business risk and also bigger size clients. The high demand for NAS by large companies leads to high auditor business risk for Big Four firms. Big Four firms attract and retain large companies because the companies can contribute

additional revenue to the firms through NAS activity. This makes small size companies with less requirement for NAS not as interesting to Big Four firms.

Findings of this study indicate there are differences among Big Four clients' portfolio and strategy used in pricing risky clients. Future studies might include another aspect of risk variables (qualitative factors) and investigate audit procedures differences among Big Four and non-Big Four firms (such as setting of materiality level). Study of the impact of risk on audit market would be more useful if it covered a longer period of study to obtain a better view and generalisability of the results.

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### ABSTRACT

Accounting for postretirement benefit is one of the most discussed phenomena in last few years. In last few years sharp decline in interest rate and rapid increases of life expectancy rate generated a huge liability for employers (Bloom, 2013). However, economic factors (death rate, interest rate) are not only one perpetrator behind this, accounting practice for pension product has also contributed in making situation worse. To improve the measurement process and reporting of pension product, International Accounting Standards Board (IASB) launched IAS19(R) in 2011. This article is an attempt to analyze the IAS 19 R practical implication using case study methodology.

**Keywords:** Pension Accounting, Defined Benefit, IASB, Defined Contribution, IFRS, IAS 19

### INTRODUCTION

Accounting for pension and retirement benefits has been a controversial topic from over a last decade for both regulatory authorities as well as for practitioners. Incessantly changing nature of pension agreement and complexities of legal and social system makes it one of most difficult accounting standards in accounting history. Financial Accounting Standards Board (hereinafter FASB) and international accounting standard board (hereinafter IASB) continuously struggling with provisions of pension accounting for last 30 years, but the outcome of this “epic wrestle” still not satisfactory (Napier, 2009).

One of the key criticisms of pension accounting is the volatility that it brings into the financial statement of companies. Majority of firm have “defined benefit obligation” that is rapidly affected by the fluctuation of market. Moreover, most of the firm have plan assets in the form of “equities” that also have volatile return (Stadler 2010). Therefore any market fluctuation leads to immediate changes in financial statement that result in instability among the financial statement of companies. In another issue pension accounting provision is heavily criticized for its complex measurement process. Pension accounting involves application of projected unit method, determination of current service cost and most importantly calculation of fair value for plan assets that makes its highly complex for understanding.

Our paper focuses on the later part of the dilemma and attempt to illustrate the complex measurement process through a set of case studies. Our paper use the latest pension accounting provision “IAS 19 (R) Employee Benefits” issued in 2011 in as part of accounting harmonization process by FASB and international financial reporting standard (IFRS). The primary objective of IAS 19 (R) to provide information on an employer’s accounting for post-retirement benefits. This standard replaced the earlier version of IAS 19 that was hugely criticized by industry for too much subjectivity and ambiguity in nature. It discussed a detailed framework for reporting of post-retirement benefits and classify the employee benefits in four different categories viz. (i) Short-term employee benefits (ii) Postemployment benefits (iii) Other long term employee benefits iv) Termination benefits (IAS19, 2011). This standard require application of “matching principle” “to recognize the expenses

related to employee benefits. Matching principle directs a company to report an expense on its income statement in the same period as the related revenues (Meigs, 1975). This standard also requires immediate recognition and disclosure of actuarial gains and losses into other comprehensive income (OCI) instead of net income.

This paper will help in elaborating in all four section of pension accounting through numerical visualization from academia and practitioner perspective. These case studies may help in better understanding of current accounting practice among various stakeholders' viz. auditors, managers and academia. To avoid the complexities of IAS 19 and for better understanding we use a single case study for different accounting head instead of multiple case study. Our case study uses the provision of IAS 19 (IASB) for Indian accounting scenario as there is no significant difference exist between IAS 19 and AS 19 and Indian version of IFRS is still at its introductory stage.

### **Summary of IAS 19:-**

IAS 19 Accounting for post-retirement benefits include all form of payment or consideration given to employee by employer either in exchange of service or for the termination of employment, however it doesn't cover share based payment as they are covered under IFRS 2 (IFRS 19, 2011). It outline following 4 categories for further process.

**1 Accounting for Short-term employee benefits-** "Short term employee benefits includes all those benefits that need to be settled within twelve months after the end of the period in which the employees render the related service such salary, annual leave, profit sharing, bonus and non-monetary benefits" (IAS 19, 2011).

**2 Accounting for post-employment benefit plans-** Post-employment benefit plans are informal or formal arrangements where an entity provides post-employment benefits to one or more employees, e.g. retirement benefits (pensions or lump sum payments), life insurance and medical care. The accounting treatment for a post-employment benefit plan depends on the economic substance of the plan and results in the plan being classified as either a defined contribution plan or a defined benefit plan:

**A-Defined contribution plans-** Defined contribution plan requires a fixed amount of contribution into a separate fund deposited by employer of the company. Under defined contribution, if fund return is not sufficient to pay all the employee obligation, employer will not hold any additional responsibility (legal or constructive) or in other words his liability is limited only up to the amount of contribution. (IAS 19 2011)

**B-Defined benefit plans-** Defined benefit plans are post-employment benefit plans other than defined contribution plans. Under defined benefit plans:

- (a) Actuarial risk (if profits are more than expected cost) and failure of investment, will be, on the entity and
- (b) The entity's responsibility is to provide the pre-approved benefits to existing and earlier employees

**3- Accounting for other long-term employee benefits Accounting-** For other long term employee benefits include all those benefits which are not covered in above given section i.e. any employee benefits other than short term benefit or post term benefits will be treated under other long term employee benefits (IAS 19, 2011)

**4- Accounting for Termination -** Any Employee benefits that provide in exchange of employee removal from company.

### **CASE SUMMARY**

DHDC Corp. has 1500 employees. Average staff turnover observed during past 10 years represents 5% per year (5% of employees leaves each year). In line with its internal H&R policy, Housie provides the following employee benefits to all of its employees:

1. Paid sick leave - 6 days per year. Compensation for sick leave is 80% of employees' salary. Employees cannot carry forward any unused sick leave to the future calendar years. In the year 20X1, average unused sick leave amounted to 5 days per employee.

2. Paid vacation - 20 days per year regardless date of hiring. Compensation for paid vacation is 100% of employee's salary and unused vacation can be carried forward for 1 year. As of 31 December 20X0, unused vacation carried forward was 6 days per employee, average salary was 150 INR per day and accrued expense for unused vacation in 20X0 was 22 50000 INR. During 20X1, employees took 12 days of vacation in average. Salary increase in 20X1 reached 5%.

3. Annual bonuses - during past 10 years, Housie paid bonus to all employees who were in service during the whole calendar year. Bonus was paid in March after the year-end. Amount of bonus for 20X0 paid in March 20X1 represented 4000 INR per employee. Housie used to increase amount of bonus based on official inflation rate which is 5 %for 20X1.

4. Company provides a retirement bonus to all employees who retire. The calculation of this bonus depends on years in service for XYZ on retirement: more than 20 years - 3 x final salary, 10 - 19 years - 2 x final salary, less than 10 years - 1 x final salary.

5-Retirement age is 65 years. Based on HR dept. data, Carrie prepared statistics about its employees as of 31 December 20X1 in a table below. Carrie increases salaries annually based on inflation rate. In line with national statistics, assumptions for inflation in the future periods 5% p.a.

<i>Average data as of 31 December 20X1</i>				
	<i>Years of service</i>	<i>Age</i>	<i>Number</i>	<i>Salary</i>
Group 1	4	35	570	2,000
Group 2	5	42	310	2,200
Group 3	1	33	160	1,900
Group 4	9	54	140	2,800
Group 5	12	56	180	3,300
Group 6	2	59	140	2,500
<b>Total</b>			<b>1500</b>	

6- Company makes annual contributions to the fund determined solely for payment of retirement bonus. On 30 Dec 0X1, Carrie made contribution of 50,000 INR to the fund. As mentioned in previous example, benefits paid to employees from this fund amounted to 32000INR and were paid at the year-end. Carrie's discount rate applied to determine present value of net defined benefit obligation is 5% p.a. Independent valuator determined the fair value of plan assets to be 3,00,000INR as of 31 December 20X0 and 3,20,000INR as of 31 December 20X1. In calculation, Carrie estimates discount rate by extrapolating current market rates along yield curve. As of 31 December 20X0, resulting discount rate for average maturity of benefit's obligation represented 5% and has not changed since then.

7-In 2003, DHDC decided to shut down one of its operations and published detailed formal plan of shut-down together with redundancies of employees and termination of their employment. Details of plan are as follows:

- DHDC expects the commencement of closure in 20X4 and completing the full closure of the operation by the end of 20X5.

- Company offers to pay 25 000 INR to each employee leaving the company before the closure.

- As employer needs qualified employees to perform the closure, total benefit of 35 000 INR is promised to all employees staying in the company until the closure is completed.

Total number of employees affected by the closure is 800. Company assumes that 200 of them leaves before closure and 500 of them stays until the closure. (Discount rate is 5 %).\*

Incorporating all these assumptions, estimate ultimate cost of a benefit, present value of obligation and current service cost.

For termination, benefits and benefits from other show only the treatment related to of 20X3 and 20X4. Ignore all other actuarial assumptions and assume all transactions happen at the year-end.

**SOLUTION:-**

1-Treatment for paid sick leave

Housie does not recognize anything, as employees cannot carry forward any unused sick leave - it is non-accumulating short-term compensated absence.

2- Treatment for paid vacation

#1 Employees in service for the whole year (95%)

Unused vacation as of 31 December 2010		6	days per employee
Entitlement to vacation for 2011	20		days per employee
Average vacation taken in 2011	12		days per employee
Unused vacation as of 31 December 2011		14	days per employee

#2 .1Newcomers (5%)

Entitlement to vacation for 20X1		20	days per employee
Average vacation taken in 20X1	-12		days per employee
Unused vacation as of 31 December 20X1		8	day per employee
Total unused vacation as of 31 December 20X1	600		man-days

Total unused vacation as of 31 December 20X1	20,550	man-days
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2.2 Calculation of average salary per day:

Average salary per day as of 31 December 20X0:	150.00	INR
Salary increase in 20X1:	5.00%	
Average salary per day as of 31 December 20X1:	157.50	INR

2.3 Calculation of accrual for unused paid vacation:

Calculation of accrual for unused paid vacation - 20X1:	32, 36,625.00	INR
Accrual for unused paid vacation - 20X0	22, 50,000.00	INR
Difference:	9, 86,625.00	

2.4 Accounting treatment for paid sick leave

<b>Debit Expense - Wages and salaries</b>	<b>32, 36,625.00</b>
<b>Credit Liabilities -accrual for unused vacation</b>	<b>9, 86,625.00</b>
<b>Credit Cash - settlement of vacation from 20X0</b>	<b>22,</b>

Bonus for 20X1 - increased by inflation of 5%:	4,200	INR per employee
N. of employees in staff during the whole year (150 * (1-4%))"	1,425	
Accrual for bonus 20X1:	59, 85,000	INR

3.1Accounting treatment for Bonus

<b>Debit Expense - Wages and salaries</b>	<b>59, 85,000</b>	<b>INR</b>
<b>Credit Liabilities -accrual for bonus 2011</b>	<b>59, 85,000</b>	<b>INR</b>

	Years in service at retirement		Staff turnover rate		Salary at retirement	Retirement bonus	
	Total	From 20X1	Probability - in service at 65	Employees		1 employee	Whole group
Group 1	34	30	21%	122	6,773	20,318	2,485,803
Group 2	28	23	31%	95	5,295	15,884	1,513,408
Group 3	33	32	19%	31	7,094	21,281	659,571
Group 4	20	11	57%	80	3,752	11,257	896,402
Group 5	21	9	63%	113	4,011	8,022	910,094

Group 6	8	6	74%	103	2,625	2,625	270,146
Total				545			6,735,423

4.2. Attributing benefit to the periods of service - Group 6 \*

	20X0	20X1	20X2	20X3	20X4	20X5	20X6	20X7
Previous year	0	33,768	67,537	101,305	135,073	168,841	202,610	236,378
Current year	33,768	33,768	33,768	33,768	33,768	33,768	33,768	33,768
Total:	33,768	67,537	101,305	135,073	168,841	202,610	236,378	270,146

4.3. Measurement of current service cost and PV of obligation

	20X0	20X1	20X2	20X3	20X4	20X5	20X6	20X7
	1	2	3	4	5	6	7	8
Opening obligation	0	23,998	50,397	79,375	111,125	145,852	183,773	225,122
Interest at 5% (5% applied on opening obligation)	0	1,200	2,520	3,969	5,556	7,293	9,189	11,256
Discount factor at 5% (1/(1+5%)^(years from individual year to 20X7))	0.7107	0.7462	0.7835	0.8227	0.8638	0.9070	0.9524	1.0000
Current service cost	23,998	25,198	26,458	27,781	29,170	30,629	32,160	33,768
Closing obligation (total):	23,998	50,397	79,375	111,125	145,852	183,773	225,122	270,146

5.1. PV of obligation

Description	INR		
<b>Provision for employee benefits Dr.</b>	<b>9122 INR</b>		
<b>Other comprehensive income - remeasurements of NDBL Cr.</b>	<b>-9122 INR</b>		
Interest cost (5% - 250000)	12,500		
Benefits paid to the employees	-32,000		
Actuarial gains or losses	-9,122	balancing figure	
PV of obligation c/f	255,146		

5.2 Accounting treatment

2. Recognition of actuarial gains or losses

6.1 Interest income on plan assets

Description	INR
Interest income on the balance b/f (3, 00,000 *5%)	15,000
Interest rate:	5.00%

Interest income on the contribution (32000 *5%)	1,600
Total interest income on plan assets	16,600

#### 6. 2.Actual return on plan assets

Description	INR
FV of plan assets c/f	320,000
less FV of plan assets buff	-300,000
less contributions paid into plan assets	-50,000
add back benefits repaid	32,000
Actual return on plan assets	2,000
Difference:	-14,600

#### 6.3 FV of plan assets

Description	INR
FV of plan assets b/f	300,000
Interest income on plan assets	16,600
Contributions	50,000
Benefits paid to the employees	-32,000
Difference between interest income and actual return	-14,600
FV of plan assets c/f	320,000

#### 6.4. Recognition of interest income / return on plan assets

Plan assets (part of net defined benefit liability / asset) Dr. 2000  
To Credit Service cost (P/L) Cr. -16600  
To Credit Remeasurements of NDBL (OCI) Cr. 14600

### 7. Financial Statement Presentation

7.1. Net amount in the statement of financial position		
	b/f - 20X0	c/f - 20X1
PV of defined benefit obligation	-250,000	-255,146
FV of plan assets	300,000	320,000
Net defined benefit liability	50,000	64,854

7.2. Amounts in the profit or loss statement		
Current service cost		33,768
Interest cost on DBO		12,500
Interest income on plan assets		-16,600

Total to profit or loss	29,668
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7.3. Remeasurements to other comprehensive income		
Actuarial gain		-9,122
Return on plan assets less interest income:		14,600
Total to other comprehensive income		5,478

#### 8 Verification and accounting entries

8.1 PV of defined benefit obligation:			Plan assets:		
<i>Description</i>	<i>Debit</i>	<i>Credit</i>	<i>Description</i>	<i>Debit</i>	<i>Credit</i>
Balance b/f from 31/12/20X0		250,000	Balance b/f from 31/12/20X0	300,000	
Entry 1: Current service cost		33,768	Entry 3: Benefits paid		32,000
Entry 2: Interest cost		12,500	Entry 5: Interest income	16,600	
Entry 3: Benefits paid	32,000		Entry 6: Contributions paid	50,000	
Entry 4: Actuarial gain	9,122		Entry 7: Difference actual vs. int. income	-14,600	
Balance c/f 31/12/20X1	255,146		Balance c/f 31/12/20X1		320,000
Total	296,268	296,268	Total	352,000	352,000

8.2 Profit or loss		
<i>Description</i>	<i>Debit</i>	<i>Credit</i>
Balance b/f from 31/12/20X0	0	
Entry 1: Current service cost	33,768	
Entry 2: Interest cost	12,500	
Entry 5: Interest income		16,600
Balance c/f 31/12/20X1		29,668
Total	46,268	46,268

8.3 Other comprehensive income		
<i>Description</i>	<i>Debit</i>	<i>Credit</i>
Balance b/f from 31/12/20X0		
Entry 4: Actuarial gain		9,122
Entry 7: Difference actual vs. int. income		-14,600
Balance c/f 31/12/20X1	-5,478	
Total	-5,478	-5,478

8.4 Cash		
<i>Description</i>	<i>Debit</i>	<i>Credit</i>
Balance b/f from 31/12/20X0		
Entry 6: Contributions		50,000
Balance c/f 31/12/20X1		

#### 9 Accounting for termination and other benefits

9.1. Calculation of termination benefit vs. benefit in exchange for the services			
Benefit in exchange for termination:	2,00,00,000	INR	
(800*25 000)			

Benefit in exchange for the service: (500*10 000)	50,00,000	INR
Total benefits:	2,50,00,000	INR

9.2. Termination benefits		
Termination benefits payable within 12 months (300*25 000)	75,00,000	INR
Termination benefits payable beyond 12 months (500*25 000*1/(1+5%))	1,19,04,762	INR
Total termination benefits:	1,94,04,762	INR

9.3. Benefits in exchange for the service		
Attributing the benefits:		
Total amount of benefits for the services (800*25 000)	2,00,00,000	
Number of years of the service (20X4-20X5)	2	
Attributed benefit per year:	1,00,00,000	
	20X4	20X5
	1	2
Opening obligation (closing obligation from previous period)	0	95,23,810
Interest at 5% (5% applied on opening obligation)	0	4,76,190
Discount factor at 5% (1/(1+5%)^(years from individual year to 20X5))	0.9524	1.0000
Current service cost (present value of benefit attributed to the current year - 1 500 000*discount factor)	95,23,810	1,00,00,000
Closing obligation (total):	95,23,810	2,00,00,000

#### 9. 4. Accounting treatment

In 20X3		
Personnel expenses (profit or loss) Dr		1,94,04,762
To Liabilities -termination benefits Cr		-1,94,04,762
		0
In 20X4:		
Payment of termination benefits:		
Termination benefits Dr		75,00,000
To Credit Cash		-75,00,000
		0
Unwinding the discount on termination benefits (4 285 714*5%):		
Interest cost Dr.		5,95,238

To termination benefits			-5,95,238
			0
Balance of termination benefits as of 31 December 20X4:			-1,25,00,000
Recognition of other long-term benefits:			
Personnel expenses (profit or loss) Dr			95,23,810
TO other long-term benefits			-95,23,810
			0
In 20X5:			
Payment of termination benefits:			
Termination benefits Dr			45,00,000
To Cash			-45,00,000
			0
Balance of termination benefits as of 31 December 20X5:			-80,00,000
Unwinding the discount on other long-term benefits (1 428 571*5%):			
Interest cost Dr			4,76,190
To Liabilities - other long-term benefits Cr			-4,76,190
			0
Recognition of other long-term benefits - cost for 20X5:			
Personnel expenses (profit or loss) Dr			1,00,00,000
To Liabilities - other long-term benefits Cr			-1,00,00,000
Payment of other long-term benefits:			
Other long-term benefits Dr			30,00,000
To Cash Cr.			-30,00,000
			0
Balance of other long-term benefits as of 31 December 20X5:			-1,70,00,000

#### 10 Case Learning Objectives and Implementation

This Case is practical illustration of accounting for postretirement benefit in accordance with IFRS 19. BHDC limited is one of the fastest growing companies in solar industry operating primarily in Indian market from last 15 years. From Last 15 years, BHDC was using earlier version of accounting standards popularly known as India AS for the financial statement designing. However, recent pronouncement from Ministry of Corporate Affairs (MCA) and Institute of Chartered Accountant (ICAI)

notified the Companies Rules, 2015 (the 'Rules'). The Rules specify the Indian Accounting Standards (IND AS based on IFRS) applicable to certain class of companies\* and set out the dates of applicability\*\*.

\* Companies whose equity and/or debt securities are listed/unlisted or are in the process of listing on any stock exchange in India or outside India (listed companies) and having net worth of Rs. 500 cores or more;

\*\* For the accounting periods beginning on or after 1 April 2016;

Our case focuses on practical perspective of IAS 19 and shows the accounting treatment for post retirement benefits and short term benefits. This case study will help in extending the existing educational resources of pension accounting. Overall, this case study has following objectives.

1. To understand the technical aspects of accounting for employee benefits under according to IFRS and IND AS-19 accounting frameworks.

2-This case study cover the wholesome accounting treatment of employee benefits and try to include every aspects of employee benefits viz. journal entry, sub account creation and verification of accounting entry.

3-This case deals with implication of "fair value measurement (FVM)" in pension accounting and exhibit the affects of FVM on financial statements.

#### 10.1 Implementation

The case can be used as an individual or a group project for discussing the latest(IND AS and IFRS 19) methodology among different stakeholders viz.(i) Students or faculty related to accounting study or more specifically those who are working on pension accounting.(ii)This study can help in enhancing IFRS understanding among accountant and auditors who works on pension accounting.

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## TECHNOLOGY OUTSOURCING AND DIGITALIZATION IN E-PUBLISHING: CHALLENGES AND OPPORTUNITIES

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### ABSTRACT

This article describes some of the tools or web and digital publishing (e-books, Mobi pockets, e-pub) that are generally used in publishing services. Application of these advanced technologies, including cloud computing, is changing the direction of publication. These tools make possible not only technological advancement but also an open and more efficient business culture (business process outsourcing), which underlies the recently launched 'Make in India' campaign. The article also explores the challenges and opportunities posed by using digitalization in the publishing process.

**Key words:** Cloud publishing, digitalization, e-publishing, outsourcing

### INTRODUCTION

#### 1.1: Introduction

India's services sector is the 12th largest in the world by nominal GDP. India is now an outsourcing hub for many industries, and the tertiary sector [57.9%, updated 08 July 2015, Source: Planning Commission, Government of India] makes up a significant component of the Indian economy. Major global publishers are now using India's end-to-end publishing services that are required for full-flow service (i.e. from sourcing a manuscript to its final print and web versions). The e-publishing market has been fuelled by a number of parallel technological developments, such as digitalization, and the ease of use, convenience, and mobility offered by digital information.

#### 1.2: Objectives of Study

- To describe the concept of digitalization used in publishing
- To argue for the use of outsourcing in the digitalization process for publishing
- To compare the publishing process and use of technology details in print and digital versions

#### 1.3: Data source

This study is based on my experience in ITeS (IT enabled system) and data composition gained while working for various book packagers based in India. I have not disclosed any internal data of these organizations, but use secondary data from the internet and web media to support my conclusions.

#### 2.1: Overall service flow

A cost-effective strategy and one that increasingly used is to publish a book digitally as a means to test the market before proceeding to a print version. It helps the publishers gauge the initial response to the book and in the process reduces the potential of lost revenue, including printing costs and advertising. Then, if the e-book has a favorable response, the publisher will produce printed copies for those readers who prefer a print version, who still make up a majority of the market. With e-books, publishers are finding new ways of earning even more revenue through sponsored links, in-book advertising, add-on applications, and e-book subscriptions.

#### 2.2: Content development

The first step is to prepare the content for publication. Once the content is submitted for publication some expert will review the content and will brush the textual part so that it is structured and looks professional for readers. Sometimes, publishers receive raw content that they want to publish in different languages. Typesetters are asked to convert those materials into reader-friendly language, a process that used to be called data conversion or translation.

### 3.1: Typesetting services

Different types of processes can be adopted depending upon the nature of the input. I describe five of the most often used processes: the XML-based publication system (XPS), the Latex-based publication system (LPS), the InDesign platform, the 3B2 publishing system, and the PXE digital publishing platform.

### 3.2: XML-based publication system (XPS)

The first step in an XML-based publishing process is the creation or acquisition of content in an appropriate XML vocabulary. The vocabulary should be flexible enough to represent all common features (e.g. headings, sections, subsections, paragraphs, and links) and advanced features (e.g. tables, figures, and bibliography) of a publication. One such vocabulary is DocBook XML, used to mark up documents such as books, articles, and technical documentation into logical sections (see Fig. 1).

Figure 1: XML coding of the texts

Comment [S5]: Không thấy hình, không biết format

### 3.3: Latex-based publication system (LPS)

LaTeX is a document preparation system for high-quality typesetting. Although it is most often used for medium to large technical or scientific documents, it can be employed for almost any form of publishing. However, LaTeX is *not* a word processor! Instead, it encourages authors *not* to worry too much about the appearance of their documents but to concentrate on getting the right content (see Fig. 2).

Figure 2: Latex coding of the texts

Comment [S6]: Không thấy hình, không biết format

### 3.4: InDesign platform

Adobe InDesign is a desktop publishing software application produced by Adobe Systems. It can be used to create works such as posters, flyers, brochures, magazines, newspapers, and books. It can also publish content suitable for tablet devices in conjunction with Adobe Digital Publishing Suite. Graphic designers and production artists are its principal users, creating and laying out periodical publications, posters, and print media. It also supports export to EPUB and SWF formats to create e-books and digital publications, including digital magazines, and content suitable for consumption on tablet computers.

### 3.5: 3B2 publishing system

This is a high-end composition and pagination software package that supports XML version input to fix the margins and layout of a page. It is normally used for pagination purposes.

### 3.6: PXE digital publishing platform

This platform allows for seamless collaboration between subject matter experts (SMEs), reviewers, and content professionals across the production workflow – with no installation or software downloads required. It enables the creation of structured content in an easy-to-use Word-like publishing environment. Users can format text using styles and templates that are available to build tables, insert figures, and manage references.

Aptara's PXE digital publishing platform works like a "well-oiled machine," said Edward Wates, Global Journal Content Management Director of Wiley-Blackwell. "We're now getting content to

our readership much earlier, and it's delivered in XML, giving us huge flexibility to repurpose the content for any delivery channel – from print to PCs, tablets, e-Readers and smart phones. Aptara's PXE has opened the door to a better distribution model and new ways to monetize our content – faster.”

#### 4.1: Old-fashioned published output versus digital output:

Until recently the only way to publish content was through a print version. Without knowing whether the book would have a readership, the publisher still had to incur the expenses of printing and distribution, just so the book could be advertised in the marketplace. To address this concern, the print on demand (POD) technology was developed, in which a book was not printed until ordered by a customer.

E-publication makes the delivery of content to the publisher even more seamless. The next stage in e-publishing is producing output for smart phones, tablets, and e-readers using EPUB and MOBI files, including Adobe Smart PDF (see Fig. 3).

Figure 3: Amazon Kindle viewer

Comment [S7]: Không thấy hình, không biết format

This technology can also be used to create a **flip book** or flick book. This is an e-book with a series of images that vary gradually from one page to the next, so that when the pages are turned rapidly, the images appear to be animated (see Fig. 4).

Figure 4: Flip book created by using Adobe Digital Flash player

Comment [S8]: Không thấy hình, không biết format

The **EPUB File Reader** is a free EPUB files viewer that enables readers to open and read EPUB e-books and documents. The software interface has two elements: on the left is the document chapter directory, and on the right is a browser to show document content (see Fig. 5).

Figure 5: EPUB file viewer

Comment [S9]: Không thấy hình, không biết format

The **Adobe e-reader file** is a PDF file where all the web links are active and the reader can click on any link to proceed further. It enables colored pages in the book to be displayed at a very low cost compared to traditional publication. Figure 6 shows how the links are active on the screen.

Figure 6: Adobe Ebook viewer

Comment [S10]: Không thấy hình, không biết format

#### 5.1: Role of Outsourcing for technology enhancement

Outsourcing is an increasingly used strategy because many traditional book publishers do not have the capacity to develop all the sophisticated technology needed in today's competitive marketplace. At the same time offshore organizations are conducting their own research to develop tools that can minimize the cost of production. Sharing these types of tools and technology can also contribute more value to the market, reducing the costs of production. We can see certain publisher like Elsevier using the ERP called PTS (production tracking system) which is amalgamating all the stakeholders of like (Author/Contributor), Publisher (Publishing House), Editor (Reviewer), Supplier (Global/Regional), Typesetter (ITES) and Printing services.

Cloud computing is also enhancing publication technology. For example, the e2e cloud-based workflow platform is an online editing, proofing, collaborative workflow and content and project management system. It yields savings in time and money without requiring the installation of any local software. Its main benefits are the following:

- Encourages collaboration among authors, editors, reviewers, and other stakeholders
- Avoids introduction of errors at every stage

- Includes an integrated math editor
- Has zero reliance on conventional typesetting to generate structured content, create pages, and incorporate corrections
- Yields significant cost savings from parallel product deliveries in XML, HTML, PDF, EPUB 3, Word, and other formats

### **5.2: Future: E-books will only improve in quality and attractiveness to readers**

E-books will become increasingly dominant in the marketplace as technology continues to respond to customer demands for more sophisticated features and rich content. Some of the features of enhanced e-books include their integration and usability with widespread reading devices that can be used on the move, advanced interactivity, and such features as providing word meanings and pronunciations, references, quick translations, and easy search.

Technology is getting smarter, yet cheaper at the same time, providing the major advantage of accessibility. Because technology is accessible to almost everybody, it is easy to weave our lives around these new capabilities that make our lives easier. E-publishing is such a viable industry because it positions itself in the center of human activity. Though there are deep challenges, there are also great opportunities.

The enhanced e-book enables a more holistic approach to reading. The ability to insert media—audio, video, and animation—enriches and deepens the reading experience. Embedding video tutorials or audio lectures in textbooks can significantly increase their educational value.

Another often overlooked opportunity provided by e-publishing is to provide access to out-of-publications. For instance, there were only about 100 copies printed of each issue of *Futura Fantasia*, a fanzine written and edited by Ray Bradbury in the late 1930s. Thanks to e-publishing, there are now e-book versions of these issues that will never be lost.

### **5.3: Challenges**

Despite the many opportunities presented by e-publishing, it faces several challenges. In the evolution of any industry, there will be competing approaches and methods. In the case of e-publishing, this competition comes in the shape of formats. The key players of the industry are continuing to use various formats even in the relatively simple area of book conversion. For instance, Amazon whose proprietary device is the Kindle, publishes e-books in .azw, which is incompatible with most other devices. The challenge thus lies in developing e-reading software that is compatible with several formats.

Piracy is and will always be a threat to any media that is digital. The internet is still a chaotic place. It is hard to say who has the authority to patrol it, let alone bind people's freedom to use it through the imposition of rules and parameters. Unfortunately, as much as any digital product is available to be purchased, users also have the ever-present option to pirate it.

The third major challenge, a lack of credibility, derives from one of the great opportunities of e-publication: the ability to self-publish. Traditional publishers had gatekeepers that set high standards for publication. Today, free or low-cost publishing platforms are widely accessible. Because nearly anyone can publish what he or she writes, e-books suffer from a perceived lack of credibility.

### **6.1: Conclusion**

Despite these challenges, e-publishing is becoming more sophisticated, attractive to readers, and efficient each year, and India is one of the major global players in outsourced typesetting and publishing. However, unless Indian firms continue to develop e-publication tools and technology, such as cloud-based publishing tools, we will not be able to increase or retain our market share in this industry. E-publishing is not a passing trend, and we need to increase our investment in it.

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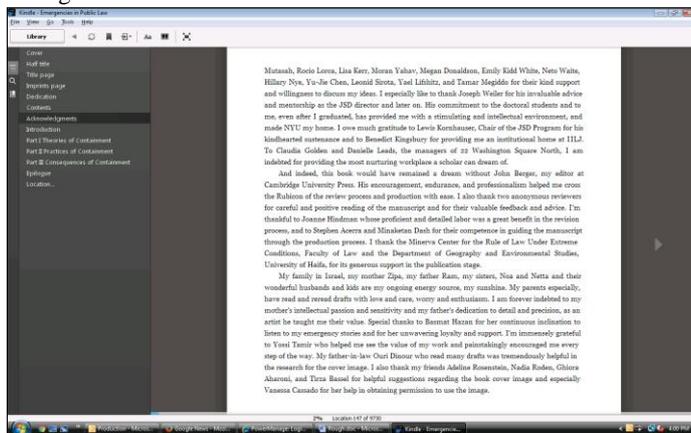
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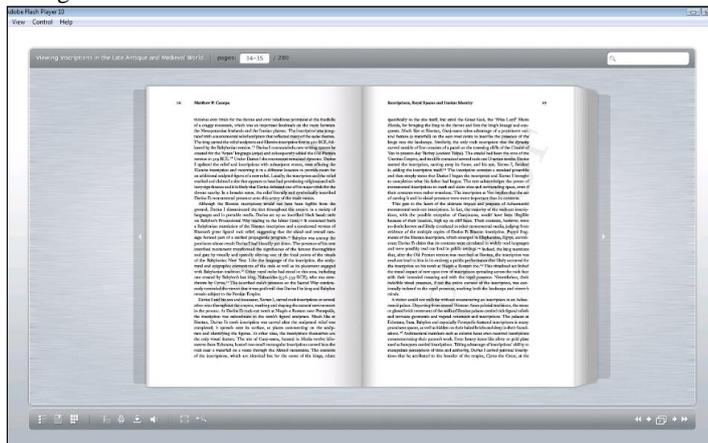
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\end{document}
```

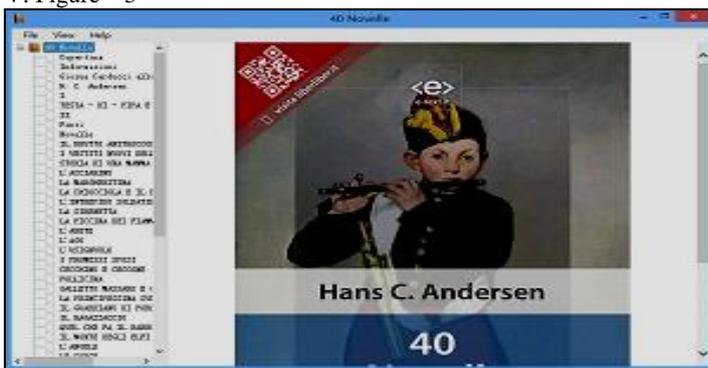
iii: Figure—3



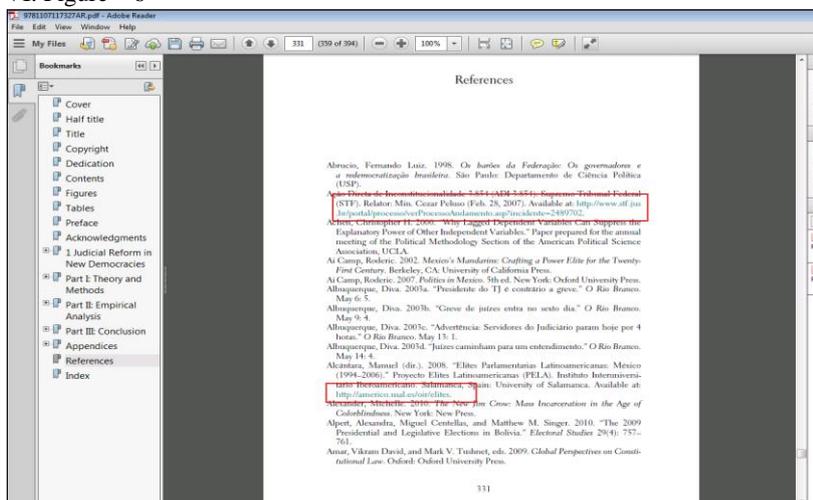
iv: Figure—4



v: Figure—5



VI: Figure—6



## OUTSOURCING AND PERFORMANCE OF HOTELS IN THAILAND

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### ABSTRACT

A study of the outsourcing by hotels in Thailand was conducted. Data from 160 hotels were analyzed and results indicated that both cost and non-cost benefits were drivers of outsourcing decisions. There were significant gaps between expectations and realizations of benefits. Outsourcing experience had a significant influence on the choices and distribution of outsourced functions. Other variables such as expectation of benefits, selection of providers, outsourcing management and future plan on outsourcing were also clearly influenced by the outsourcing experience of hotels. Perceived disadvantages, risks and obstacles to outsourcing were perceived as less important than its benefits. Management perception on hotel performance attributable to outsourcing was also found to be related to the financial result measured by the revenue to asset ratio.

*Keywords:* Performance, Hotel Industry, Management, Outsourcing, Thailand

### INTRODUCTION

The number of foreign tourists visiting Thailand has steadily grown from 14.1 million in 2009 to 22.4 million in 2012. It is expected that the number of tourists will exceed 28 million by 2015. The number of tourists directly affected the expansion of hotel number in Thailand from 5,420 in 2009 to 10,234 in 2012 and the room number from 14,150 in 2009 to 22,354 in 2012 (Tourism Authority of Thailand, 2013). These statistics indicate that the hotel industry, as one of the largest service industries, plays an important role in Thailand's economy. The hotel business environment has also changed significantly (Tuntirattanasoontorn, 2008). Firstly, they are experiencing severe competition from local and international hotels. Secondly, customers' expectations and needs for services have substantially increased. The third major change is the development of technology which leads hotels to invest more under limited human, financial and technical resources. Hence, the hotel industry has to rely on outsourcing strategy to reduce costs, increase efficiency and flexibility of operation.

This study extends the research by Kettapan and Vachajitpan (2014) to investigate more about hotel outsourcing. The aim is to provide both hotel management and outsourcing providers with insights into the important characteristics, expectation and behavior of hotel outsourcing in Thailand. The influences of outsourcing on the performance of hotels in Thailand are also studied both in terms of operational efficiency and financial results. Finally, the correlation between perception of management on performance supported by successful outsourcing strategy and the financial results is investigated.

### LITERATURES REVIEWS

Outsourcing has now become a commonly accepted business practice in all industries. Firms are using outsourcing strategies to become more efficient and competitive while continue to pursue sustainable growth. Studies have shown that the important objectives for outsourcing are cost reduction,

improving quality of service, increase in management flexibility, time saving, decrease in uncertainty of service, and reduction of business risks (Kremic, Tukul & Rom, 2006; Lammininmaki, 2011). Reasons for outsourcing often include both tactical and strategic dimensions. Two theoretical perspectives behind outsourcing decisions are the Transaction Cost Theory (TCT) of economics and the Resource-based View (RBV) of strategic management (Espino-Rodríguez & Padrón-Robaina, 2004; Espino-Rodríguez & Padrón-Robaina, 2005; Donada & Nogatchewsky, 2009; Kang & Wu, 2009; Tavitiyaman, 2011). According to the TCT, firms may insource or outsource activities depending on their relative transaction and production costs implications. Meanwhile, the RBV is based on the theory that companies utilize outsourcing to get resources not available internally.

Outsourcing can also have undesirable impacts on firms such as loss of control of operation and organizational autonomy (Espino-Rodríguez & Padrón-Robaina, 2004). Lam and Han (2005) studied outsourcing strategy of hotel industry in China and suggested that compatibility between the corporate cultures of hotels and vendors was a critical factor for success. They also found that the legal regulation was an obstacle to outsourcing adoption. Wan and Su (2010) also studied hotel outsourcing in Taiwan and found that strategic outsourcing in international tourist hotels had not received much attention. Bolat and Yilmazo (2009) studied Turkish hotels and found strong support for the impacts of outsourcing on organizational performance. Gonzalez, Llopis and Gasco (2011) used a content analysis in studying hotel outsourcing to determine the level of development in the research area. A study of outsourcing patterns based on empirical data from a small number of hotels in Malaysia (Sani, Dezdar & Ainin, 2013) indicated that main factors influencing outsourcing adoption are expertise and brand name of suppliers as well as increase efficiency.

## METHODOLOGY AND DATA ANALYSIS

The research involved sending questionnaires to members of the Thai Hotel Association and the response of 160 self-administered questionnaires was available for analysis. The profiles of the respondents are shown in Table 1 with a broad coverage of hotels according to types, sizes, ownerships, locations, service experiences, outsourcing experience and future outsourcing plan.

Table 1: Profile of respondents (n=160)<sup>a</sup>

Star rating	1-star (3); 2-star (5); 3-star (78); 4-star (62); 5-star (12)
Number of rooms	Less than 60 (59); 60-150 (59); >150 (42)
Room rates (Baht)	Less than 1,000 (9); 1,000-1,999 (61); 2,000-2,999(34); 3,000-3,999 (28); 4,000-4,999 (7); ≥ 5,000 (21)
Location	Business area (34); tourist area (105); residential area (18); near airport (3)
Regional Location	Northern (14); northeastern (10), western (9), eastern (38), southern (77), central (12)
Type of hotel operation	Independent (129); member of a hotel chain (31)
Ownerships	Thai (147), foreigner (8)
Number of employees	Less than 60 (69); 60-100 (37); 101-150 (26); >150 (28)
Years of service	Less than 5 years (27); 5-10 years (62); ≥10 years (71)
Outsourcing experience	Less than 3 years (56); 3- 5 years (32); ≥5 years (72)
Future outsourcing plan	Increase (38); same (93); reduce (29)
No. of outsourced functions	1 (64); 2 (37); 3 (17); 4 (8); 5 (6); >5 (28)

<sup>a</sup>Numbers of hotels are displayed in parentheses.

Table 2 indicates that security, maintenance, information systems and housekeeping are the most often outsourced functions by hotels. The same finding in Taiwan was also reported by Wan and Su (2010). Previous report (Kettapan & Vachajitpan, 2014) showed that star rating of hotels, hotel size, type of hotels, number of employees and years of business have no significant influences on the frequencies of the outsourced functions. However, outsourcing experience shows observable

influence on the distribution of the outsourced functions. Table 3 indicates clearly that hotels with longer outsourcing experience (>5 years) select more different outsourced functions, while hotels with less outsourcing experience tend to concentrate more in the top outsourced functions.

Table 2: Choice and frequency of outsourced functions

No. of Hotels	Outsourced functions						
	Security	Maint.	InfoSy	Hskeep	F&B	Acctg.	Mktg.
160 (100%)	75 (47%)	75 (47%)	51 (32%)	49 (31%)	49 (31%)	43 (27%)	35 (22%)

Outsourced functions						
FrontOff.	Managt.	Finance	Concierge	HR.	Garden.	Train.
33 (21%)	31 (19%)	30 (19%)	25 (16%)	20 (13%)	13 (8%)	8 (5%)

Table 3: Outsourcing experience and outsourced functions

Outsourcin g experience	No. of Hotels	Outsourced functions						
		Security	Maint.	InfoSy	Hskee p	F&B	Acctg	Mktg.
≤5 years	88 (100%)	31 (35%)	34 (39%)	22 (25%)	18 (21%)	17 (19%)	17 (19%)	11 (13%)
>5 years	72 (100%)	44 (61%)	41 (57%)	29 (40%)	31 (43%)	32 (44%)	26 (36%)	24 (33%)

Outsourcin g experience	Outsourced functions						
	FrontOf f.	Mangt.	Financ e	Concierge	HR.	Garden.	Train.
≤ 5 years	8 (9%)	9 (10%)	9 (10%)	6 (7%)	2 (2%)	4 (5%)	1 (1%)
>5 years	25 (35%)	22 (31%)	21 (29%)	19 (26%)	18 (25%)	9 (13%)	7 (10%)

By arranging the hotels into groups of different characteristics to compare their behaviors, Table 4 shows high percentage of hotels across all groupings plan to increase or maintain the level of outsourcing in the future. The star rating, number of years of service, type and number of employees have no impact on future plan for outsourcing level. Outsourcing experience and current number of outsourced functions have observable influences on the decision about outsourcing level in the future. The percentage numbers of hotels planning to increase or maintain outsourcing levels change from 76% to 89% with longer outsourcing experience, and from 78% to 93% with more outsourced functions. On the contrary higher percentage of hotels with less outsourcing experience and hotels with less outsourced functions plan to reduce the outsourcing level. This may indicate that there is a learning curve in using the outsourcing strategy to achieve the required business objectives.

Table 4: Comparing future outsourcing plan for different groups

Future plan for outsourcing level	No. of Hotels	Star rating		Years of service		Type of hotel	
		1-3	4-5	≤10	>10	Independe nt	Chain Hotel
Increase or same	131 (82%)	68 (79%)	63 (85%)	73 (82%)	58 (82%)	105 (81%)	26 (84%)

			)				
Reduce	29 (18%)	18 (21%)	11 (15%) )	16 (18%)	13 (18%)	24 (19%)	5 (16%)

Future plan for outsourcing level	No. of employees		Outsourcing experience		No. of outsourcing	
	≤ 100	> 100	≤ 5 years	>5 years	1-3	≥4
Increase or same	86 (81%)	45 (83%)	67 (76%)	64 (89%)	92 (78%)	39 (93%)
Reduce	20 (19%)	9 (17%)	21 (24%)	8 (11%)	26 (22%)	3 (7%)

The statistical analysis of scores based on 1 to 5 Likert scales questions in the second part of the questionnaires was conducted to determine management perception about the experience and influence of outsourcing on hotel operations and performances. The expectation and realization of benefits from outsourcing by the hotels provided results in Tables 5a to 5c. Table 5a contains a list of 10 benefits and the averages of expectation, realization and their difference. It is found that cost reduction benefit has the lowest average score. The results also show that all expectation scores are higher than realization scores and the gaps between them are statistically significant. This indicates that there are still opportunities to improve outsourcing in the hotel industry. The results also indicate that hotels with longer outsourcing experience, hotels with more outsourced functions, hotels with future plan to increase or maintain the level of outsourcing have both higher expectation and realization of benefits.

Table 5a: Expectation and realization of benefits from outsourcing (n=160)

Benefits of outsourcing	Expectation Average (E)	Realization Average (R)	Gap (E-R)
1. Cost reduction	3.04	2.89	0.16*
2. Allow more focus on core functions	3.46	3.09	0.36**
3. Improve service	3.61	3.26	0.34**
4. Relief or reduce risk from unfamiliar tasks	3.79	3.25	0.54**
5. Create competitive advantage	3.39	3.06	0.34**
6. Increase management efficiency	3.69	3.24	0.46**
7. Provide experts	3.77	3.25	0.52**
8. Increase flexibility and operation speed	3.79	3.36	0.43**
9. Support other hotel activities and innovation	3.51	3.09	0.41**
10. Increase revenue with new services/products	3.20	2.88	0.32**
Total average	3.53	3.14	0.39**

\*\*Significant at 0.01 level, \*significant at 0.05 level

Table 5b: Comparing average expectations

Average expectation (E)	Mean	Outsourcing experience		Number of outsourcing		Future outsourcing plan	
		≤ 5 years	>5 years	1-3	≥4	Reduce	Increase or same
E1	3.04	2.91	3.21*	3.03	3.07	2.83	3.09
E2	3.46	3.38	3.56	3.44	3.50	3.24	3.50
E3	3.61	3.41	3.85**	3.47	4.00**	3.28	3.68*
E4	3.79	3.61	4.01**	3.75	3.90	3.62	3.83
E5	3.39	3.23	3.60**	3.25	3.79**	3.21	3.44

E6	3.69	3.55	3.88*	3.60	3.95**	3.55	3.73
E7	3.77	3.58	4.00**	3.66	4.07**	3.55	3.82
E8	3.79	3.60	4.01**	3.73	3.95	3.59	3.83
E9	3.51	3.52	3.49	3.44	3.69	3.48	3.51
E10	3.20	3.23	3.17	3.11	3.45*	3.24	3.19
Total average	3.53	3.40	3.67**	3.45	3.73**	3.36	3.56

\*\*Significant at 0.01 level, \*significant at 0.05 level; difference between two groups

Table 5c: Comparing average realizations

Average realization (R)	Mean	Outsourcing experience		Number of outsourcing		Future outsourcing plan	
		≤ 5 years	>5 years	1-3	≥4	Reduce	Increase or same
R1	2.89	2.73	3.08**	2.86	2.98	2.69	2.93
R2	3.09	2.91	3.32**	3.03	3.26	3.03	3.11
R3	3.26	3.12	3.43**	3.22	3.38	3.07	3.31
R4	3.25	3.07	3.47**	3.22	3.33	3.17	3.27
R5	3.06	2.91	3.24**	2.95	3.36**	2.97	3.08
R6	3.24	3.14	3.36*	3.18	3.40	3.10	3.27
R7	3.25	3.13	3.40*	3.20	3.38	3.10	3.28
R8	3.36	3.23	3.51*	3.33	3.43	3.28	3.37
R9	3.09	3.02	3.18	3.07	3.17	3.10	3.09
R10	2.88	2.82	2.96	2.83	3.02*	2.76	2.91
Total average	3.14	3.00	3.30**	3.09	3.27	3.03	3.16

\*\*Significant at 0.01 level, \*significant at 0.05 level; difference between two groups

Disadvantages and risks from outsourcing are shown in Table 6. All the mean scores are between 2.68 and 2.92 and below the neutral score of 3.00. Therefore, on average, respondents did not consider these risks and problems as important compared to the expected benefits. The highest risks are problems with management control and inflexibility of outsourcing providers. Lower scores of risks and problems are perceived by hotels with longer outsourcing experience. Whereas hotels with future plan to reduce outsourcing level perceive more risks and problems from outsourcing.

Table 6: Disadvantages and risks of outsourcing

Disadvantages and risks of outsourcing (D)	Mean	Outsourcing experience		Future outsourcing plan	
		≤ 5 years	>5 years	Reduce	Increase or same
D1 Loss control of confidential information	2.86	2.82	2.90	3.14*	2.79
D2 Noncompliance with contract	2.79	2.85	2.72	2.97	2.76
D3 Seeking benefits beyond contract	2.68	2.75	2.58	2.86	2.63
D4 Difficulty in controlling suppliers	2.92	3.02	2.81	3.28*	2.85
D5 Difficulty in adapting and inflexibility	2.92	2.95	2.88	3.07	2.89
Total average	2.83	2.88	2.78	3.06	2.78

\*Significant at 0.05 level; difference between two groups

Table 7 shows the obstacles and limitations of outsourcing encountered by the hotels. However the average scores do not indicate these as important obstacles in outsourcing decision especially for hotels with longer outsourcing experience. Hotels with more experience should realize these problems which need to be overcome or compromised. Hotel size and cost effectiveness are obstacles to hotels

with plan to reduce outsourcing level, while hotels planning to increase or maintain outsourcing level find more obstacles in regulations and policy.

Table 7: Obstacles and limitations of outsourcing

Obstacle and Limitation (O)	Mean	Outsourcing experience		Future outsourcing plan	
		≤ 5 years	>5 years	Reduce	Increase or same
O1 Hotel size not favorable and not cost effective	3.28	3.34	3.19	3.31	3.27
O2 Limitations, unfavorable regulations and policy	3.12	3.13	3.11	2.90	3.17
Total average	3.20	3.23	3.15	3.10	3.22

Selection of outsourcing service providers is an important factors affecting the success of hotels. Results in Table 8 show hotels with longer outsourcing experience and hotels with plan to increase or maintain the outsourcing level give more attention to the selection of outsourcing providers. Technical capability, past performance and good contracting are the most important criteria for the selection of providers. Quality assurance system and certification was found to be the least important factor.

Table 8: Selection of outsourcing providers

Selection of providers (S)	Mean	Outsourcing experience		Future outsourcing	
		≤ 5 years	>5 years	Reduce	Increase or same
S1 Cost and contract fee	3.72	3.63	3.83	3.55	3.76
S2 Past good performance	3.88	3.77	4.00	3.83	3.89
S3 Technical capability	3.90	3.82	4.00	3.72	3.94
S4 Clear and concise contract	3.79	3.69	3.90	3.62	3.82
S5 Good business relationship	3.65	3.60	3.71	3.55	3.67
S6 Capacity of provider	3.72	3.70	3.74	3.52	3.76
S7 Certified quality e.g. ISO 9001	3.01	3.09	2.90	2.90	3.03
S8 Systematic selection of provider	3.37	3.24	3.53*	3.34	3.37
Total average	3.63	3.57	3.70	3.50	3.66

\*Significant at 0.05 level; difference between two groups

In order to support sustainable success for the business, appropriate management of outsourcing must be implemented. Hotels with longer outsourcing experience pay higher attention to management of outsourcing. However, hotels with plan to reduce outsourcing have higher scores of outsourcing management. This result can be linked to the results in Tables 5b and 5c and conclude that hotels with more effort in outsourcing management but having low expectation and realization of benefits tend to choose reduction of outsourcing level in the future. These corresponding results confirm that a factor which leads to higher attainment of benefits can be attributed to better management of outsourcing and experience.

Table 9: Management of outsourcing

Management of outsourcing (M)	Mean	Outsourcing experience		Future outsourcing	
		≤ 5 years	>5 years	Reduce	Increase or same
M1 Evaluate performance of provider	3.24	3.08	3.44*	3.41	3.21
M2 Systematic follow-up progress of work	3.37	3.13	3.67**	3.41	3.36
M3 Efficient coordination with provider	3.45	3.25	3.69**	3.52	3.44
M4 Fair contract and payment	3.44	3.30	3.61*	3.59	3.40
M5 Mutual suggestions for improvement	3.49	3.31	3.71**	3.59	3.47
Total average	3.40	3.21	3.63**	3.50	3.38

\*\*Significant at 0.01 level, \*significant at 0.05 level; difference between two groups

Performance improvement of hotels which is contributed by outsourcing is shown in Table 10. Results show that hotels with longer outsourcing experience or plan to increase or maintain outsourcing activities have higher business performance and improvement.

Table 10: Performance and improvement

Performance and improvement (P)	Mean	Outsourcing experience		Future outsourcing	
		≤ 5 years	>5 years	Reduce	Increase or same
P1 Meeting objectives of business plan	3.42	3.26	3.61*	2.97	3.52**
P2 Effective control of costs and expenses	3.53	3.45	3.61	3.21	3.60*
P3 Working capital enabling business flexibility	3.47	3.42	3.53	3.17	3.53*
P4 Support business risk plan	3.44	3.39	3.51	3.34	3.47
Total average	3.47	3.38	3.57	3.17	3.53*

\*\*Significant at 0.01 level, \*significant at 0.05 level; difference between two groups

In this study of outsourcing by hotels, results obtained by using questionnaires were based on the management perceptions. Since the performance and improvements of operations were rated by the respondents, it is appropriate, therefore, to confirm the relationship between the perceived performance with the actual financial results. Although it is difficult to request hotels to disclose their financial data, data on revenues and assets could be obtained instead from the official records (Department of Business Development, 2014). However, it was found that many hotels were operating under different business names and only 80 out of 160 hotels in the original sample were identified. In order to avoid the size effects, the Revenue to Asset Ratio (RAR) was used as a financial measure of the hotel performance. This variable was chosen instead of the Return on Asset (ROA) since profit depends on many factors such as debts, investment and asset amortization policy. Some irregularities of recorded data such as sudden large profit or continuous losses also hindered the use of profit data. In order to reduce the fluctuation of RAR values the revenues and assets for the final two years (2010-2012) of available data were used to calculate the average value of RAR. Initial comparisons of RARs for different groupings of outsourcing are shown in Table 11. It is found that RAR is higher for hotels with more outsourcing experiences or higher number of outsourced functions or having plan to increase or maintain the outsourcing level.

Table 11. Comparing RAR for different groups relating to outsourcing

Variables	Outsourcing experience		Number of outsourced functions		Future Plan	
	≤ 5 years	> 5 years	1-3	≥4	Reduce	Increase or same
RAR	0.39	0.56	0.41	0.56	0.44	0.50

Finally, a regression analysis to determine the relationship between performance (P) and RAR gives the following equation (significant at 0.028 for the coefficient of RAR):

$$\text{Performance} = 3.274 + 0.387 \text{ RAR}$$

Thus it is confirmed that the management perception and response to the questionnaires on hotel performance with outsourcing strategy is positively correlated with the actual financial results measured by the RAR.

## CONCLUSION AND IMPLICATIONS

The outsourcing strategy by hotels in Thailand was studied and interesting observations were made which are useful to both hotel operators and outsourcing providers. The findings and implications can be summarized as follows:

- Most popular choices of outsourcing functions are security, maintenance, information systems and housekeeping. Outsourcing experience shows a clear influence on the number and distribution of outsourced functions.
- Thai hotels may outsource many functions based on cost and non-cost benefits according to the Transaction Cost Theory and the Resource-based View. However, cost reduction has the lowest score as an expected benefit. Reducing risk and increasing flexibility are the most valued expected benefits.
- The statistical analysis showed that majority of the hotels plan to increase or maintain their outsourcing activities. This should indicate that outsourcing practices are growing in the Thai hotel industry.
- Average expectations of benefits are all higher than actual realizations. The gaps may indicate that the satisfaction level of outsourcing could still be improved. This requires good selection of providers and better relationship between hotels and its outsourcing providers.
- Disadvantages and risks from outsourcing were rated with lower scores than outsourcing benefits. Hotels with higher scores of outsourcing risks and problems are more likely to reduce their outsourcing activities in the future.
- The risks and problems of outsourcing can be prevented or minimized by having selection criteria and reputable outsourcing partners with proven records and high technical capability. Hotels with longer outsourcing experiences tend to put more effort into the selection criteria and process.
- Being an important factor determining the success of outsourcing strategy, management of outsourcing must be given close attention. The analysis of data shows that hotels with longer outsourcing experience significantly have higher scores on management of outsourcing.
- Hotels with longer outsourcing experience and hotels with plan to increase or maintain outsourcing level have higher business performance and improvement. The management perception on hotel performance and improvement is also found to be related to the financial results measured by Revenue to Asset Ratio of the hotels.

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# EXPLORING FACTORS AFFECTING MARKETING ADAPTATION/STANDARDIZATION STRATEGIES - A STUDY AMONG INTERNATIONAL INSURANCE FIRMS IN VIETNAM MARKET

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## ABSTRACT

The current trend towards globalization has created countless new business opportunities for international companies to penetrate local markets around the world. One of the challenges for entering a new market is the choice between adaptation and standardization of marketing strategy. Previous studies found seven main factors that influenced the choice of a particular strategy. Since most studies have been done in developed countries, this study aims to explore the issue in a developing country like Vietnam and how these factors affect the strategic choice. Our sampling comprises four case studies which are international insurance firms that are currently doing business in the local market. The results of this research are expected to contribute to the body of literature about marketing adaptation/standardization in emerging markets.

**Keywords:** *Marketing, adaptation, standardization, strategy, insurance, international.*

## INTRODUCTION

### Overview of Vietnam insurance industry

Till 2014, the insurance industry has maintained a high growth rate to GDP growth. The industry's revenue (including investment income) reached VND 65,802 billion, increasing by 13.45% after 1 year, with VND 54,635 billion of insurance premium income and VND 11,167 billion of investment income. In addition, there exists 61 service providers with diversified ownership structure in the insurance market, including 2 state-owned enterprises, 26 joint-stock companies, 9 joint ventures and 24 wholly foreign-owned enterprises and 1 branch of foreign insurance company in Vietnam so far.

Table 1.1 Development in number of insurance company in Vietnam

	2010	2011	2012	2013	2014
Joint venture	5	7	8	9	9
Joint stock	16	24	25	25	26
100% foreign owned	18	21	22	23	24
State owned	2	2	2	2	2
Total	41	54	57	59	61

Source: *Annual report of Vietnam insurance market from Ministry of Finance*

In addition, the presence of 25 representative offices of 100% foreign-owned insurance in Vietnam plays an important role in showing an attractive investment environment for foreign investors to do business in Vietnam.

Table 1.2. The key development indicators of Vietnam insurance industry

Key indicators	2010	2011	2012	2013	2014
Penetration rate (%GDP)	1,56%	1,44%	1,55%	1,88%	2,03%
Insurers	41	54	57	59	61
+ Local insurers	11	13	15	19	19
+ Foreign insurers	18	21	22	23	24
+ Insurance brokers	10	12	12	12	12
+ Reinsurance insurer	2	2	2	2	2
Staff	15,000	21,000	23,000	27,000	30,000
Agents	200,000	202,956	250,000	280,000	300,000
Insurance premium (VND bil)	30,844	32,522	38,591	44,708	54,635
+ Growth rate		8%	13,5%	14,4%	14,2%
Investment (VND bil)	92,300	95,210	101,220	111,340	131,371
+ Growth rate		3%	6%	12,2%	15,6%
Claim payments (VND bil)	4,730	13,500	16,000	17,500	20,766

Source: *thoibaotaichinhvietnam.vn*

From the statistics above, the Vietnamese insurance industry has experienced a regular growth rate. However, compared to other developed countries within the region, Vietnam is a country with the population of 90 million but there are only 1,252,408 new life insurance contracts written in 2014 of whole life insurance sector, occupied 1,39% (annual report of Vietnam insurance market 2014 from MOF, p. 14). In addition, customer retention is quite low. Given the fact that, in 2014, the number of lapsed contracts was 436,749 with 118,735 in the first year, 165,192 in the second year and 152,822 in the following year (annual report of Vietnam insurance market 2014 from MOF, p.49). In consideration of lapsed contracts proportion, it gets peak at 34.8% of total new insurance policies in the year. Moreover, insurance agency retention rate is also surprisingly low. The ratio of active insurance agents is 25% on average although most of foreign insurance companies have spent a huge amount of money for their marketing activities. For example, Prudential Vietnam spends USD 12.1 million for PR, internal contests and new agency recruitment every year. In sum, there are many things to be done with the insurance market of Viet Nam.

### Research problem

When expanding its market outside of home country, a firm needs to decide whether to standardize or to adapt its marketing strategy, and to which degree. Standardization is referred as "identical product lines at identical prices, through identical distribution systems, supported by identical promotional programs in several different countries" (Buzzell, 1968), which means applying a uniform strategy in all countries, whereas, adaptation is defined as the customization of strategy to fit the unique needs of a particular local market. Actually, there is not always a rigid choice to standardize or to adapt because a firm can choose to adapt or standardize its strategy to some degrees (Quelch & Hoff, 1986). There are also elements known as antecedent factors affecting companies' choice of level of adaptation/standardization in marketing strategy.

### Antecedent factors for choice of standardization/adaptation

The level of adaptation/standardization for a certain foreign market can be affected by one or more of the following seven variables:

**Environment-related factors** define the differences between home and host countries in terms of economic, social-cultural, political, legal, and physical elements (Douglas & Wind, 1987; Schmid & Kotulla, 2011). These are regarded as constraints to the firm's ability to develop and implement a standardized strategy. Among those, political-legal and economic factors are considered the most influenced to multinational firm's adaptation to the local environment. For example, government and

trade restrictions (tariff, trade barriers, etc.) or on- business regulations may affect product and price strategy in host markets

**Market characteristics** consist of market size, marketing infrastructure, advertising media availability and distribution infrastructure. Those factors should be considered because they demonstrate how advanced a particular foreign market develops (Chhabra, 1996). While the market size reveals the potential of a foreign market, the other elements show the requirements for adaptation to host markets. For instances, TV advertising is popular in US, Japan and Australia, however, it is limited in South Africa, Nigeria, or Indonesia due to the limited ownership of TV, and even prohibited in Scandinavian countries (Schmid & Kotulla, 2011). This is a particular example for how the availability of media type, their reach and effectiveness is varyamong countries.

**Customer-related factors** include the target consumer's characteristics/behavior, tastes/preferences, and usage patterns. These factors are important because they reveal the needs of a foreign market, and the firm's ability to meet market's demand in comparison to competitors decides its survival and success. Customer issues' influence on marketing strategy adaptation has been proved by empirical research, specifically by Barlett (1979) and Levitt (1988) that the more universal need a product can meet, the little adaptation the firm has to facilitate in cross-national market.

**Competition-related factors** emphasize the competition in cross-national markets in terms of structure (monopolistic or oligopolistic), nature (price or non-price) and intensity (mild or fierce). Little adaptation is required for company to operate in noncompetitive market overseas. However, more and more companies find it attractive to expand their markets globally, there has emerged a growing number of multinational companies as important competitors in foreign markets (Buzzle, 1968). The existence of competition as well as a company position (leader, challenger, follower) forces it to carry out strategy customizations to gain competitive advantage over opponents by providing successfully localizing products (Jain, 1989).

**Product and industry characteristics** also affect firm's choice of adaptation through product type, technological orientation and stage of the product life cycle. The type of product is categorized as an industrial product sold to other firms for generating other products or a consumer product sold for final consumption. According to the empirical research (Boddewyn, Soehl and Picard 1986; Jain 1989), consumer products such as clothing, food, household cleaner, etc. require more adaptation to meet the unique needs than industrial products (computer hard-wares, machine tools, heavy equipment, etc) do. Technology orientation implies whether an industry is technology-intensive or old-line. Highly technology-intensive industries like computer, airline, medical equipment are more suitable with highly standardizing strategies in relative to old-line industries, for example, clothing and food (Jain 1989). Product-life cycle also considerably influences decisions on adaptation. Actually, a low-customization marketing strategy works most effectively for markets with the same stage of development for a particular product (Cavusgil & Zou, 1994; Cavusgil, Zou & Naidu, 1993; Grosse & Zinn, 1990; Chhabra, 1996).

**Organizational-related issues** concern with the traditional home country of the parent company, nature of company ownership, international experience of parent company, and foreign market share. The influence of parent company's nationality on standardizing marketing strategy is not consistently concluded (Kirpalani et al. 1988; Özsoomer et al. 1991; Sirisagul 2000; Tai 1997; Yip 1997), besides, in the latest research by Theodosiou & Leonidou (2003), this element has impacts on certain aspects of product and advertising. As for the ownership of parent company, it is argued that standardization of marketing strategy works better for wholly-owned, or at least substantially controlled subsidiaries than for joint ventures (Laroche et al. 2001; Ozsoomer et al. 1991; Rau and Preble 1987). On the other hand, some studies report that there exists positive relationship between the firm's international experience and its level of marketing adaptation (Cavusgil and Zou 1993; Leonidou 1996). The last element, the firm's foreign market share, seems to have non-significant impact on marketing strategy adaptation (Akaah, 1991; Shoham, 1999).

**Management-related factors** focus on two items: (1) the extent to which decision making is centralized. In fact, there are no consistent conclusions toward this field. Whereas there are papers supporting the claim about effective marketing standardization as a result of centralized decision-making (Jain 1989, Ozsoomer et al. 1991), others report non-significant link between them (Picard et al. 1998; Quester and Conduit 1996; Tai 1997). (2) Corporate orientation which refers to international commitment to accommodate foreign perspectives. Corporate orientation, according to Perl Mutter

(1969), is categorized into: ethnocentric (home-country-oriented), polycentric (host-country-oriented), regioncentric (region-oriented), and geocentric (world oriented). On that classification, marketing strategy standardization is found to be more likely for firms of geocentric/regiocentric orientation than for ethnocentric/polycentric oriented firms ( Wind, Douglas & Perlmutter, 1973; Akaah, 1991).

## **METHOD**

In this research, we apply qualitative method with case study to gain insights and deep understanding on how insurance firms adapt their marketing strategies to Vietnam market. The data was collected through in-depth interview with each representative from the companies. The four cases were purposefully chosen with pre-identified criteria in order to ensure the candidates' suitability as well as theoretical and conceptual value to the study (Eissenhardt & Graebner, 2007). The selected cases for investigation are international firms with the focus on non-life insurance services. They are also selected based on the perceived effectiveness of their marketing strategies in local market. To study the adaptation of marketing strategy in particular, each of the interviewees is Marketing Director of their respective company because these representatives are involved directly in the process of adapting marketing strategies. The interviews are conducted through repeated face-to-face discussion between the marketing director and the corresponding author, following interview themes: the parent company's marketing strategy in home country, the adaptation of marketing strategy to host country (Vietnam), and the causes for those customizations. All the interviews lasted for about 1 hour and were digitally as well as paper-recorded. The collected data then were brought to in-depth analysis in a deductive way to find out the patterns among the cases. Besides, company reports, websites, statistics provided by government were utilized as secondary sources to complete the data. The next section gives a summary of companies' information as well as their key points in marketing strategies and goes further with factors affecting their choices of adaptation to Vietnam market situation.

## **DATA PRESENTATIONS AND DISCUSSIONS**

### **Brief Company Introduction**

In the limit of this article, we investigated 4 international insurance companies operating in Vietnam.

#### ***American International Group, Inc. (AIG)***

American International Group, Inc. is the largest insurance firm in the world, serving more than 88 million customers in more than 130 countries and territories around the world. AIG Vietnam is founded in 2005 to mark the return of the company since the 1920s and headquartered in Hanoi and Ho Chi Minh City. AIG Vietnam offers lots of innovative insurance solutions. With a staff of 170 agents, it is the market leader for personal and business travel, housing, cars and properties to complex accident insurance and the different risks in business. AIG Vietnam insurance company is 100% casualty of America's first capital in Vietnam. It is increasingly known by Vietnamese clients for the professional customer service and reliability of the company.

#### ***MSIG Insurance (Vietnam) Company Limited (MSIG Vietnam)***

MSIG Vietnam is a part of the Mitsui Sumitomo Insurance Co., Ltd network in Japan and a member of MS&AD Insurance Group. MS & AD Insurance Group was established in April 2010 as an alliance of Mitsui Sumitomo Insurance Group, Aioi Insurance Company and Nissay Dowa General Insurance Company. MS&AD Insurance Group is one of the largest general insurers in the world, with presence in over 41 markets globally, 16 of which are in Asia. Headquartered in Japan, MS&AD Insurance Group is active in five business domains, namely domestic Japanese general insurance, life insurance, non-life insurance, financial services and risk-related services.

MSIG Vietnam with 100% foreign wholly-owned company is the first Japanese General Insurer in Vietnam with headquarter in Hanoi and branch in Ho Chi Minh City. MSIG Vietnam provides a wide range of non-life insurance products to both enterprises and individuals, including property, marine cargo, motor and engineering. Currently, MSIG Vietnam insurance company has over 150 staffs to serve clients in Vietnam.

#### ***Vietnam Liberty Insurance Company Limited (Liberty Vietnam):***

Since 1912, Liberty Mutual Insurance with its headquarter in Boston has been a global multidisciplinary coverage. Till 31/12/2014, Liberty Mutual Insurance has a total asset of USD 124.3

billion and a total turnover of USD 39.6 billion, rated 3rd and 6th in the field of property and damage insurance over the world.

Liberty Mutual Insurance has more than 50,000 employees work in 900 offices in 30 countries around the world. Vietnam is one of the youngest in the network. In 2003, Liberty insurance established its first representative office in Hanoi. In 2008, official Liberty insurance company was allowed to provide insurance services to all customers in Vietnam and it currently has over 200 staffs in Vietnam ***Vietnam ACE Insurance Company Limited (ACE Vietnam)***.

ACE Group is one of the world’s largest multiline property and casualty insurers. Operating in 54 countries, ACE provides commercial and personal property and casualty insurance, personal accident and supplemental health insurance, re-insurance and life insurance to a diverse group of clients. The company is distinguished by its broad product and service capabilities, exceptional financial strength, underwriting and claims handling expertise and local operations globally. The insurance companies of ACE Group serve multinational corporations and local businesses with property and casualty insurance and services; companies and affinity groups providing or offering accident and health insurance programs and life insurance to their employees or members; insurers managing exposures with reinsurance coverage; and individuals purchasing life, personal accident, supplemental health, homeowners, automobile and other specialty insurance coverage.

With more than \$98 billion in assets and nearly \$23 billion of gross written premiums in 2014, ACE’s core operating insurance companies maintain financial strength ratings of **AA from Standard & Poor’s** and **A++ from A.M. Best**. ACE Limited, the parent company of ACE Group, is listed on the New York Stock Exchange (NYSE: ACE) and is a component of the S&P 500 index. ACE Group maintains executive offices in Zurich, Bermuda and New York, among other locations, and employs more than 20,000 people worldwide.

**Key points in marketing programs**

	AIG	Liberty	ACE	MSIG
Product	Commercial line: property, insurance, marine insurance, and casualty insurance only. Personal line: mainly global health and personal accident insurance, travel insurance and auto insurance.	Consumer line with auto insurance as a core product.	Mass product with an exception of auto insurance.	Main products include marine and property insurance (80% of profit)
Price	Low	Premium brand with high price for upper class customers.	Medium price with enhances in customer service.	Standardization policy under Head-quarter’s control. Especially, a lot of big case size must be get approval from Head-Quarter
Promotion	Contest programs for agency to enhance GWP (gross written premium)	Focusing on digital marketing, editorial marketing, and exposing brand in auto-garage.	Digital marketing, product educational workshop.	No promotion activities.
Place	B2B model for	Cross sales, agency	Traditional	Direct sales

	selling and setting up CAF (captive agency force)	and direct sales, website and telesales.	distribution with direct sales, websites, airline ticket POS.	
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**Factors affecting the adaptation**

In order to gain deeper understanding of the issue, interviewers asked about the directors’ perception on what had made them customize their marketing programs. The most common factors are environment and customer-related factors. Besides, the interviewees also mentioned about competition, product & industry characteristics and the empowerment from regional offices.

When a multinational firm decides to enter any foreign market, it must face up to changes in *environmental factors*. Entering Vietnam market is not an exception. In details, although more and more Vietnamese people concern about insurance, their power of purchasing is still limited due to low living standard. With the exception of Liberty which defines itself as a premium brand in Vietnam with product price far above 10 million VND to aim upper class consumers (about 1% of population) and medium or small business units, all other three firms AIG, ACE, MSIG have to adjust their product price as well as product benefits to suit local market better. In details, AIG offers fewer-benefits product with lower price in comparison to their tradition home market (the US). ACE Insurance also offer low price (though still higher than the market average) with more value added. ACE marketing directors believed that adding more values to the products may decrease the goal profit in percentage (20%) by about 5%, the profit in value is still higher thanks to more revenue from more service sold.

Legal factor also affects companies’ choice for customization of distribution and promotion programs. The marketing directors shared a common belief that loopholes in regulations in electronic transactions make buyers skeptical about purchasing insurance service through the internet. As a result, online selling is quite limited. To handle this challenge, most companies directed sale-staffs to set meeting with customers for contract signing regardless of the initial channels that the customers involve. ACE is an interesting case because its marketing directors open a new online channel with B2B selling for airline service providers, known as electronic flight ticket insurance.

Adapting to new environment is not enough to make a successful business. *Customer characteristics* should be taken into consideration. More specifically, the interviewed managers claimed that consumers’ attitude and awareness of product has a significant impact on their usage behaviours. Whereas consumers in the home country of these international firms (USA, Japan) perceive insurance as a for-protection product, ie., a kind of product which helps them manage risks of loss, most Vietnamese consumers buy insurance for “consumption” purpose. They try to claim for compensation even in trivial cases just to justify their insurance fee. Moreover, they usually buy insurance as a “compulsory” product. For example, they purchase the service when they suffer from serious health problems which are expensive to cure, or when they get loan from a bank and the bank requests insurance for collateral. These perceptions and behaviours increase expenses for insurance providers, who then need to find ways to adapt to this challenge. Liberty Insurance handles this problem using editorial marketing. They deliver through magazine and newspaper the contents which give customer instructions about the service or how to avoid risks, for example, car accidents in car insurance. By this way, the firm can improve its brand awareness and help customers reduce the risks of loss, leading to decrease their number of requests for compensation. ACE chooses to sacrifice profit from personal and family product lines in order to maintain its brand image and get compensated from high profit product lines. MSIG focus only on high profit lines (marine and asset insurance). Other firms reduce service benefits and tighten the rules for using the service.

In addition to environmental issues and customer characteristics, there exist a lot of other factors affecting the choice of adaptation. Since 70% of insurance market share is possessed by state-owned company, (AIG’s Insurance Market Report), the challenge is tough enough for companies from foreign countries to compete against these state-owned rivals. To succeed, there’s a need for them to differentiate. For instance, Liberty Insurance positions itself as a premium brand targeting upper class in Vietnam instead of mass market as in its home country (the US). MSIG uses another approach, concentrating on B2B market, with marine & asset insurance as core products, serving not only Vietnamese but also Japanese and other global customers. This case indicates the impact of *product*

*type* on the degree of adaptation. In particular, marine & asset insurance is industry service which requires less adaptation than consumption service. As for marine insurance, mutual regulations must be applied globally to protect exporting and importing merchandise. For asset (equipment, machine, goods, etc.) insurance, the fee may be a bit lower for local companies than for foreign ones in Vietnam.

The empowerment of regional office to management in host country (Viet Nam) is the key to the decision to adaptation. MSIG and AIG management in Viet Nam have no authority toward decisions to make changes in marketing programs introduced from home countries. Every move needs to be approved from regional office. Therefore, little or almost no adaptation was carried out. In contrast, the regional offices of Liberty and ACE let their local management freely do what they think necessary in the local markets. As a result, high degree of adaptation to local market is found in these two firms.

## CONCLUSION

This article's findings contribute to building a comprehensive picture of marketing strategy adaptation in Vietnam market, especially within insurance service. We first identified through existing literature variables determining the adaptation of marketing strategy when entering international markets. Then, face-to-face interviews were conducted to gain deeper understanding on the influence of the variables and how marketing managers handle it through adaptation. Therefore, from managerial point of views, this study should answer one of the most important questions in adaptation to Vietnam market: which are the key factors affecting the choice of adaptation to Vietnam market? Because this study only focuses on the field of insurance service, there is a need for further research to obtain better and more general view on marketing strategy adaptation for the whole service area. However, we hope our investigation is helpful for marketing managers in adapting their strategies and tactics to the specific characteristics of Vietnam market.

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## **HOW BUSINESS PROCESS OUTSOURCING AND SUBCONTRACTING IS IMPORTANT FOR BUSINESS SURVIVAL**

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### **ABSTRACT**

Business process outsourcing is a popular strategy to maintain a competitive edge. Numerous business owners in developed countries with high costs of labor reduce those costs by entrusting part or all of their production to a subcontracting company. In this paper we present the factors that influence a business owner's decision to outsource (including survival), the abilities of subcontractors, and the advantages and disadvantages of outsourcing and subcontracting.

**Keywords:** Business, Outsourcing, Subcontracting, Survival

### **INTRODUCTION**

Outsourcing can help business to take advantage of lower production costs, and outsourcing helps the world economy in many regions by transferring jobs and money from one country to others (Egger & Falkinger, 2006). Outsourcing means subcontracting to a third party one or more of the operations that one cannot adequately perform in-house (Kumar & Eickhoff, 2005). Outsourcing is to employ and moved jobs to other expert organizations and lower cost of production (Magnezi, Dankner, Kedem, & Reuveni, 2006). Many organizations use it to develop and manage themselves, and numerous industries around the world have outsourcing contracts advantageous in wages and production capital (Sakolnakorn, 2011).

Subcontracting involves a contractual agreement with an outside person or company to perform a certain amount of work (Bender, 2010). Firms often subcontract to fulfill deadlines for customer orders (Wang, Zhu, & Cheng, 2015). Subcontractors process a material, component, part, or subassembly for it, according to specifications provided by customer firm (Imrie, 1986). A general contractor (or prime contractor or main contractor) hires and normally pays a subcontractor to perform a specific task as part of the overall project (Forrestbrown, 2015). General contractors or firms often subcontract because they require additional resources for a big production or require specialist expertise.

Popular sources of subcontracting are developing countries with low cost of production such as India, China, and Mexico (Naipinit, & Sakolnakorn, 2010). Cost of labor is the major deciding factor in outsourcing (Noorbakhsh, Paloni, & Youssef, 2001). Reducing cost of production can reduce sale prices, important in competition when multiple businesses have the same goods. In addition, subcontracting can help businesses and people in developing countries to have production to order, boosting paid employment and the cost of everyday life. This paper will present why businesses outsource, why businesses decide to work as subcontractors, how businesses process outsourcing, and why subcontracting is important for business survival.

### **OUTSOURCING AND SUBCONTRACTING**

Numerous factors make businesses decide to outsource: competence of subcontractors, cost of production, government policy in subcontractors' countries, business environment, and resource of production (Griffin & Pustay, 2005; Chen, Ishikawa, & Yu, 2002; Gorg & Hanley, 2005). For example, most industries use oversea partner to produce parts for assembly in a brand-name factory (Swenson, 2004). In addition, outsourcing can increase a company's competitiveness (Chung, Yam

and Chan, 2004), customer satisfaction (Espino-Rodriguez and Robaina, 2004), and quality of in-house management (Yang & Huang, 2000). Subcontracting allows industries to fine-tune labor flexibility, meet rapidly changing product market demands, externalize less rewarding and dangerous activities, bargain down labor cost, encourage quicker completion of tasks, transfer financial risk and avoid workers' compensation costs (Manu, Ankrah, Proverbs, & Suresh, 2013).

*Subcontracting* means that an enterprise receives money from outside employers to produce tools, equipment, or industrial goods (Sakolnakorn, 2011). A subcontractor that responds quickly to the technological demands of international customers, has previous work experience for large firms, and has strong managerial capabilities will do well in this system (Kim & Hemmert, 2016). Subcontracting is considered effective for avoiding changeable demands on the main contractor's own in-house resource (Ng et al., 2009). It had also shown benefits in using information systems for supply chain management practices ((Bayraktar et al., 2009). Subcontracting can expand regional economies, and small, medium, and large enterprises who work as subcontractors can increase their income (Naipinit, Tepsing, & Sakolnakorn, 2014). In addition, businesses who work under the subcontractor do not have marketing competition because they work by order. They are free to innovate in developing their production and help their local labor markets, raising their workers' quality of life.

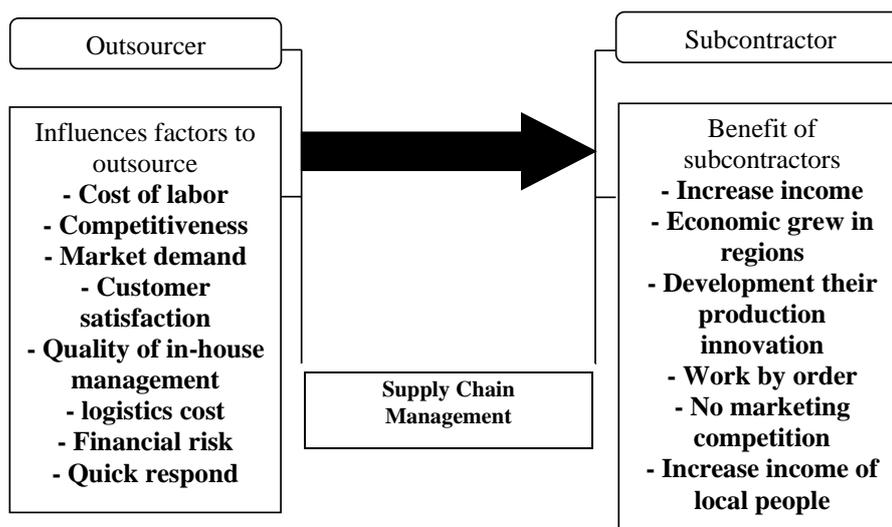


Figure 1 Outsourcing and Subcontracting Concept

### HOW BUSINESS PROCESS OUTSOURCING IS IMPORTANT

Outsourcing is a very good business strategy, partly because it puts important processes in the company in the hands of experts in the field. Employing people to carry out the same operations in-house would require a considerable chunk of time to train the staff, as well as the need to buy all of the essential equipment, and perhaps even employing extra staff members and increasing payroll and Web development. With outsourcing, employees at a company will also be able to shift its focus from peripheral activities toward work that serves the customer (Dover, 2013). In addition, outsourcing can control capital costs, allows firms to avoid large expenditures in the early stages of business, makes firms more attractive to investors, increases efficiency thanks to outside providers' cost structure and economy of scale, help management set its priorities more clearly, and absorb risks in market competition, government regulations, financial conditions, and technologies.

Reduction in labor wage is especially compelling. If a factory in the United States employs 1,000 workers, pays them \$8 US an hour and has them work 8 hours per day, one worker will received \$64 US per day and the factory will pay \$64,000 US per day. However, Thailand's standard wage is \$10 US per day, so that factory can lay off more than 100 workers and pay a factory in Thailand to get the same work for less. The factory in Thailand sends back the finished goods for assembly in the US factory, and after that the factory can deal with another factory in China that produces the same goods. Or the factory can outsource all its production to Vietnam and its labor wage of \$5 US per day, then close its American factory and lay off almost all workers but still have an administrative office in the United States and a small administrative office in Vietnam. This means reducing a lot of the cost of production and focusing on core competencies of business such as management, marketing, advertisement, while selling they higher quality of goods than competitors from China but at the same price of goods. In addition, outsourcing reduces inventory cost to a business owner because most finished goods remain in the subcontractor's or sale agency's inventories, then pass directly to the shop and or superstore. This reduces logistics and transportation costs.

### **HOW SUBCONTRACTING IS IMPORTANT FOR BUSINESS**

A subcontractor can draw business revenue from making orders, increase business income without marketing management and without sending goods to customers or the market. A business owner can use a subcontractor for one-off jobs and jobs requiring specialist expertise or fast turnaround. However, the abilities of the subcontractor are very important, including speed, quality, and cost. In addition, the subcontracting company needs to be able to advance payments and project payments from contractors. Sakolnakorn et al. (2010) explained the important factors related to entrepreneurs in outsourcing were 1) cost of production because they want to reduce wages, compensation, and indirect expenses such as water supply and electricity; 2) management of facilities and production efficiency, which means they typically outsource the more complicated processes to the subcontractors; 3) environment of the outsourcing area, such as resources for production and number and skill of workers; 4) government policy and law, such as the minimum wage policy; and 5) potential of subcontracting such as skill and standard.

### **CONCLUSION**

Outsourcing allows a business to control its cost with the use of subcontractors: fixed-price contracts facilitate cost control and reduces a manufacturer's responsibility for supervision. More than two decades the industrialization in the world used outsourcing strategy for business survival under the price war to maintain and gain market share. The major motivation for outsourcing is reducing costs, such as cost of labor, cost of waste, and cost of production process. However, outsourcing has numerous disadvantages. Sometimes the mother company (the outsourcer) cannot control the number of finished goods the subcontractor makes, and the subcontractor can sell what it produces, leading to copyright issues. Industrialization in Thailand began with subcontracting factory more than twenty years ago. Most big industries in Thailand work as subcontractors for oversea outsourcers, producing shoes, shirts, electronics, machinery and more, because Thailand has a low cost of labor and more quality than other countries, and responds well to market changes. Subcontracting in Thailand helps the national economy grow because Thai people can easily find a job in subcontracting factories spread out in all regions of Thailand. However, after the Thai government improved the minimum wage to 300 baht/day in year 2014 (approximately \$8.6 US/day, as \$1 US = 35 baht), this drastically raised cost of production for the subcontracting factories who employed many workers, who could not maintain the payment rate to receive orders from outsourcers, leading oversea business owners to outsource in other areas such as Vietnam (95 baht/day, approximately \$2.7 US/day), Cambodia (75 baht/day, approximately \$2.2 US/day), Laos 80 baht/day, approximately \$2.3 US/day), and/or China (185 baht/day, approximately \$5.3 US/day). In addition, many Thai subcontracting factories also moved to set up new factory in Vietnam to lower cost of labor. In the year 2016, the Thai government announced it would again increase minimum wage, but is still evaluating that plan. It is a significant

issue for Thai business owners, and the factories that still work as subcontractors need to find a way to survive as sustainable businesses.

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## **THE ALTERNATIVE GATEWAY SYSTEMS OF THAILAND**

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### **ABSTRACT**

The issue of using single gateway instead of multiple gateway that may happen in the future. They talked about the effects from this change. So, it is interesting to study and realize the importance and benefits of each system gateway. In addition, the experts from information technology sector are interviewed. The results of the poll of 300 people in Bangkok showed that most people do not agree with changing the gateway system because it is easy to threaten the right of personal liberty by single gateway. Also, surveyed people suggested that the government should do the research of the impact of using single gateway on the nation in the short term or long term before setting it up.

### **THE PROCESS AND SYSTEM OF GATEWAY**

Gateway is a channel for connecting different types of computer networks to communicate. By making the computer or user in the network can connect to the service, or different types of network, and a network of connections that each country uses together by main function similar to traffic lights. That arranged to use the road to go smoothly.

ISP service is preparing media to connect to the Internet for users. Next, ISP will connect to the internet or any content link to "Internet Gateway Service (IG Service)" to bring users domestic and international to the world of the Internet. The service of the exchange is divided into 2 forms, International Internet Gateway (IIG) which is an Internet data exchange between domestic and National Internet Exchange (NIX), a center for exchange of information in the Internet within the country. CAT TELECOM PUBLIC COMPANY LIMITED (2015)

### **GATEWAY IS DIVIDED INTO TWO FORMS: SINGLE GATEWAY AND MULTIPLE GATEWAY.**

#### **1. Single gateway**

Panu Guysorn (2015) Single gateway definition must separate into two words: by the word "Gateway" refers to door through, the word "Single" refers a system can be connected to the internet through the door just a single pane that means has only one provider network owner.

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>- The government can control the internet access of residents. Therefore, the useful information or the otherwise can be filtrated before public release. Inappropriate information can be access denied.</li> <li>- Single gateway promotes national stability because the government can predict about rebellion by investigation of internet usage.</li> <li>- The government can control the information from abroad flowing via internet.</li> </ul>	<ul style="list-style-type: none"> <li>- Internet speed is certainly dropped because there is only one gateway.</li> <li>- If the gateway crashes, the whole internet networks in the country will be failing because there are not other supporting gateways.</li> <li>- General internet users are restricted the use of international networks. Also, they must be aware of accessing inappropriate contents unconsciously that may lead to blocked, banned, and scanned internet usage.</li> <li>- The government can block the informational access efficiently by the way of preventing unauthorized website access.</li> <li>- Setting up on the single gateway needs high investment since the gateway must be established in large volume that is sufficient for the current and future entire users in the country.</li> <li>- Foreign investors hesitate to invest in our country because of doubtfulness in stability and safety of the internet services and anxiety about leakage of the crucial business information.</li> <li>- The opportunity for being a hub of the digital economy in the country is lacked.</li> </ul>

**2. Multiple gateway**

There are channels for multiple transmission channels is equal to having multiple network providers.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>- The use of the Internet faster than single gateway system.</li> <li>- Multiple gateway is more stable than single gateway, when there is a problem with either, it can send information through other channels that make foreign investors have confidence.</li> <li>- The people's rights and freedom is not restricted in the use of the Internet.</li> <li>- To promote government policy in that it is the hub of the digital economy.</li> </ul>	<ul style="list-style-type: none"> <li>- Monitoring of Internet crime is going to be harder because the government can not control the access of people in the country. It is impossible to filter information and can not protect websites from inappropriate content. A malicious user contributing country in the terrorism can be seen from the terrorism that occurred today.</li> </ul>

**THE GATEWAY SYSTEM ABROAD**

**Countries that use the single gateway**

**China**

China's Internet control project called " Golden Shield" , which made almost 20 years. The Chinese government has 3 gateways connected to the internet, based in Beijing, Shanghai and Guangzhou. In the technical side, there are three gates, but considered in the "single" because of the government gateway, the gateway using contraceptives, three more than 24,000 million budget. To control the population at more than 500 million people use the internet by hiring people over 2 million Chinese sit verify that the government thinks that impact stability and block these messages.

China has created a social media within the country like a web site search (search engine) such as a Chinese web services company (Baidu) and a Chinese microblogging (weibo) with over 100 million user. China can control up to 90% of the remaining 10% of Internet users also have gold smuggling forbidden sites. But these seem to be controlled is not a barrier to the economic policy of China to much because other factors also make China a superpower in the economic.

**Laos**

The single gateway in Laos was first introduced in 2009 as an International Internet Gateway of Lao National Internet Center (LANIC) which provide Internet Service Provider (ISPs) to connect to the hub before connecting to an external system, CAT Telecom (CAT) of Thailand.

However, this system works well when there are fewer connections. The users of mobile services will reach over 5.6 million people or 83% of the population and transform 2G to 3G / 4G that can be used data accessible over the Internet. The transmission congestions and insufficient. Therefore the private sector by various telecom companies must find another way to connect. At present, the Internet Services Providers (ISPs) company in Laos with a total of 6 items, which is divided into home-based internet service provider at home 3 cases and via a mobile phone 4 cases. Some providers offering internet and mobile homes and switched their connection from a single gateway to multiple gateway according to the standards of the international.

**Countries that use multiple gateway**

Countries that use multiple gateway: United States, United Kingdom, Scandinavia, Singapore and Malaysia.

**Singapore**

IDA Singapore. (2015) on February 2015, Singapore has 11,512,900 members of broadband internet with three internet service providers: Singtel, StarHub and M1, and other service providers, such as MyRepublic and ViewQwest.

Singapore has the way to control inappropriate web sites. By the power of the court has been asked to trace the data of other people. So they set up the agency to screen information, under a law protecting of the right to get information and empower the minister into the part of the board of directors of the security agencies. Screening the data that effect to the security or violate others privacy right. Screening information agencies of Singapore is the undesirable publication act, screening information outside the country, such as information about sex, crime, violence, or how to create hatred between nationalities and religions.

No.	Name	Organization	AS Number
1	CAT TH-NIX	CAT Telecom Public Company Limited	AS4652
2	TOT NIX	TOT Public Company Limited	AS37930
3	ADC NIX	Advanced Data Network Communications Co., Ltd.	AS38443
4	TIG-NIX	TRUE International Gateway Co., Ltd.	AS38081
5	CSL NIX	CS Loxinfo Public Company Limited	AS45265
6	SBN-IX	SUPER BROADBAND NETWORK Co.,Ltd	AS45458
7	JASTEL-IX	JasTel Network Company Limited	AS45642
8	BB Connect-IX	BB Connect Co.,Ltd.	AS45796
9	TCCT-IX	T.C.C. Technology Company Limited	AS45667
10	Symphony-IX	Symphony Communication Public Company Limited	AS132280

#### United States

The internet occur the first time in 1969 in the United States in the name of ARPA NET (Advanced Research Project Agency Network:), which is supported by the ministry of defense of the United States and National Science Foundation (NSF). Charmonman, S. Anaraki, F. and Nalwa-Segal, V. (1994) NSF assigned University of Southern California, John Poste, as administrator of the system that link to the internet area. Until 1972, postal or electronic mail (Electronic mail: e-mail) was offered. In 1973, Vint C.Erf and Bob Kahn have offered protocol for connecting to the internet. In addition, in the year 1974 Vint C.Erf and Bob Kahn also let "the Internet (Internet)" is used for the first time. Therefore, in 1983 John Poste and team have announced the name of the system property (Domain Name System: DNS), the great internet zone, and also has announced the name of the highest level such as (.com) for business, (.net) for the network, (.org) for organization and (.edu) for education, etc. In 1989, NSF allow the use of e-mail for business and allow the use of internet to trade in 1991. That make the effect to many countries around the world, including Thailand.

In addition, the screening information agency, National Security Agency: NSA, is created to screen the information that is not appropriate and may be harmful to the stability of the nation. But this might be the problem, authorities from the people in the organization. Case example of Edward Snowden that exposed NSA's spying information that makes the United States has to explain about the safety.

#### THE DEVELOPMENT GATEWAY IN THAILAND

The single gateway used in the past of the internet is not widespread. Time to connect to the internet. Each connection point to unite the CAT Telecom. At that time it was the only provider

International Internet Gateway (IIG) but after the IMF crisis in the year 1997 Thailand has been ordered to make a Gateway telecommunication liberalization in Thailand now have more than ten gateway. CAT.(2015) National Internet Exchange (NIX) and International Internet Gateway (IIG) providers have each 10 scheme (Table 1, 2) and connection diagrams refer to Figure 3, 4.

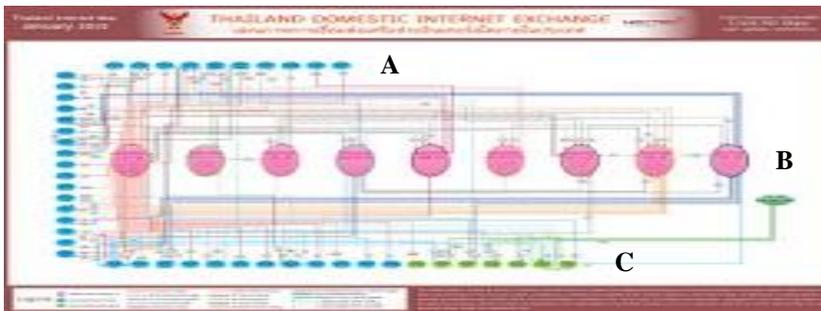


Figure 3 shows the domestic Internet connection (Appendix)

From the internet map can be described as follows:

- A: The part of Internet Service Providers (ISP) such as True, TOT, Triple-T who are the internet gateway service provider's customer
- B: Internet gateway providers as this means the providers Thailand internet Gateway (IX)
- C: Non-profit organizations

Table 1 shows the National Internet service Exchange (NIX) providers, National Electronics and Computer Technology Center (2015)

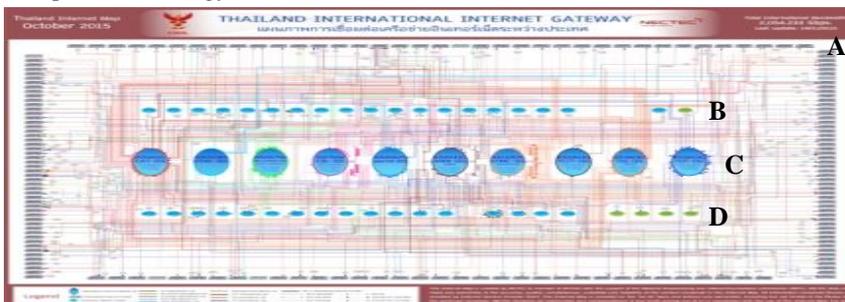


Figure 4 shows the international internet connection (Appendix)

From the internet map can be described as follows:

- A: A Content provider or an internet service provider based abroad. (International internet provider)
- B: The part of Internet service providers in Thailand (ISP)
- C: Internet gateway providers as this means the providers International Internet Gateway (IIG)
- D: Non-profit organizations like Uninet, GIN and ThaiREN

No.	Name	Organization	AS Number
1	CAT-IIG IPv6 Support Dual Stack/Tunneling	CAT Telecom Public Company Limited	AS4652
2	ADC-IIG	Advanced Data Network Communications Co.,	AS17565

		Ltd.	
3	BB Connect-IIG IPv6 Support Dual Stack/Tunneling	BB Connect Co.,Ltd.	AS45796
4	CSL-IIG IPv6 Support Dual Stack/Tunneling	CS Loxinfo Public Company Limited	AS7568
5	JasTel-IIG	JasTel Network Company Limited	AS45629
6	SBN-IIG	SUPER BROADBAND NETWORK Co.,Ltd	AS45430
7	Symphony-IIG IPv6 Support Dual Stack/Tunneling	Symphony Communication Public Company Limited	AS132876
8	TCCT-IIG	T.C.C. Technology Company Limited	AS58430
9	TIG-IIG (TRUE) IPv6 Support Dual Stack/Tunneling	TRUE International Gateway Co., Ltd.	AS38082
10	TOT-IIG IPv6 Support Dual Stack/Tunneling	TOT Public Company Limited	AS38040

Comment [S11]: Bảng lộn xộn quá... em không biết chính

Table 2 shows the International Internet Gateway (IIG) providers , NECTEC. (2015)

### The general environment of Thailand and the effect of changing the format to use the gateway from the multiple gateway to become single gateway.

#### ECONOMIC

Thailand is an open economy country, a country in which contacts, trade goods and services to neighboring countries. Trade between the countries has an important role as a mechanism to develop and bring prosperity to the country. Including a major part in driving the country's economic expansion. By information technology which is a key factor that helps to communicate and conduct business both domestically and overseas. Moreover, in the future there will be the ASEAN Economic Community (AEC). The government has a policy to make the country become a digital economy hub of South East Asia.

To bring a single gateway system to use in Thailand. Many scholars, including the people in IT, concerns about the establishment of a single gateway. They worried that it will damage business or the lack of opportunities to be a digital economy hub of ASEAN. There are more expenses and affect the confidence of investors. Foreign company's more hesitant to come to invest in Thailand and could lose revenue. Due to the multinational corporation don't ensure the stability and security of the internet in Thailand because of the countries using the single gateway. If the system was collapsed, it will effect to all information systems. In addition, trade secret information may be easy to pick out. The economy may be a long-term recession.

#### SOCIAL

Thailand society nowadays call the social network. The Internet not only have a duty to provide information but also any website on the Internet has become a "new society" consist of friends, sibling, acquaintances, and other people. It make the network known as social network website. The communication is borderless. We will see that the current social networking websites can be very influential, and it can cause the flow in the positive and negative aspects.

The flow of single gateway system that is the government can control the use of the public internet. It hard to bring the flow to the society. Moreover, to bring the single gateway, It would block recognition of public information from the outside. People will be informed only by the government. Thailand today's society, used internet widely which is a global network that is over the State's control (even the United States), and the power of an internet greater than the social structures which would change or limit it. The way for the government to control access to public information and limit the use of the internet which had open-minded liberal by bring single gateway system perform more difficult in Thailand.

#### POLITICS AND GOVERNMENT

Since the past. Thailand faced a problem with the political instability in several years ago. That led to political conflict severely, until in the early years of the 2014, coup has occurred to end the turmoil.

However, it is apparent that from the democratic freedoms, everyone has the right. Changes to the military government, people is limited to certain rights. Bringing a group of people who don't agree with that opinion and effect to the relationship between the countries. Criticism about the government's implementation, especially in the Internet. That is an area which is difficult to control. It's east to recognize and distribute news. It can be seen from the current buzz that's influence on everything.

If Thailand changes a gateway from multiple to a single gateway system that government can be made to filter data before it reaches the people and be able to block access quickly to the data that people find out. By preventing access to web sites that the government does not want, which will result in the control of people to go in the same direction easier. However, to change the system. The government must fight against a lot of opposition from groups concerned in the matter of the violation of privacy, access to confidential information of the business sector and the confidence of investors. Which could result in a conflict, and the contribution to the political.

### **THE ISSUE OF CHANGE MULTIPLE GATEWAY TO SINGLE GATEWAY**

The issue of change multiple gateway to single gateway was produced by the National Council for Peace and Order (NCPO) has a policy will push the establishment of a single gateway. NCPO assign to the Ministry of Information and Communication Technology is responsible for ensuring that inappropriate information and block data that caused the disturbance including to prevent cyber-attacks by terrorists.

On June 30 2558, National Council for Peace and Order has assigned the Ministry of Information and Communications Technology in conjunction with the relevant authorities such as the Ministry of Justice and Royal Thai Police to conduct a single gateway to use a control inappropriate websites and the inflow of information from abroad through the internet. Until of resistance to the single gateway by making internet users post on the website Change.org to express their disagreement with a single gateway concept to work in Thailand . And just a short time there have been co-signed by a hundred thousand people. The main reason is that they have concerns about freedom of the internet and the risk of a system that could easily be attacked when there is only one gateway.

### **PEER REVIEWS**

The positive effect if Thailand start using single gateway in Internet management information

1. Col. Settapong Malisuwan

Chairman of National Broadcasting and Telecommunication Commission said the real goal of the government is to increase the competitiveness of the digital business in the region. Motivating the private sector to leverage the connectivity of Thailand instead of abroad such as Singapore or Malaysia.

Using a single gateway can establish a state in cyberspace. To create a digital channels center that easy-to-handle and helped to prevent attacks and cybercrime based on cyber security law comes to support work to comply with international law of many countries, such as the US.

2. Dr.Uttama Savanayana

Dr.Uttama Savanayana, The Minister of Ministry of International and Communication Technology (ICT) said that the single gateway project is intended to help the country's economy by reducing the cost of internet entrepreneurs but is not focused on security sector.

3. M.L. Panatda Ditkun

M.L. Panatda Ditkun, The Minister of the Prime Minister's Office said that I understand that the Prime Minister has only to study the facts as presented in the context of stability. The Prime Minister has never spoken a word to use a single gateway system. Although in this system, user must faced with the problem of unstable or hacked. Also, as a result, the overall internet systems of the country's lack of stability and reliability. A prospect that investors may decide to use the service outside the country and that impact on the economy. However, a single gateway that it is not to wasted.

### **THE NEGATIVE EFFECT IF THAILAND START USING SINGLE GATEWAY IN INTERNET MANAGEMENT INFORMATION**

1. Captain Anudith Nakornthap and Mr. Anusorn Eamsaard      Captain Anudith Nakornthap Former Minister of Information and Communication Technologies and Mr. Anusorn Eamsaard the spokesman of Pheu Thai party are sharing the position to disagree with the single gateway project because they believed it will have more disadvantages. Such as in the matter of slow internet access and communications on a single channel may result in the collapse of the whole country internet. At the same time, investors both in and outside the country will lack confidence and feel unsafe. In order to use the internet in Thailand, it may lose an opportunity to upgrade to be a digital economic hub of ASEAN. In particular, the control of information of government. There is a risk to violate personal right that be protected without conditions, according to the principles of democracy.

2. Mr. Taewapoj Sumpuntarak

Mr. Taewapoj Sumpuntarak, Regional journalists, Telecomasia Magazine. He has written an article about a single gateway issue that can be divided into two dimensions. The first one is in terms of efficiency. If Cat Telecom is a single gateway server, everything will slowly and lack of good performance of state enterprises that has a bad performance. So the internet service fee is more expensive. The speed of the internet, and the internet will collapse easily.

3. Prof. Jittud Fakcharoenpon

Prof. Jittud Fakcharoenpon, Professors from the faculty of Computer Engineering, Kasetsart University, said that just one door really means all data flow before connecting to the network must be passed the main door before it can be removed. When it has only one path, it's mean more risk. Such as if the path is collapsed, all information in system will collapse as well. Causes by many methods such as a power failure or a terrorist attack. It makes more risk to the internet. Therefore, if it is only one gate, it has to ensure the effectiveness of the gates so that it can accommodate the flow of a large amount of data. So, if the gate has not powerful enough, it may cause overall Internet use within the country slowly.

4. Dr. Prawit Leesathapornwongsa

Dr. Prawit Leesathapornwongsa, Director of Commission Broadcasting and the National Telecommunications Commission NBTC and the director of telecommunications, show that if the government concern about the stability. There must be alternative with less impact because some of the alternatives may be required, but this will result in some unwanted consequences. Which in modern technology, have to discuss what to do to keep the market easily. Stability is still enough, but the liberty was enough to get by. So we must be discussed that it can be done or not. Because the private sector under the unlawful business. If it has to gather, they must show the information. Because it is not just a gateway, but including the pipe that goes outside the gateway, which is now some companies try to invest fiber optics overseas. If said gateway is not available, it will result to the tube that he invested, which is a problem.

## **INTERVIEW ABOUT THE SINGLE GATEWAY SYSTEM**

1. Mr. Somsak Paecharoenchai, Executive level 10, Department of the telephone exchange system, TOT co. Ltd.

Mr. Somsak Comments in the single gateway system used in Thailand that he agree with because a single gateway system, the data can be verified stable which could be harmful and can be audited that what's easy to access the information quickly. But there are drawbacks in the block of other people's opinion, that many people who do not agree with. The suggestions to the government should provide a single gateway system agency to control the system in security and prevent confidential leaks.

2. Mr. Somkiat Anurakchaipong, IT Specialist, True Corporation Ltd.,

Mr. Somkiat Anurakchaipong comments in the single gateway system used in Thailand that he disagree with because if the system collapse it will effect to people who use website, host, server aboard. The second is the monopoly market so people who use internet will take a higher cost. The last one is the company or private sectors who serve in gateway have to adjust the device to use with single gateway of the government. As a result, they need to go through more system. Make the information bottlenecks. He has recommendations to the government on single gateway system that should make a public criticism of internet information users in both domestic and aboard. Moreover, they should determine the price using the data through a single gateway by gateway in the private sector today.

Survey results from 300 people in Bangkok

Part 1 : General information

1. 53.2% of respondents are female and 46.8% are male. All of them age between 21-30 year on average.
2. 66.2% of respondents are undergraduate. 29.9% are graduate
3. For occupation of respondents is student, which makes up 42.9 % and 36.4% is employees of private companies and some of them work about IT, which makes up 80.5%

Part 2 : Internet access information

Main object of internet access

It can be concluded from the pie chart that the most internet access is social networking, (Facebook, Twitter, Instagram) which makes up 39.2%. Second comes research and communication (Skype, Line, Google Talk) respectively (Appendix Chart 1)

Average period of internet access (hour) per day

It can be concluded from the pie chart that the average period of internet access is 1-4 hours, which makes up 42%. The second and third large proportions are 5-8 hours and 9-12 hours respectively (Appendix Chart 2)

Part 3 : Perception and opinion information of single gateway system usage

Single gateway awareness

According to the pie chart, The people who know single gateway is 76% (Appendix Chart3)

Single gateway awareness before it happened in current event

According to the pie chart, The people who know single gateway, have not known before it happened in current event is 86% (Appendix Chart 4)

The Channel that people know single gateway

To conclude from No.1, the most way that people know single gateway is social media, which makes up 58%, Second comes television and word of mouth respectively. (Appendix Chart5)

The positive effect if Thailand start using single gateway in internet management information

To conclude, most of people think that positive effects of government which investigate criminal or people who commit internet criminal easily is the first important. Second comes to country security from other information government controls, which makes up 63% and effects from country security that can control other information is the last important proportion, which makes up 76.6%. (Appendix Chart 6)

The negative effect if Thailand start using single gateway in internet management information

53.2% of respondents give an opinion that invasion of privacy is the most important. The second proportion is information insecurity of business secret, which makes up 33.8%. Third comes to restriction of information approaches, which makes up 24.7 %. Fourth and fifth come to business damage from international investment is not confidentiality and internet usage that get speed decrease respectively. (Appendix Chart 7)

People opinion about using single gateway in Thailand

It can be concluded from the pie chart that 54.4% of respondents disagree using single gateway in Thailand. The people who agree, which make of 6.4% and the other people is indecisive 39.2%. 66.7% of 39.2% indecisive not sure about the process details, 48.5% give a reason that do not sure about details and 6.1% not sure by other reason. (Appendix Chart 8)

Suggestion to government about Single Gateway system

40% of respondents think they should have education entirely about country effects in both short and long period before take it in real come to the first proportion. Second and third come to giving knowledge and usage of single and gateway to people and make a public hearing to find the same ways to lead this system to country and find the other ways to screen and investigate the illegal information respectively. (Appendix Chart 9)

**Conclusion (Questionnaire)**

For the first part, general internet information appears that respondents have the main objection of internet access for social networking (Facebook, Twitter, Instagram), which spends 1-4 hours per day.

For the second part, perceptive information and opinion of single gateway system usage from the surveys show that most respondents know single gateway system, after current news via social media suggests single gateway affect government in the positive way, which is the easiest way that investigate criminal or people who commit the internet crime. For the negative way, single gateway might be the most private violation. Generally, they do not agree to bring single gateway to Thailand. Some of them hesitate because they do not know enough detail to decide and have suggestion about single gateway that government should have all education about country effects in both short and long period before bring it in real.

In general information, respondents is female, which make up 53.2% and 46.8% is male. In addition the age is between 21-30 years old. Their education are bachelor degree. For their career found that most of them are students who not evolve about IT field.

### **Conclusion**

At this time, technologies are instruments driving the world forward. One of them is the internet that being used widely. The internet is an important part of creating more competitive ability in business sector. Also, it is used for existing business optimization. For current human's daily life, the internet is associated with making our lives more comfortable.

Internet connection must use gateway. Gateway has two systems that are single gateway and multiple gateway. Almost countries in the world including Thailand use multiple gateway. Multiple gateway is a channel for the transmission of multiple data. There are several network providers. Recently, the Thai government is considering an issue about using single gateway instead of multiple gateway leading to the resistance from many people. So, the group is interested in study the pros and cons of two systems of gateway including the opinions of experts and people in Bangkok whether single gateway system is suitable for current Thailand or not.

From the study about pros and cons of the two gateway systems, the studied information shows that both systems have advantages and disadvantages depending on the environment and social contexts in each country. For example, single gateway is suitable for China while multiple gateway is more suitable for Singapore. From studying the environment in Thailand and reviewing the opinions of some experts and 300 people in Bangkok area, the results present the majority opinion indicating that Thailand is not appropriate to use single gateway because this system will negatively impact on social, economics and politics. Also, the use of single gateway will cause infringement of personal liberty, insecurity of secret business information, restriction of some information approaches, doubtfulness of international investors and decrease of internet speed. Our result is according to the result from " Maejoe Poll " that surveyed the opinions of people in Chiang Mai province about single gateway, that means surveyed majority opinion disagree with using single gateway instead of multiple gateway.

From the all above results, our group thought that the environment and context in various areas of the current country are still not appropriate to use a single gateway. By the way, if the single gateway needs to be used, the government will must to find the most suitable design and application for the maximum national benefit.

### **SUGGESTION**

In our opinion, if the government wants to use single gateway for the future in Thailand, they will need to provide more the information of single gateway to people for making the decision themselves that this system is suitable for Thailand or not. Also, the government should do public hearing to find the way of the single gateway application. For people's confidence, the government must be transparent in the implementation that means every process can be checked. By the way, the government may find the other methods to screening and monitoring of illegal information for the national stability and security.

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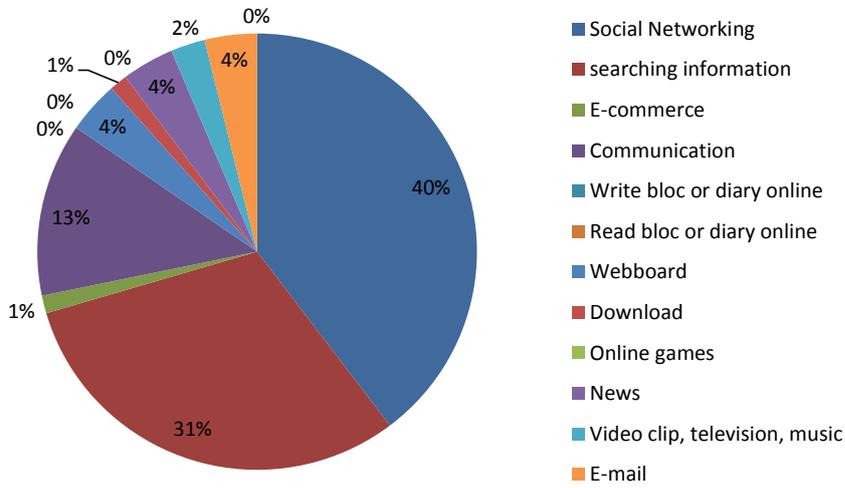
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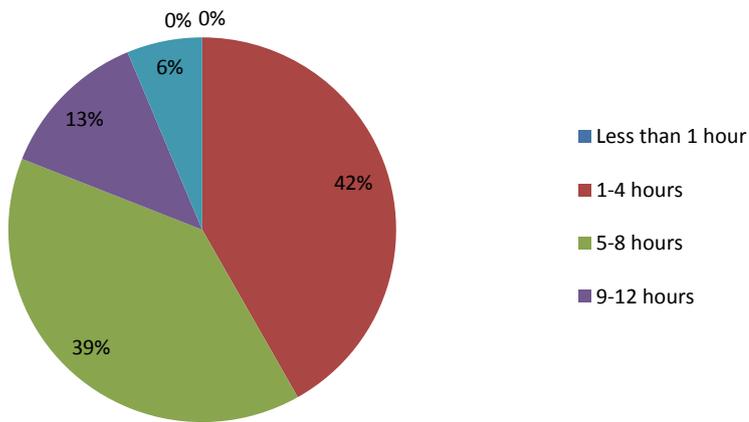
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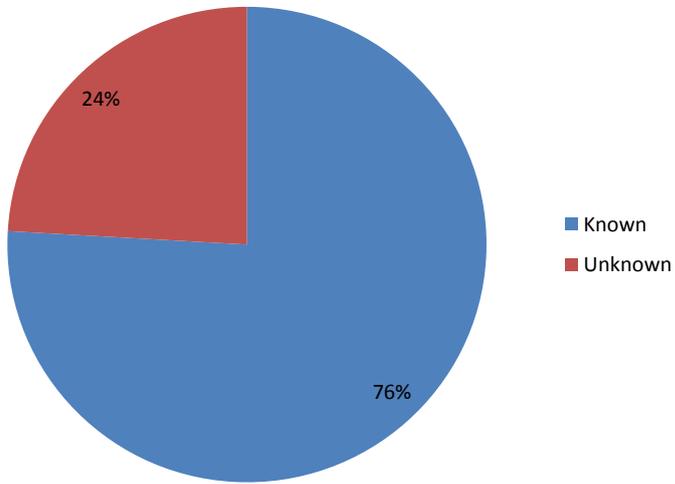
**APPENDICES**



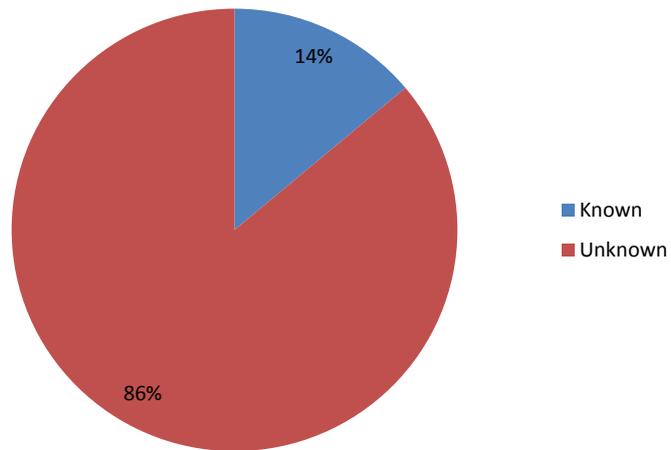
**Chart 1 : Main object of your internet access**



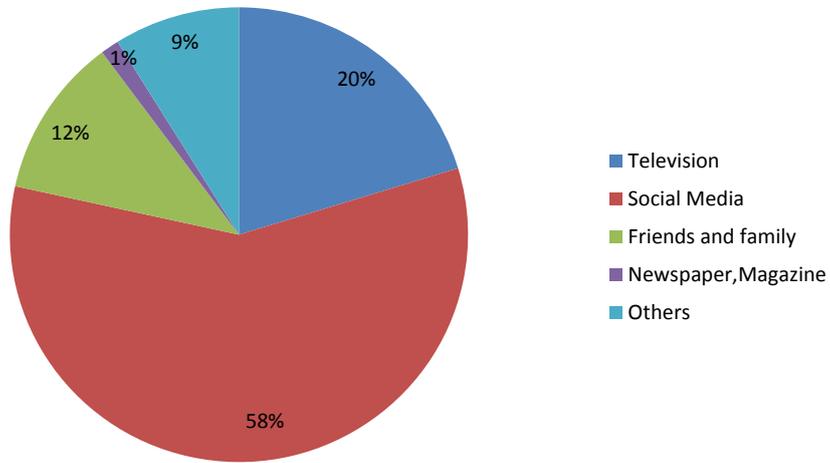
**Chart 2 : Average period of internet access (hour) per day**



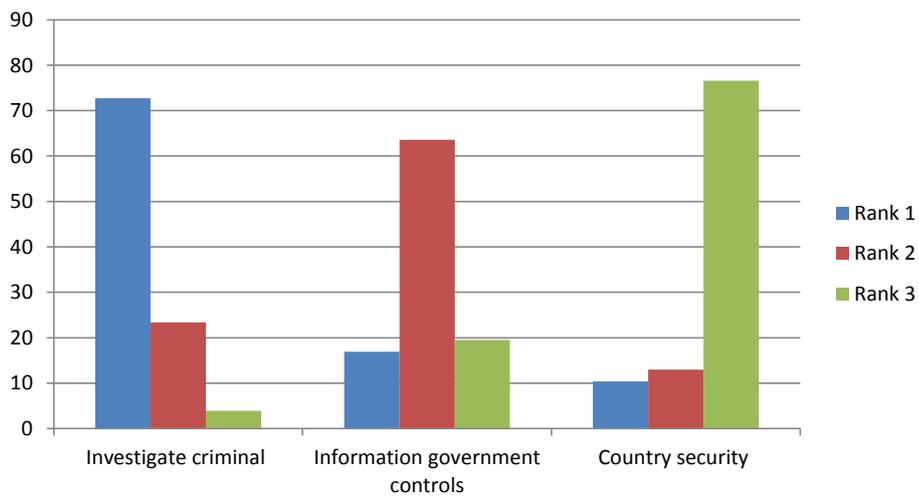
**Chart 3 : Single gateway awareness**



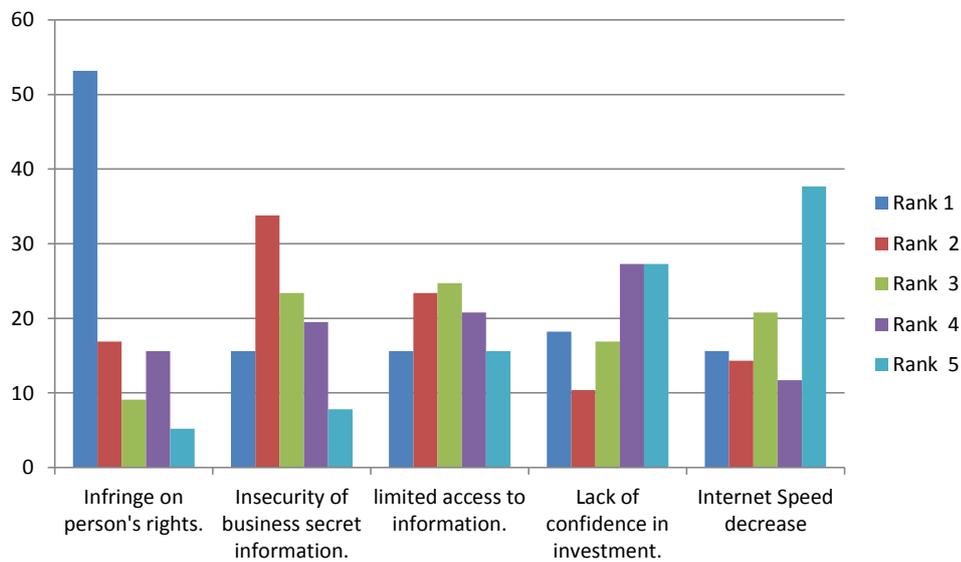
**Chart 4 : Single gateway awareness before it happened in current event**



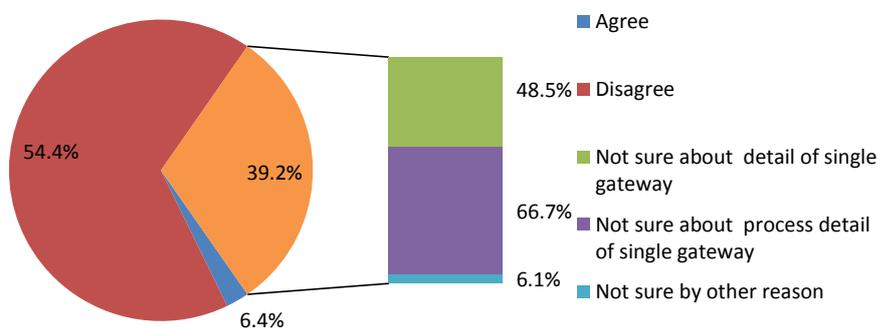
**Chart 5 : The Channel that people know single gateway**



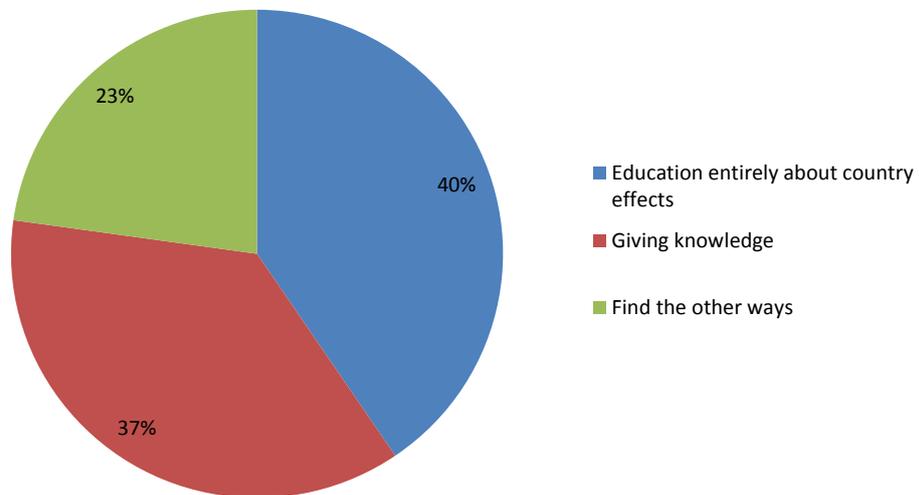
**Chart 6 : The positive effect if Thailand start using single gateway in internet management information**



**Chart 7 : The negative effect if Thailand start using single gateway in internet management information**



**Chart 8 People opinion about using single gateway in Thailand**



**Chart 9 : Suggestion to government about Single Gateway system**

## THE IMPACT OF RATIONAL AND EMOTIONAL ADVERTISING APPEALS ON ELECTRONIC WORD OF MOUTH (E-WOM): A CONCEPTUAL FRAMEWORK

Comment [UP12]: No author

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**Jongsawas Chongwatpol**

NIDA Business School

### ABSTRACT

The effectiveness of electronic word of mouth (eWOM) communication has attracted the attention of the marketing practitioners; however, a few studies focus on the impact of advertising appeals on eWOM especially in video online advertising context. The purpose of this study is to investigate the impact of rational and emotional advertising appeals on eWOM. The data is collected from the university students by using questionnaires. The experiment study will set up by using product involvement as high and low product involvement with difference product categories. Lastly, structural equation modeling is employed to analyze the data.

### INTRODUCTION

Over the last decade, internet has been the cornerstone of the marketing relationship. Internet provides consumers with an easy access to other consumer comments about products, brands, or companies and to share their experiences (Duan, Gu, & Whinston, 2005). Social networking sites become one of the most popular social communication channels. It is connecting millions of consumers around the world. In Thailand, Facebook is in the lead with 30 million subscribers, followed by YouTube at 26.2 million subscribers and twitter and Instagram at 4.5 million and 1.7 million respectively (Vichienwanitchkul, 2015).

Many social network websites attempt to explore the innovation of electronic word of mouth (e-WOM) advertising strategies for users to sharing information, experiences, and product reviews. Advertisement and electronic word-of-mouth play an important role in everyday life and are the key strategies that companies use to achieve commercial benefits from virtual communities.

Advertising becomes one of the most important commercial activities in the modern competitive environment by attracting the target consumer's attention and also generating consumer interest and educates about product benefits (Aaker, Batra, & Myers, 2000). With the progress of technologies rapidly day by day, advertising media is widely used in many form. With a larger and heavily segmented audience in social network in today's, marketers and advertisers believe that online advertising have a role in creating brand awareness and image (Frankel, 2010).

Online video is quickly becoming one of the newest trends in media. A recent study from Online Publishers Association shows that 69 percent of online users have watched a video online, and 24 percent do at least once a week (ByteCaster, 2015). According to a surveying 120 U.S. advertising agencies from BrightRoll, 72 percent of advertising agencies say online video advertising is effective. The survey pointed that consumer interest in video advertising has grown 88.6 percent during the last three years (Gesenhues, 2015). The estimation from eMarketer indicated that US digital video advertising spending will nearly double in only four years, climbing from \$4.14 billion in 2013 to \$8.04 billion in 2016 (eMarketer, 2013). According to the Digital Advertising Association (Thailand), Digital advertising spending in 2015 is forecasted to jump by two-thirds to a record 9.9 billion baht (\$277.47 million) in Southeast Asia's second-largest economy (Khetiya, 2015). Moreover, the report of Online Publishers Association shows that 52% of viewers take action in response to such online video advertising, including visiting the company website, sharing the video with other, or purchasing. Thus both marketers and scholars are interested in online video advertising.

Apart from the growth of online video advertising, electronic word-of-mouth (eWOM) has been a powerful marketing force in recent years. eWOM is also a rapidly growing in the marketing and consumer environment (Chu & Choi, 2011; Henning-Thurau, Gwinner, Walsh, & Gremler, 2004). eWOM is defined as “ any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the internet” (Henning-Thurau et al., 2004). In the past, word of mouth has never been considered a communication mix element, but now internet allows users to mix communication elements together.

This study integrates the traditional video advertising and eWOM which called “Social video online advertising”. When users receive the online video advertising, they may share these video advertising to the others, or post some recommendations which can be positive or negative messages, or click like on the video advertising. Moreover, some social network sites such as Facebook allow users to see the number of comments, number of users who click like, views advertising and share advertising.

Audiences receive too many video ads per day but the issues are on how consumers are using online video and their reactions to advertising, and what advertising factors make audiences to spread the message to the others. Sometimes the contents of advertising have a great impact on the social more than what advertiser or company have expected. For example in mid-2015, DTAC launches new video ads to promote customers to exchange their old smartphone for an iPhone 6 at a discount. The advertising shows people embarrassed and ashamed for not owning iPhone and they try to hide their non-iPhone handsets. The advertising concluded by saying “It’s time for you to change your handsets to iPhone”. After on air the advertising, android smartphone owners angered and insulted by DTAC. Within 17 hours, 131 comments are spread in pantip.com community. This topic becomes a hot topic in the social. The ad went live on Friday and on Sunday night DTAC’s clip of the ad on Youtube got 1,250 dislikes and 58,000 views. On Monday afternoon, DTAC issued the statement to apologizing about the advertising and stopping showing this advertising (Femquest, 2015).

Advertising appeal is an important factor influencing audience’s perception. Kolter (1991) classified advertising appeals into two categories: rational and emotional appeals. Moreover, a little is known about which advertising appeals make video online advertising engaging and how they influence audiences’ forward or share message. To fulfill this gap, the aim of this study is to explore the influencing of video online advertising on eWom by focusing on the advertising appeal contents, specifically in the comparison between high and low product involvement.

## RESEARCH GAP

Few of researches have compared rational appeal and emotional appeal especially in video online advertising and have determined which one creates significant effects on advertising attitude more effectively, and consequently how these appeals affect the electronic word of mouth (eWOM). To fulfill this gap (See Figure #1), this study will explore the influence of the rational advertising appeals and emotional advertising appeals on audience attitude and eWOM.

The **purpose** of the study:

The purpose of this study is to investigate the impact of rational and emotional advertising appeals on e-WOM. This study also seeks to answer the following research questions:

- 1) How audiences response on video online advertising?
- 2) How advertising appeals influence audience in forwarding or sharing the message?
- 3) Between rational and emotional advertising appeals, which one creates significant effects on audience attitude and e-WOM?
- 4) How advertising appeals vary by product involvement?

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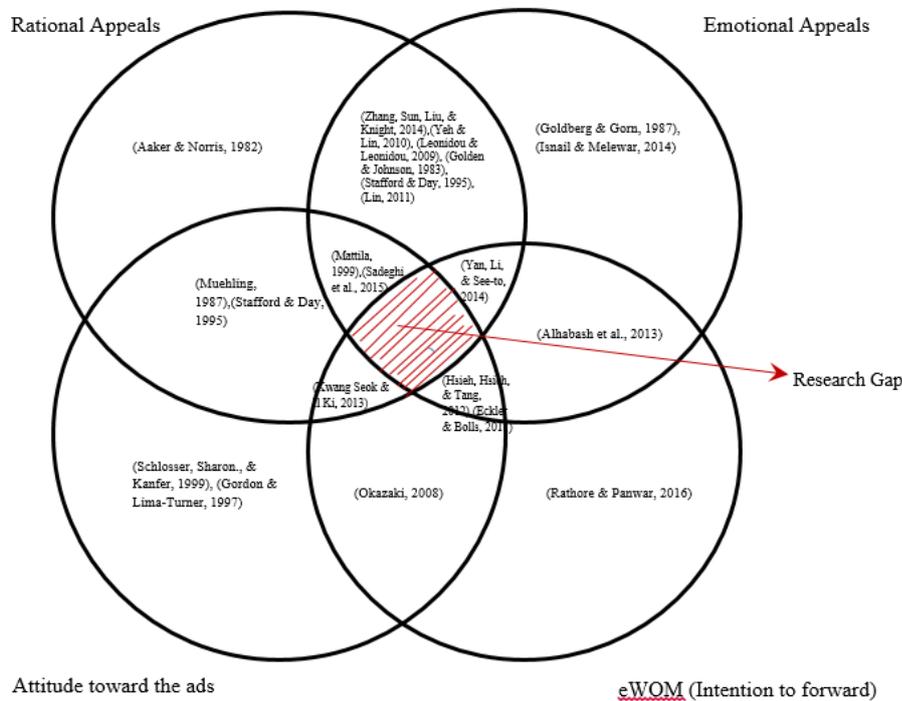


Figure 1: Research Gap of this Study

## LITERATURE REVIEWS

### Video Online advertising

The American Marketing Association (2015) defines advertising as “The placement of announcements and persuasive messages in time or space purchased in any of the mass media by business firms, nonprofit organizations, government agencies, and individuals who seek to inform and/ or persuade members of a particular target market or audience about their products, services, organizations, or ideas” (American Marketing Association, 2015). Advertisements are a kind of persuasive communication that offers product information to every consumer. Advertising is not only attracts the target consumer’s attention but also generates interest and educates the consumers about product benefits and positioning (Aaker et al., 2000). The challenge of generating interest and educating consumers become especially relevant in the domain of online advertising. With a larger and heavily segmented audience in social network in today’s, marketers and advertisers believe that online advertising have a role in creating brand awareness and image (Frankel, 2010).

Online advertising refers to those paid for spaces on a website or e-mail such as banner ads, skyscraper ads, dynamic media, pop-ups, video ads, etc. (Strauss & Frost, 2008). Danaher & Mullarker (2003) examine factors that effect on recall and recognition of banner advertising. However, there are a few studies about video online advertising especially the factors that effect on consumer's curiosity and consumer's memory.

Social online video advertising is the combination between the tradition video advertising that we can watch from television and online social network. Online video advertising gradually play an important role in the cyberspace now. Many social websites as Facebook attempt to pursue the user to create

their advertising and point out the benefit that users may receive when advertised with Facebook (Facebook, 2015).

### **Advertising Appeals**

A video ad is a video clip about a product. They appear in different forms or a combination of forms comparable to television commercials as well as clips composed by text, animations or images (Mei, Hua, Yang, & Li, 2007). In order to understand the characteristics of advertising, the examination of advertising appeals is an effective way to investigate the characteristics of advertising (Jeon, Franke, & Huhmann, 1999; Moon & Chan, 2005). Advertising appeal is the theme of an advertisement (Kolter, 1997). To make the audience receive a necessary message, advertisers have to put some driving power in to message. This driving power is appeal. Kolter (1997) divided advertising appeal into rational and emotional appeals.

Kolter (1997) divided advertising appeal into two parts: (1) rational appeal, which informs consumers of the core values of the product such as practicability, function, and quality; and (2) emotional appeal, which is aimed at stimulating a purchase based on an emotional response to context and image.

Informational or rational appeals focus on the consumer's practical, functional, or utilitarian need for the product or service and emphasize features of a product or service and/or the benefits or reasons for owning or using a particular brand. The content of these messages emphasizes facts, learning, and the logic of persuasion (Belch & Belch, 2014).

Emotional appeal is the stimulation of consumers' purchase intentions by arousing their positive or negative emotion (Kolter, 1991). Emotional appeals relate to the customers' social and/or psychological needs for purchasing a product or service. Many consumers' motives for their purchase decisions are emotional, and their feelings about a brand can be more important than knowledge of its features or attributes (Belch & Belch, 2014).

Advertising scholars have studied and debated the effectiveness of these two approaches. For example, the study of Aaker and Norris (1982) showed that informational appeals resulted in higher effectiveness ratings than emotional appeals. Golden and Johnson (1983) found that thinking advertising provides more information than emotional advertising and resulted in higher purchase intention. Moreover, the study of retail service by Stafford and Day (1995) pointed that rational appeals are superior to emotional appeals for two different types of services. Rational or informative advertising appeals may help reduce some of the uncertainty often associated with the purchase services.

Other scholars have suggested that appeals generating an emotional response result in more positive reactions (Goldberg & Gorn, 1987). BÜlbÜl and Menon (2010) investigated the power of emotional appeals in advertising by using the distinction between abstract and concrete affect and the result showed that concrete affective appeals drive behavioral intentions more strongly in the short-term perspective, whereas abstract affective appeals appear to drive behavioral intentions more strongly in the longer-term perspective (BÜlbÜl & Menon, 2010).

Moreover, more researchers point that the effectiveness of appeal depends on product type (Golden & Johnson, 1983; Johar & Sirgy, 1991). The advertising appeals should match the product type (Johar & Sirgy, 1991).

### **Electronic word of mouth (eWOM)**

eWOM is an extension of traditional word of mouth (WOM). Traditional word of mouth is defines as "Oral, person to person communication between a receiver and a communicator whom the receiver perceives as non-commercial, concerning a brand, a product, or a service" (Arndt, 1967). Moreover, in the other definition as Dwyer (2007) defined WOM on the social aspect. "Word of mouth is a network phenomenon: People create ties to other people with the exchange of units of discourse (that is, messages) that link to create an information network while the people create a social network" (Dwyer, 2007).

WOM plays an important role in the formation of consumer opinions, over the past decade it becomes a more powerful source due to the technological explosion of informal communication channels such as the internet, instant messaging, blogs (Allsop, Bassett, & Hoskins, 2007). The interactive structure of web makes the consumer more active. Users can choose the website that they would like to review

or transfer information to the others (Korgaonkar & Wolin, 1999). Therefore, e-WOM can be defined as “any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet” (Henning-Thurau et al., 2004). e-WOM communication can take place in various settings. Consumers can post their opinions and reviews about a product on weblogs, social networking sites, discussion forums, review websites, etc. (C. Cheung & Thadani, 2010).

E-marketers are constantly in a process to exploit this feature of social media marketing because the trends in viral marketing relies on the evolution of streaming video technology as well as the popularity of video sharing website such as Youtube and Google Video (Lian, 2011)

For consumers, it is important to listen to the opinions, advices of the others before their take any actions. In the traditional WOM, family members and friends may influence their decision making. In this era, consumers may obtain the information they want by being in interaction with the consumers who they do not know but with whom they share similar interests in online WOM. Now, almost every website that makes online sales provides the opportunity of writing or reading online customer review to the consumer and also provides the opportunity of receiving or presenting information and advice. While making the decision, many consumers are influenced from these comments and ratings, and adopt a positive or negative attitude for the product. In this study, e-WOM will explore in the term of intention to sharing.

#### **The impact of advertising appeal on advertising attitude and e-WOM:**

Rational and emotional appeals are more effective in advertising (Albers-Miller & Stafford, 1999). Advertising appeal refers to packaging products, services, organizations, or individuals in a variety of ways that clearly deliver a certain benefit, stimulation, identification, or reason to explain what consumers are thinking about and why they buy products (Kolter, 1991). Advertising appeal is defined as suppliers’ application of psychologically motivating power to arouse consumers’ desire and action for buying while sending broadcasting signal to change receivers’ concepts of the product (Schiffman & Kanuk, 2007). Therefore, advertising appeal is applied to attract the consumer’s attention, to change the consumers’ concept of the product, and to affect them emotionally about a specific product or service (Belch & Belch, 2014; Schiffman & Kanuk, 2007).

The examination of advertising appeals is an effective way to understand the characteristics of advertising (Jeon et al., 1999; Moon & Chan, 2005). Advertisers need to determine how a message should be delivered to the target audience. Advertising appeal is the approach that advertisers draw consumer’s attention to message. An advertising appeal can also be viewed as “something that moves people, speaks to their wants or needs, and excites their interest” (Belch & Belch, 2014). Mueller (1987) defined an advertising appeals as any message in advertising designed to motivated consumer behavior (Mueller, 1987).

The advertising appeals consists of content indicating the targeted consumer’s interest, goals, or problem (Moon & Chan, 2005). The advertising appeals can lead consumer exciting, and create wants and needs for the product or service that marketers would like to promote. Therefore, the advertisers are trying to not only get the attention of their audience, but also persuade them to act.

Attitude is an essential concept in psychology, but it is also widely applied in the social sciences and marketing. Attitudes are psychology tendency accrued from learning and continual evaluation towards a subject (Schiffman & Kanuk, 2007). (Fishbein & Ajzen, 1975) defined attitude as a learning orientation based on which state of content like or dislike is generated towards a certain object. Kolter (1991) stated that attitude refers to an individual’s long-lasting perceived evaluation of like, dislike, emotional feeling, and action intention towards an object or idea.

According to Belch & Belch (2014), advertising appeal is applied to attract consumers’ attention. Advertising appeal aims at influencing consumers’ attitude and emotions about a related product or service. It is classified into rational and emotional appeal (Belch & Belch, 2014). Schiffman & Kanuk (2007) pointed that advertising appeal may change consumers’ attitude by using broadcast messages to trigger consumers’ inner momentum psychologically. Consumers are likely to echo and recognized the advertising messages and further change their attitude towards the advertised product.

H1: Perceived rational appeal advertising contents is positively related to consumers’ attitude toward received video online advertising.

- H2: Perceived rational appeal advertising contents is positively related to consumer e-WOM.
- H3: Perceived emotional appeal advertising contents is positively related to consumers' attitude toward received video online advertising.
- H4: Perceived emotional appeal advertising contents is positively related to consumer e-WOM.

**The impact of advertising attitudes on e-WOM**

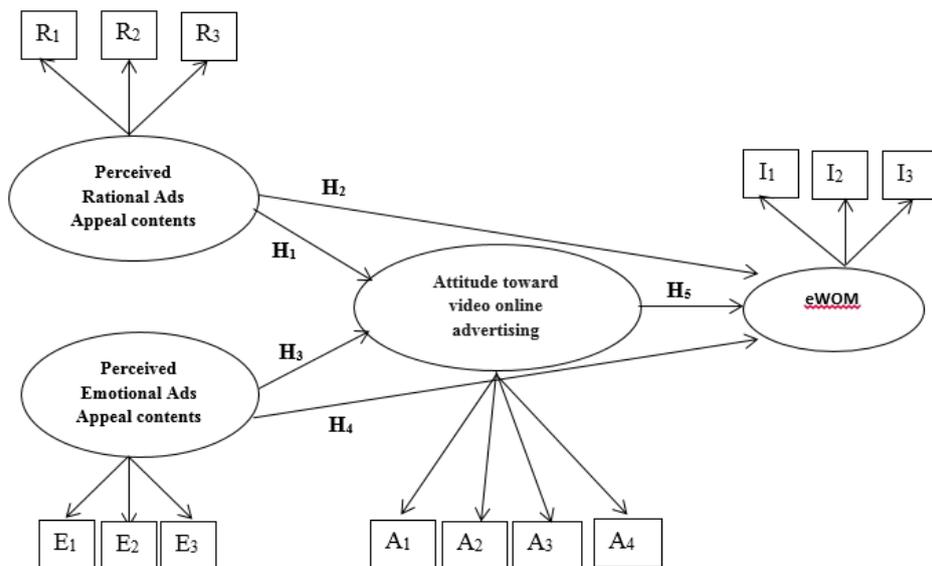
Attitude is represented as a psychology tendency, expressed by evaluating a particular entity with some degree of like or dislike (Schiffman & Kanuk, 2007). In advertising, attitude toward the advertisement indicates the response of consumer in a favorable or unfavorable manner to a particular advertising stimulus during an exposure circumstance (Belch & Belch, 2014).

Information can present in various forms such as in form of video online, text, image, and sound. The recipient's attitude toward the video online likely influences to his or her forwarding intention. According to Phelps et al., when people receive a viral marketing e-mail, they enter a four-stage process as receipt, decision to open, reading the message, and decision to forward (Phelps, Lewis, Mobilio, Perry, & Raman, 2004).

- H5: Attitude toward received video online is positively related to consumer e-WOM.

**METHODOLOGY:**

This research investigates the causal relationships between independent factors as appeal advertising (rational and emotional) and dependent factors as attitude toward the online advertising and e-WOM which shown as figure 2.



**Figure 2: The model of advertising appeal of video online advertising on e-WOM**

Video Chosen:

The effectiveness of the advertising **appeal** is closely related to product types (Golden & Johnson, 1983; Johar & Sirgy, 1991). Different advertising should be applied for different product categories (Albers-Miller & Stafford, 1999; Johar & Sirgy, 1991). Firstly, this study will focus on both high and low involvement products and then will choose the advertising with difference product types. The

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video online advertisings are chosen from Youtube or Facebook. The advertisings are shown before starting the process of experiment and the experimental process is presented as follows:

Stage 1: The researcher will give 10 minutes for each participant (aged between 15 – 24 years old) to list the video advertising that they watch on online or they received from their social network community groups.

Stage 2: In this stage, we would like to test the participant perspective about the product involvement. Therefore, all data that collected in stage 1 will be classified as either high or low involvement by using the convenient samples (university students, aged between 15 – 24 years old). Afterword, 3 product types are chosen for each product involvement group. Lastly all these advertising are evaluated by advertising expertise. The selected advertising videos must contain both rational and emotional advertising appeals.

### DATA COLLECTION AND DATA ANALYSIS

In Thailand, internet user profile shows that most of the users who access internet aged between 15 - 24 years old and 60.8 percent of users are the undergraduate students (NETEC, 2014). Therefore, the data used in this study is designed to collect from the student in university by using questionnaires. The respondents are the student who access on internet in everyday and also account in social networks sites as Facebook. The descriptive analysis will be applied in analyzing the demographical data of the respondents. The part of the causal relationships between independent factors including both rational and emotional advertising appeal and dependent factors (attitude toward the online advertising and e-WOM) will be analyzed by using structural equation model (SEM).

Table 1: Constructs, Definitions, and Measurement Indicators

Constructs	Definitions	Measurement	Questions	References
Perceived Rational	Rational appeal focuses on the benefits or attribute that consumers receive in an advertisement.	R <sub>1</sub> – Valuable R <sub>2</sub> – Informative R <sub>3</sub> – Helpful	This video advertising is Valuable. This video advertising is informative. This video advertising is helpful.	(C. M. K. Cheung, Lee, & Rabjohn, 2008)
Perceived Emotional	Emotional appeal focuses on the feelings or emotion that consumers receive in an advertisement.	E <sub>1</sub> – Happy E <sub>2</sub> – Interesting E <sub>3</sub> – Funny	This video advertising is happy. This video advertising is interesting. This video advertising is funny.	(Cline, Altsech, & Kellaris, 2003)

Table 1: Constructs, Definitions, and Measurement Indicators (Continued)

Constructs	Definitions	Measurement	Questions	References
Attitude toward received video online advertising	Attitude focuses on a learning orientation based on which a state of constant like or dislike is generated towards a certain object.	A <sub>1</sub> - Good thing A <sub>2</sub> – Like A <sub>3</sub> – Essential A <sub>4</sub> – Favorably	1) Overall, I consider video online advertising a good thing. 2) Overall, I like video online advertising. 3) I consider video online advertising very essential. I would describe my	(Wang & Shaojing., 2010)

			overall attitude toward video online advertising very favorably.	
eWOM	eWOM focuses on the sharing or forwarding the message or advertising to the others.	I <sub>1</sub> – Worth sharing I <sub>2</sub> – Recommend I <sub>3</sub> – Share	1) I think this video advertising is worth sharing with others. 2) I will recommend this video advertising to others. 3) I will share this video advertising to my friends through online social network.	(Chiu HC, Hsieh YC, Kao YH, & M., 2007)

## IMPLICATIONS

### Managerial implication

Currently, the advertising environment has become increasingly interactive, and the mechanism and effects of video online advertising have become critical managerial issues. This study presents a new advertising model which are applicable to the new advertising environment and can be used as a guideline for advertisers for developing video advertising on social media. Moreover, advertisers or marketers can achieve success with both rational and emotional appeals. Each has its place in the marketing toolbox. The challenge is to know which is right for your products or services. A right match may enhance consumers' processing of the advertising, achieve a high level of advertising effectiveness, and drive positive purchase behavior. Companies may refer to the results obtained in this study for their future considerations in developing an advertising appeal strategy.

### Research Knowledge implication

Video online advertising is quickly becoming one of the newest trends in social media, but a little is known regarding which advertising appeals make video online advertising engaging and how they influence audiences' perception in forwarding or sharing messages in the social media. This study explores the influencing of video online advertising on e-WOM by focusing on the content of advertising appeals by comparing product categories between high and low products involving in difference product or service types. Therefore, the result from this study can help scholars to expand their knowledge about the power of rational and emotional advertising appeals in the different product categories and product types especially in video online advertising.

## LIMITATION

The first limitation in this study is toward the convenient samples through university students. Although university students aged between 15-24 years are the most of internet users in Thailand; however, they may not represent other older and more affluent segments. It may say that university students are relatively homogenous in terms of their age, educational level and income so this similarity can reduce the potential effects of these potential covariates in the results. The second limitation is that this study is conducted in Thailand which has its unique social and cultural characteristics. The language is also one of the limitations, because the questionnaire has to translate from English to Thai and also has to translate back to English. Therefore, it may affect the content validity. In addition, this current study only focuses on the rational and emotional advertising appeals that impact e-WOM. Therefore, the next study may add more factors that influence eWOM characteristics such as advertising characteristics, advertising design, and etc.

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## THE ADOPTION OF MOBILE COMMERCE SERVICES IN HO CHI MINH CITY: FROM CUSTOMER'S PERSPECTIVE

Comment [UP15]: No author

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### ABSTRACT

Due to the rapid development of digital devices, followed by the significant increase in mobile transactions, studying the consumers' adoption of Mobile Commerce (M-commerce) services has become more important recently. This study aims to investigate the behavioral intention of customers in using M-commerce services by exploring factors influencing their adoptions of those services. The research model is adapted from Technology Acceptance Model with the responses of 298 M-commerce users in Vietnam. Perceived Ease of Use and Perceived Usefulness are found to have strong impacts on the Attitudes Toward Using M-Commerce Services (ATMC); and there is an essential relationship between ATMC and Behavioral Intention. Following the results are the several recommendations for further development of the Vietnamese mobile industry.

**Keywords:** M-commerce, Perceived Ease of Use, Perceived Usefulness, Perceived Trust, Perceived Risk

### INTRODUCTION

In recent years, modern technologies have an essentially strong effect on the society. Specifically, the internet has enhanced trade and communication between organizations and their customers. Since the development of wireless technologies and telecommunication infrastructure, mobile communications have been improved to meet consumer demand. Thanks to innovative technologies and the entry of new manufacturers, the mobile technologies have been able to reach mass users rapidly. By September 2012, there have been over 190 networks operating 3G technology; and approximately 50 nations have been fully covered by 3G. Consumers now can use a digital device to implement all common e-commerce transactions such as e-banking or online shopping. In general, M-commerce is expected to create a new era of business processes, thereby strengthening online business activities.

Companies use M-commerce to provide services and communicate with customers. Recently, many companies in Vietnam have begun to apply M-commerce to provide better services for smartphone users. Besides, the wireless technology becomes now more popular in Vietnam; it allows customers to access the internet in many places by using smartphones. Services frequently used by customers are online music and video, mobile TV, data transmission, banking online transactions, online purchasing and so forth. Therefore, understanding the behaviors of users towards M-commerce applications and services has been more attractive researchers, marketers, and players in the industry. From the perspective of players in the industry, studying more about the needs of customers is essential for the quality improvement process. From the perspective of researchers, it is necessary to explore the factors affecting customers' decisions in switching from the traditional services to the new M-commerce.

This paper aims to investigate the key forces affecting the emergence of M-commerce technology in Vietnam. Moreover, we are trying to find out the majority of Vietnamese customers' opinions about the current M-commerce market, the usage of it, and the level of satisfaction in the society for this new and potential technology. We develop the TAM model by integrating with risks and validated factors to determine customers' adoption of M-commerce.

As a result, this could provide a good basis for Vietnamese companies to improve their strategies basing on the understanding of customers' insights and realistic data; thereby increasing their market

shares. Finally, the research is expected to explore the customers' insights; thereby suggesting possible recommendations for improving M-commerce services.

The remainder of this paper is structured as follows: the first part looks at the overview of M-commerce and related technology; the second part shows detailed analysis of related factors contributing to the customers' adoption of M-commerce through quantitative approach; and the last part includes suggestions and recommendations for companies in the industry to establish suitable strategies.

## LITERATURE REVIEW

E-commerce, which is directly related to M-commerce, is firstly considered. There are numerous definitions, which illustrate, describe, or emphasize on different perspectives of E-commerce. To the point of Zwass, 2001, E-commerce is comprised of main activities that include providing business information, building and maintaining business relationships, and implementing business transactions by using means of telecommunication networks. Due to the penetration of the Internet, E-commerce, which was limited to several banking activities and legal financial issues in the past, now has become a significant part of people's daily activities. In its development, E-commerce has brought greatest potential applications through appropriate business transactions (McIvor et al., 2003).

M-commerce is considered as a subset of E-commerce. There are several similarities between E-commerce and M-commerce. Both of these two create a virtual business world; however, in this study, M-commerce is identified as a unique business opportunity with its features and applications, not just an extension of Internet-based E-commerce (Ding Xiaojun, IJJIMA Junichi, Ho Sho, 2004). M-commerce is also referred to Mobile Electronic Commerce (Zhang et al., 2003). M-commerce is considered as electronic transactions implemented by using a wireless network and a mobile device, which could be a mobile phone or a Personal Digital Assistants (PDAs). Mobile Commerce requires consistent, clear, and understandable regulations as all parties involved do not essentially know each other and there is barely face to face meeting while reaching an agreement (Wirtx, 2001). Personal contact is infeasible due to a large number of attendees – consumers and enterprises - in the market. Thanks to the facilely and fairly cheap access to the telecommunication network, and the cross-regional origin of applications, the use of M-commerce services has steadily become popular.

M-commerce is known as “the mobilization of knowledge” thanks to its unique features including lower barriers (Anckar et al., 2003), ubiquity on the move, personalization, flexibility, and localization, which are not found in the traditional E-commerce. Therefore, with the above features, M-commerce has been providing consumers with added values and benefits (Boadi et al., 2008). Watson et al. (2003) claimed that the value supplied by M-commerce is over, above, and beyond traditional E-commerce. M-commerce is at the cutting edge of technology and is an interesting field to study because of its fair innovation, fast-paced growth, and potential applications (Saljoughi, 2002). M-commerce includes two major features: mobility and broach approach. Via personal mobile devices, enterprises can reach their customers, and users can execute their business transactions at real time (Gunsakaran and Ngai, 2005).

Thanks to the commercial usage of wireless technology, M-commerce has brought a large number of opportunities and challenges for enterprises. M-commerce allows E-commerce business to expand the traditional limitations of a fixed-line personal computer, increasing the overall market for E-commerce. According to Durlacher (2002), Newel and Lemon (2001), M-commerce has a unique value proposition when it could quickly provide personalized access to goods and services. It allows consumers and entrepreneurs to build connectivity by transcending time and place, increasing accessibility, and expanding their social and business networks (Liu et al., 2003). Furthermore, the access to M-commerce occurs while using mobile communication networks, which makes the availabilities of these services independent of users' geographic locations (Stanoevska-Slabeva, 2003). Since the mobile Internet has more advantages over the stationary Internet regarding mobilization, it is much easier to approach the featured applications of M-commerce (Lee & Benbasat, 2004).

In general, M-commerce provides potential applications and more opportunities for enterprises and customers to execute various commerce-related activities without the barriers of time and location. These transactions happen with the undeniable support of the below kinds of wireless networks.

#### **POPULAR TYPES OF M-COMMERCE SERVICE**

**Mobile Advertising.** Mobile advertising is described as the activities introducing and supplying goods, services, and ideas to customers with time-and-location sensitive, and through personalized information (Bamba & Barnes, 2007). Advertisers can send messages that are classified as “push” or “pull” model of marketing (Barnes, 2002) to their customers depending on interests, needs, personalities of each (Varshney and Vetter, 2002).

**Mobile Payments.** The term “Mobile Payment” is considered as payments executed via hand-held mobile devices to buy goods and services. Mobile payment services are often seen as an intermediary between customers and enterprises; it allows customers to make payments without directly interacting with the service provider. Additionally, Kumar (2004) stated that this feature makes it a potential E-commerce and M-commerce applications. Heijden (2003) identified mobile payments as an agreed or new payment system, which allows finance-related activities to be implemented securely over a mobile network. Besides, the mobile phone is believed to take the place of smart cards as a means of payment once mobile phone manufacturers embed chips, allowing customers to store value or guarantee authorization (Kumar, 2004). As a result, the number of payment systems has been risen effectively serving the needs of paying for goods and services via mobile devices (Nambiar & Lu, 2005).

**Mobile banking.** Barnes and Scornavacca (2004) claimed that mobile banking is simply explained as a medium whereby a consumer can execute his transactions with a bank through data communications via a mobile device. Confirmation of direct payments, stock trading, or transactions between accounts could be performed via this method.

#### **A REVIEW OF ADOPTION MODEL**

David (1989) developed TAM to analyze the relationships among emotions, cognitive, and applications of technology (Sun Quan, 2010). This model presents a conceptual model and a theoretical foundation, which helps explain how external variables have an impact on the inner beliefs, the behavioral intention, and the attitudes of users. By analyzing the factors affecting those variables, an explanation of new information technology acceptance would be given (Sun Quan, 2010).

Two beliefs suggested in this model considered instrumental in determining the variance of the intention to use a system are Perceived Ease of Use (PEU) and Perceived Usefulness (PU). TAM hypothesizes that PEU and PU mediate the relationship between external factors and the intention to use a particular system (Venkatesch & Davis, 2000). Therefore, the user’s beliefs on new information technology are determined by PEU and PU, which then form their attitude toward the technology and their acceptance. The origin of this model includes PEU, PU, the attitude toward use, BI, and the actual system usage.

The TAM has been popular, well developed, and considered as a fast and low-cost model. A number of prior studies adopt TAM to research on users’ behaviors and their adoptions of new technologies in varying fields. Lin and Lu (2000) employed the TAM to research on the usage of website pages. In the study, this model helped mediate the behaviors of usage on the Internet. Similarly, Heijden et al (2003) discovered the factors affecting customers’ intentions to use M-commerce services by applying TAM. Luarn and Lin (2005) used TAM model in the study about predicting BI of customers in M-banking services. On the purpose of studying factors which influence Singaporean’ attitude toward M-commerce services, Yang (2005) adopted this model as well.

Basing on other aspects of customers’ adoption, the TAM was extended and proposed by Gefen et al (2003), including a new factor – Trust – with the expectation in its ability to predict online consumers’ intention of purchasing in the research model. This factor was also added by Chen et al (2002) in their TAM-based model so as to research on customers’ acceptance of online stores. On the other hand, Mattila (2003) recognized the factor ‘risk’ plays an important role in customers’

adoption of M-banking. Besides, factors such as perceived risk (PR), perceived trust (PT), and perceived usefulness (PU) were identified by Lee et al (2007) in their research on the adoption of M-banking services.

### HYPOTHESIS DEVELOPMENT

The development of the research model is based on the extension of the TAM. Two external control factors perceived trust (PT) and (perceived risk) PR are added.

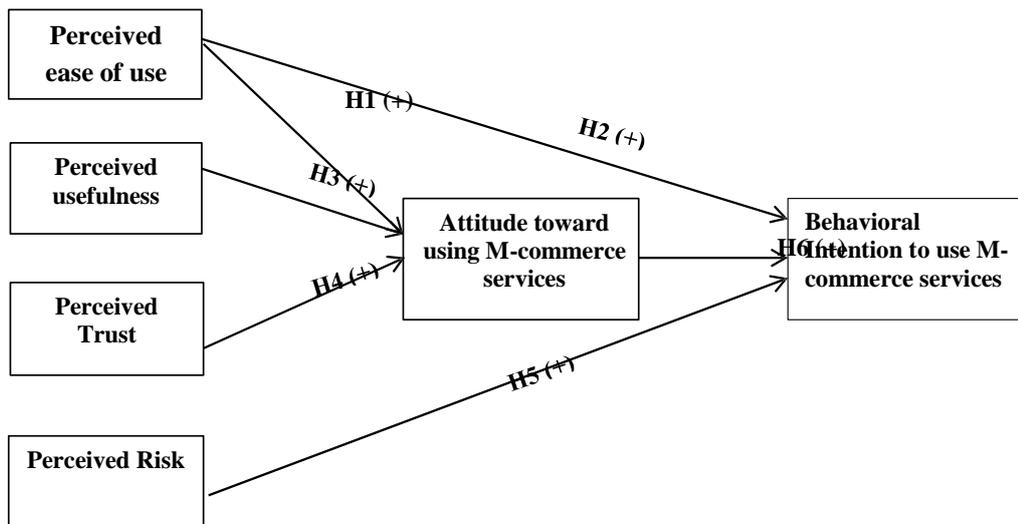


Figure 3.1: Proposed Research Model

#### Perceived ease of use (PEU) and the Attitude toward M-commerce service (ATMC)

According to Davis (1989), PEU is explained as the extent to which an individual believes in the freedom of effort when it comes to using a particular technology system. In other word, PEU is considered as the degree to which a person is aware of an information system which is easy to understand and use. In the mobile context, PEU refers to the level that a person feels easy and comfortable when using a mobile system. In a study, Lau (2002) came up with the conclusion that there is a correlation between PEU and the attitude towards using the online purchasing system.

In TAM model (Davis et al, 1989), PEU is a main instrument in deciding the attitude toward using a certain technology, which in turn determines the intention to use. Moon & Kim (2001) perceived PEU as an important premise of the attitude toward an online store. Their study showed that a person's beliefs on a particular technology system could be predicted; hence, the prediction of users' attitude toward the system is available, which helps predict the overall acceptance (Davis et al, 1989; Venkatesh & Davis, 2000).

Hypothesis 1: Perceived ease of use has a positive effect on the attitude toward using M-commerce services.

#### Perceived ease of use (PEU) and the behavioral intention (BI).

Many results of prior studies emphasized that PEU is significantly correlated with BI (Davis, 1989; Venkatesh & Davis, 2000). PEU affects BI via two common ways, directly and indirectly through perceived usefulness. Agarwal et al (2000) tested PEU as a predominant factor affecting the intentions to adopt a particular system. Additionally, Hong et al (2006) stated that PEU had an impact on BI in terms of mobile commerce services.

Hypothesis 2: Perceived ease of use has a positive effect on the behavioral intention to use M-commerce services.

#### **Perceived Usefulness (PU) and the Attitude**

As mentioned, one of key elements in TAM model is the perceived usefulness (PU). There are evidences for the significant impact of PU on BI provided by extensive researches in terms of information system (Davis et al, 1989; Venkatesh & Morris, 2000). Additionally, a person could estimate the outcomes of his or her behaviors when it comes to PU and could confirm his choices of behaviors thanks to the desirableness of this factor. Hence, a person's intention to accept and adopt an M-commerce service is affected directly or indirectly by PU. Yang (2005) found that PU has a positive impact on the attitude towards online enterprises and on BI. In addition, Chen et al (2002) figured out that PU was the major premise of the attitude toward an online enterprise and the behavioral intention to use its website. Besides, the perceived usefulness was proved to be a primary premise of the attitude toward the usage of m-commerce services or the adoption of the WAP-enabled cell phones (Hung et al, 2003).

Hypothesis 3: Perceived usefulness has a positive effect on the attitude toward using M-commerce services.

#### **Perceived Trust (PT) and the Attitude**

In terms of purchasing behaviors, Trust plays an important role to determine customers' attitudes and acceptance, which could be either positive or negative. Siau & Shen (2003) classified PT as two main types: PT of technologies and PT of M-commerce services. However, due to the early growth stage of M-commerce services, it is essential to standardize technical protocols, policies, standards of transaction, and payment system. PT is essential to form the acceptance. This research also proved that the construct to the TAM is 'Trust'. In the frame of online shopping, personal information and data security problems are main reasons for the lack of customers' trust. Similarly, trustworthiness and security to build customers' trust are essentially concerned in terms of M-commerce technologies, especially in the beginning stage. Errors and mistakes arising when managing transactions via wireless communication systems would cause suspicion of customers in the ability of firms to provide services as committed. Additionally, the importance of Trust is pointed out when it is believed to lower the concerns of customers about uncertainties and risks. Meanwhile, Gefen (2000) proved Trust also helps create expedient expectations of execution and other advantages. In this study, consumers' perceptions of Trust on M-commerce services and privacy. As a result, it is theorized that the customers with higher trust will tend to have more positive attitudes toward the use of M-commerce, which is presented in the following hypothesis:

Hypothesis 4: Perceived trust has a positive effect on the attitude towards M-commerce services.

#### **Perceived Risk (PR) and Behavioral Intention (BI)**

PR is defined by Pavlou (2001) as "A person's subjective expectation of experiencing a decrease in pursuing desired results". When consumers are suspicious about the quality of products and services, they might have more concern about the delivery and payment systems. Besides, PR might affect a person's adoption and decision to reject or adopt the technology. With the raising popularity of Internet applications, various kinds of risks might occur during the online transactions or activities. In fact, those risks were categorized into 6 kinds, occurring when costumers execute their online transactions: product performance, physical, financial, time, and psychological risks (Forsythe, 2003). Minimizing risks occurred during the transaction and building trust are key solutions of appealing and keeping strong relationships with customers (Verhagen & Tan, 2004). This is illustrated in the following hypothesis:

Hypothesis 5: Perceived Risk has a negative effect on behavioral intention to use M-commerce services.

**Attitude toward M-commerce service (ATMC) and Behavioral Intention (BI) to use**

Davis et al (1989) stated in his study that a person’s intentions and attitudes determine the actual usage of a particular system. The term ‘attitude’ is considered as a psychological element explained by assessing a particular person when it comes to the extent of positive feelings about technology applications. BI is defined as a cognitive element of attitudes and is influenced by them.

Hypothesis 6: Attitude toward using has a positive effect on behavioral intention to use M- commerce services.

**METHODOLOGY**

To examine the customers’ attitudes toward using M-commerce services in Ho Chi Minh City, the proposed research model as mentioned was applied and the quantitative method was clarified. The objective is to figure out if there is a truth underlying predictive assumptions (O’Neil, 2005) and to analyze the relationship between one construct with another which results in developing mathematical models and hypotheses (Creswell, 2003).

All theoretical variables comprised of multiple statements are measured by applying a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to obtain the data and evaluate responses of participants towards those statements. The research model in this study consists of six variables: Perceived Ease of use, Perceived Usefulness, Perceived Trust, Perceived Risk, Attitude towards use and Intention to use. In the questionnaire, the respondents point out the level of their agreement with each statement by utilizing a five-point scale (from 1 - “strongly disagree” to 2- “strongly agree”) (Battacherjee, 2000).

Table. Measurement of variables

Section	Variable	Measurement question
<b>Perceived Ease of Use (PEU)</b>	PEU1	<i>Learning to use Mobile commerce services is easy to me</i>
	PEU2	<i>M-commerce services meet what I request</i>
	PEU3	<i>M-commerce services are compatible with technologies available on my</i>
	PEU4	<i>Using M-commerce services does not require many skills or knowledge</i>
	PEU5	<i>I find it easy to use M-commerce services</i>
<b>Perceived Usefulness (PU)</b>	PU1	<i>M-commerce services support my daily work.</i>
	PU2	<i>Using M-commerce services is a way to save time</i>
	PU3	<i>Using M-commerce services is convenient</i>
	PU4	<i>Using M-commerce services helps me complete my tasks better</i>
	PU5	<i>M-commerce is useful to me</i>
<b>Perceived Trust (PT)</b>	PT1	<i>I believe in how things go when I do purchasing or other activities using mobile commerce</i>
	PT2	<i>M-commerce services are trust-worthy</i>
	PT3	<i>I believe in the information which M-commerce services provide</i>
	PT4	<i>The M-commerce services have enough safeguards to make me feel comfortable using mobile commerce to transact personal business</i>
	PT5	<i>I believe that the errors while using M-commerce services rarely occur</i>
	PT6	<i>I believe that advances in technology security will protect me more while using M-commerce services.</i>
<b>Perceived Risk (PR)</b>	PR1	<i>I am not confident over the security aspects of M-commerce services</i>
	PR2	<i>I am afraid that other people will know my personal information concerning my mobile commerce transactions</i>

	PR3	<i>I am afraid that other people can tamper with my personal information concerning my M-commerce transactions</i>
	PR4	<i>It is very easy for my money to be stolen if using m-commerce services.</i>
	PR5	<i>Using M-commerce services easily lead to the invasion of personal privacy</i>
<b>Attitude towards using M-commerce services (ATMC)</b>	ATMC1	<i>Using M-commerce services is a good idea</i>
	ATMC2	<i>Using M-commerce services is a wise choice</i>
	ATMC3	<i>I agree with using M-commerce services</i>
	ATMC4	<i>I think that using M-commerce services is beneficial to me</i>
	ATMC5	<i>I'm satisfied with M-commerce services.</i>
<b>Behavioral Intention to use (BI)</b>	BI1	<i>I intend to use M-commerce services</i>
	BI2	<i>I will often use M-commerce services.</i>
	BI3	<i>I intend to use M-commerce services for entertainment only</i>
	BI4	<i>I intend to use M-commerce services for study and work only</i>
	BI5	<i>I will recommend other people to use mobile commerce services</i>

Non-probability sampling was used to analyze the sample of the population. The surveys were distributed in both online and offline channels. There were 71 observations received via the electronic means. Among 324 questionnaire surveys collected in November 2015 together with the conduct of in-depth interviews with 5 customers, 298 were identified valid. The sample size was designed based on the formula of minimum sample size by Tabachnick and Fidell (1996):  $N \geq 8M + 50$ , where  $N$  is the sample size, and  $M$  is the number of items asked to each variable. In this study, 31 items are employed. Therefore, the sample size of 298 respondents met the condition of the data analysis by structural equation modeling.

## DATA ANALYSIS

In the first section, the demographic and variables descriptive statistics as well as the reliability and validity of the study were discussed. In the next section, the goodness-of-fit indexes for the general measurement model and the hypotheses were examined by applying Confirmatory factor analysis and Structural Equation Modeling.

### DESCRIPTION STATISTICS

#### Demographics description

Table. Demographic features of the respondents

Measure	Items	Frequency	Percentage (%)
Gender	Male	196	65.8
	Female	102	34.2
Age	Under 20	32	10.7
	20 - 29	218	73.2
	30-39	36	12.1
	Over 39	12	4
Occupation	Student	118	39.6
	Employee	158	53.0
	Manager/Supervisor	15	5.0
	Other	7	2.3
Income	Less than 5 mil VND	215	72.1

5-10 mil VND	60	20.1
10-15 mil VND	23	7.7

There is a difference of the gender distribution between female and male respondents. The female respondents are estimated 65.8% whereas the number of male respondents only account for 34.2%. In terms of age group, the dominant group is from 20 to 29 years old (73.2%), followed by the group from 30 to 39 years old (12.1%) and under 20 years old (10.7%), while the group of over 39 made up for 4%- the smallest group.

#### Assessing reliability and validity of variables.

Reliability analysis is to measure the internal consistence of indicators for variables (Hair et al, 1998). Malhotra and Birks (2007) defined reliability as the degree to which a measurement re-creates consistency of results when the process of measurement was executed repeatedly. A test is recognized being reliable only when it obtains the same results over and over. To measure the scale of reliability, Cronbach's alpha is commonly applied to prove the research is reliable, with the condition of alpha greater than 0.6. In terms of validity, Saunders et al (2009) explained it is associated with whether the findings and outcomes perform what they are supposed to be. The Cronbach's  $\alpha$  values are all greater than 0.6, which is evaluated satisfied (Nunnally, 1978). Therefore, the variables in this study are proven to be reliable.

Table. General statistical results

Construct	Cronbach's $\alpha$	Correlated Value Range	Std Deviation Range	CR	AVE	Loading range
<i>Perceived Ease of use</i>	0.794	0.476 - 0.683	0.76-0.99	0.825	0.615	0.701 – 0.833
<i>Perceived Usefulness</i>	0.820	0.549 – 0.680	0.77-0.91	0.808	0.514	0.580 – 0.749
<i>Perceived Trust</i>	0.866	0.575 – 0.773	0.78-0.82	0.871	0.577	0.609 – 0.900
<i>Perceived Risk</i>	0.838	0.560 – 0.730	0.86-0.96	0.809	0.516	0.610 – 0.814
<i>Attitude toward using M-commerce services</i>	0.803	0.501 – 0.640	0.60-0.69	0.753	0.504	0.567 – 0.781
<i>Behavioral Intention to use M-commerce services</i>	0.744	0.423 – 0.641	0.74-0.85	0.766	0.528	0.639-0.837

As a variable load of single factor is evaluated, there is an occurrence of convergent validity. Each variable was measured by applying a within-scale factor analysis. All estimated items converged onto their variables with the load of each item greater than 0.5. Moreover, the result of correlation analysis showing the co-efficient correlation among the variables which satisfies significantly and statistically the criterions of validity.

#### Structural equation modeling

The two-stage analytical procedures of structural equation modeling (SEM) were applied: measurement and structural model. To check whether the results were acceptable and consistent with the underlying proposed research model, the measurement model was used. Moreover, the structural model was employed to test and identify the relations and their significance among the variables. In order to process the confirmatory factor analysis for each variable, the AMOS 21 software was applied. At first, the Confirmatory Factor Analysis was implemented in order to test whether the measurement model fits the data survey.

Table 5.6 Criteria and result for measurement model

Model-fit measures	Criteria	CFA Result	References
Chi-square/df ( $\chi^2/df$ )	$\leq 2^{**}, \leq 3^*$	1.418	Joreskog (1969)
TLI (Tucker Lewis Index)	$\geq 0.9$	0.965	
GFI (Goodness-of-Fit Index)	$\geq 0.90^{**}, \geq 0.8^*$	0.923	Bagozzi (1981)

CFI (Comparative Fit Index)	$\geq 0.90^{**}$	0.971	
RMSEA (Root Mean Squared Error of Approximation)	$\leq 0.05^{**}; \leq 0.08^*$	0.038	Browne and Cudeck (1993)

Acceptability: **\*\*** acceptable; \*marginal

The results illustrate that based on statistical significance, all variables of model were demonstrated to be verified measures of their respective variables.

In order to examine the reliability and the convergent validity of the factors studied, according to Fornell, C. & Larcker, D.F (1981), it is suggested that (1) the factor loadings greater than 0.5 are considered very significant. Results show that all items' factor loadings are greater 0.5, which meet the criteria mentioned before. Moreover, it is also considered significant (2) when the composite reliability is greater than 0.7. All the items' composite reliability meets this condition as well (CR > 0.7). And (3) the average extracted variances of all items are greater than 0.5, which is considered as very significant. The average extracted variances of all items in this study are greater than 0.5, which satisfies this condition as well. As a result, it is concluded that all factors in the measurement model have sufficient reliability and convergent validity.

To validate the structural integrity of the model, a covariance structural analysis was conducted. The final structural equation model result was shown in the below table and described the acceptable fitness statistics with  $\chi^2/d.f= 1.507$ , RMSEA= 0.041, GFI= 0.912, AGFI= 0.887, NFI= 0.895 and CFI= 0.962.

Table. Goodness-of-fit measures

Fit index	Score	Criterion	Reference
Absolute fit measures			
$\chi^2/d.f$	1.507**	$\leq 2^{**}; \leq 3^*$	Joreskog (1969)
RMSEA	0.041**	$\leq 0.05^{**}; \leq 0.08^*$	Browne & Cudeck (1993)
GFI	0.912**	$\geq 0.90^{**}; \geq 0.8^*$	Bagozzi & Yi (1988)
AGFI	0.887*	$\geq 0.90^{**}; \geq 0.8^*$	
Incremental fit measures			
NFI	0.895*	$\geq 0.90^{**}$	Hu & Bentler (1999)
CFI	0.962**	$\geq 0.90^{**}$	

Acceptability: **\*\*** acceptable; \*marginal

Table. Estimates of structural path coefficients

Hypothesis	Path	Path estimate	p-value	Results
H1	PEU → ATMC	0.152	0.018**	Support
H2	PEU → BI	0.082	0.146	Reject
H3	PU → ATMC	0.655	***	Support
H4	PT → ATMC	-0.59	0.408	Reject
H5	PR → BI	0.006	0.674	Reject
H6	ATMC → BI	0.811	***	Support

\*\*\* $p \leq 0.001$ ; \*\* $p \leq 0.01$ ; \* $p \leq 0.05$

As presented, hypothesis 1 and 3 were supported which determined that the higher the awareness of perceived ease of use and perceived usefulness on M-commerce services is, the more positive the attitude toward using those services is. However, the results of three hypotheses 4, 5 and 3 show that there is no significant relationship between Perceived Trust and Attitude toward using M-commerce services as well as there is no contribution of Perceived Risk and Perceived Ease of Use to Behavioral Intention to use M-commerce services. At last, the hypothesis 6 proved that when the attitude toward using M-commerce services is highly positive, the Behavioral Intention to use those services will increase.

## DISCUSSION AND RECOMMENDATIONS

### Practical implications

Enterprises should focus on usefulness as well as ease of use in every part of developing and providing M-commerce services because these two factors- Perceived Usefulness and Perceived Ease of Use significantly influencing the Attitude toward using and the Behavioral Intention to use those services can increase the revenue and profit for the company. Even though the finding shows that there is no significant association of Perceived Risk with the Behavioral Intention to use M-commerce services, various risks such as leakage of personal information, products, transaction security are still big troubles and barriers of M-commerce services. Therefore, the enterprise should focus on enhancing the safety and security systems of M-commerce services for customers while transacting. This is logical and understandable that the higher costumers perceive M-commerce services riskier, the lower their behavioral intention to use these services is.

This research is combining between qualitative and quantitative methods; in which, qualitative method is understood as a complementing tool for discussing the result of the another.

In our interviews, the customers judged that the abroad websites' interfaces are more attractive than Vietnamese ones. For a typical example, the interface of Amazon website is logical, well-organized and easy to finding goods' information. The customers have been afraid of the perceived trust and risk when making payment in mobile commerce services. For abroad websites such as Amazon, the customers have felt assured to make payment via VISA card due to their reliable information security system. In contrast, Vietnamese websites has accepted "cash on delivery" on purchasing. Thus, the customers can check the product quality before making payment. The customers have strongly agreed with the perceived ease of use and usefulness of mobile commerce services. It is easy for the customers to access information of any products, make a comparison and make their buying decision. In conclusion, this is one of the best way on purchasing goods in the modern life.

They strongly agreed with the perceived ease of use and usefulness of mobile commerce services. One reason related to the youth leading to these advantages is that it is easy for the young people to access internet and use mobile commerce services, such as creating account, verifying password, receiving email, comparing information on the internet and etc. Thus, the age and the education level has been investigated as new factors influencing to mobile commerce services.

Consequently, the qualitative research supported the explanation of the quantitative research above in the relationship among those factors. Especially, there are three new factors such as the “review” function, the age and the education level which would have impacts on mobile commerce services.

As mentioned, the development of M-commerce is quite fast and it is considered as a competitive advantage for M-commerce providers. M-commerce is emerged as a next generation of electronic commerce. Therefore, developing countries especially Vietnamese enterprises should take advantage of this phenomenon to earn profit and can survive in the mobile market. Based on the practical implication of this study providing an understanding on the customers’ needs, enterprises intending to introduce their M-commerce service can make an effective strategic business plan and re-organize their process of business to meet more customers’ needs. The most important implication for the enterprises to research on Mobile-related services is the recognition of the Technology acceptance model involved in the association with the objectives to develop useful services and build a strong and comfortable relationship with the consumers.

#### **Theoretical implications**

There are several essential implications for researching on M-commerce services in this study. All factors discovered are suggested to provide an accurate understanding as well as explanation of consumers’ decision making process to adopt M-commerce services. However, there are few empirical studies conducted to understand customers’ acceptance to use M-commerce services. Seemingly, many researchers have concentrated only on analyzing content and demographic information of online customers without employing theories of their behaviors to research on online consumer behaviors. Therefore, the purpose of study is to have some contributions to bridging the gap in current theoretical foundations.

This theoretical framework is expected to be a fundamental base for exploring customers’ online consumption behaviors. Particularly, the information is provided to understand how customers’ perceptions on M-commerce services, how they accept to use the services and how their intention to use them is affected by their level of involvement.

#### **Limitation and further recommendation**

Firstly, the sample limitation infers the sample could not be considered a representation of the whole country, which makes the generalizability of the results an issue. In this research, the focus is mainly on office workers in Ho Chi Minh City. Future studies may capture a larger sample of the population, and could potentially expand to other major cities and provinces, such as Hanoi, Danang, Cantho, where the popularity of smartphones is rapidly growing. The research could expand the area of study to gather more insights about the larger m-commerce market.

Secondly, this research did not specifically sample other smartphone users including students and teenagers, who are also important segment of the population. However, this is not a significant limitation as the research focused on office workers, which also has sufficient usage of m-commerce services. There is a need to expand survey respondents for larger sample size and collecting respondents from various job areas. Moreover, the current research is limited by the consumer point of view. Further research could be conducted from the side of producers and distributors.

Lastly, the frameworks used in this research may not have been sufficient to explain all the aspects of the determinants that influence the customers’ adoption. Further research needs to be conducted to overcome the limitations of this study.

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## **LIBERALIZING FIXED TELEPHONE SERVICE: CASES OF THAILAND AND THE PHILIPPINES**

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### **ABSTRACT**

This study discovers that extensive liberalization does not increase penetration rates of fixed telephone service better than the less competition-oriented policy alternative. In addition, the liberalization in the area of fixed telephone service does not guarantee the increase in penetration rates of the service because the fixed telephone service is almost at its saturation level. It is also found that, in contrast to common beliefs, an LDC that implements extensive liberalization reforms could be less successful in increasing the penetration rate of fixed telephone service than those with less competition-oriented policies.

### **INTRODUCTION**

Since the beginning of telecommunications reform efforts in the 1980s, numerous research has shown that telecommunications can contribute to economic development and could distribute social and benefits more equitably throughout a nation (International Telecommunication Union, 1988; World Bank, 1994). In order to measure the development of telecommunications services in a country, the penetration rate of the fixed telephone service is typically used as the metric for the distribution of telecommunication services to users and is also used to compare telecommunications development between countries.

By comparing penetration rates of the fixed telephone service in several countries, it has also been shown in research by the International Telecommunication Union (ITU) that the penetration rate of fixed telephone service is correlated with the level of GDP per capita (used as a metric of economic development) of many countries. So, it was suggested by the ITU that telecommunications investment, with the goals of increasing teledensity, could bring social and economic rewards to the countries, especially for the developing ones.

Moreover, it has been shown subsequently in several studies by international institutions (ITU, 1997; World Bank, 1994) that the penetration rates of fixed telephone service have increased in countries that have implemented telecommunication reform process, though the magnitude of the increases varies.

### **PROBLEM STATEMENT**

This research focuses mainly on the liberalization reform process among developing countries since this type of reform is most likely to have the long-term effects on the future industry structure. Based on the aforementioned research, which suggested that penetration rates increased in countries that implemented reforms, particularly with liberalization, it is tempting for one to conclude that the increase in penetration rates of telephone lines should vary according to the degree of the liberalization policies implemented. That is, the more the country opens up to competition and the more extensive the liberalization is, the greater the increase in telephone line penetration (and therefore the higher the level of infrastructure and service development should have occurred).

### **RESEARCH QUESTION**

However, there are neither research work nor statistics to support such an argument, especially for developing countries. Taking for example, the cases of Thailand and the Philippines, Thailand's telephone lines have been growing faster than the Philippines' despite the fact that the Philippines have been pursuing a liberal, competition-oriented policy since the early 1990s. Why has the Philippines, despite its extensive liberalization efforts, been less successful in increasing its telephone penetration rate than Thailand, which has less competition-oriented policies?

This research investigates the liberalization efforts of less-developed countries (LDCs), with the main focus on Thailand and the Philippines, and their effects on the penetration rate of telephone lines and Internet access.

More specifically, the following questions will be explored. Why has extensive liberalization in the Philippines been less successful in increasing the telephone penetration rate than the less competition-oriented policies in Thailand?

The two major case studies covered in this research, Thailand and the Philippines, are excellent for comparison because they are both considered developing countries with low-to-medium income levels per capita. They both initiated telecommunications reform in the early 1990s and telephone penetration rates (per 100 inhabitants) at the beginning of the reform in both countries were about the same. Both experienced a period of high economic growth during the early 1990s and were both later affected by the Asian financial crisis in 1997. Both are democratic countries and have had histories of political instability and dictatorship.

## **LITERATURE REVIEW**

### **4.1 Definition of “Liberalization”**

In this research, the term “liberalization” refers to the commitment and actions taken by the government to open their telecommunications markets to new providers and competition. In other words, liberalization refers to the lowering of entry barriers to all or part of a market, allowing third parties to compete with established, generally monopolistic, providers of goods and services. Thus, the more extensive the liberalization, the closer the market’s conditions are to that of the free-entry market.

### **4.2 WTO Agreement on Telecommunication Services**

This research bases its main concepts of liberalization in basic telecommunications services on the framework established by the World Trade Organization’s (WTO) Agreement on Telecommunications Services.

To compare the case studies, this research assumes that the Philippines has carried out more extensive liberalization reform than Thailand because it has followed and implemented regulations and policies according to the WTO Agreement framework on ways to open the market more than Thailand.

The Agreement on Basic Telecommunication services was reached in February 1997 when 69 countries committed to liberalize and open their telecommunication markets to the world markets. The number of countries committed to liberalizing their telecommunications markets is likely to rise as additional Least Developed Country (LDC) governments complete the process of accession to the WTO in the coming months. All industrialized countries have made commitments to open their markets on basic telecommunications and on most value-added telecommunications services. Fifty-two emerging economies have made commitments to open their markets to basic telecommunications and many of these have also made commitments to opening their markets to value-added services such as data communications.

The importance of the WTO negotiations should not be underestimated because no other agreement has yet created more telecommunications opportunities and opened more markets more quickly. The most significant implications of this are the WTO’s requirement to permit telecommunications operators based in all WTO member countries to build network infrastructure and compete in the national market on a most-favored nation (MFN) basis. This means that entry can no longer be restricted to those countries that provide reciprocal access or are parties to bilateral agreements. As a result, the global telecommunications market environment will likely become more competitive.

### **4.3 Pattern of Commitments according to WTO**

The pattern of commitments to opening telecommunications markets by most developed country (MDC) economies with respect to market-access for the modes of supply have differed somewhat from LDCs.

Based on the WTO statistics, MDCs were two to three times more likely than LDCs to commit to unlimited market access for cross-border supply of basic telecom services; between 36 to 43 percent of them did so. Moreover, they were about twice as likely to make unrestricted

commitments on the supply of basic telecom services via the other two modes of supply, at between 64 to 70 percent for consumption abroad and 14 percent for commercial presence. Finally, all MDCs committed either fully or partially on all basic services, there being no cases of "unbound" entries listed for any of the services or modes of supply.

By becoming party to the WTO agreement, countries commit to a set of regulatory principles (the Reference Paper). In addition, countries make specific commitments to open up their telecommunications service markets. Market opening measures include free access to public telecommunications transport networks of incumbent suppliers under non-discriminatory terms and at cost-oriented rates. These non-discriminatory terms assume a competitive provider has the technical ability to interconnect to the public network using standardized, open interfaces.

#### 4.4 Elements of the WTO Agreement

In sum, the three basic elements of the WTO agreement are:

- 1) Market access: This provides foreign companies access to local, long-distance, and international telecommunications service. This requires incumbent carriers to unbundle their network services and give alternative carriers the right to connect their carriers to the incumbent's network (alternative carriers pay interconnection rates that reflect costs). Consequently, this allows for more open competition.
- 2) Investment: This refers to the right of foreign companies to establish or hold a stake in domestic telecom companies.
- 3) Competitive regulatory policies: These include curbs on cross-subsidization and rights to interconnect at fair prices, and it mandates transparency of government regulations in technical standards and licensing.

The WTO agreement consists of Schedules of Specific Commitments and Lists of Exemptions. These documents specify nations' commitments to market access, national treatment, and MFN for specific services. Thus, each nation has agreed to different levels of liberalization. In this research, the nation that agreed to a greater level of liberalization according to the WTO Agreement framework is the Philippines, which allows free competition in its telecommunications markets, while Thailand agreed to and has implemented it only at a limited level because the government is still monopolizing the industry at that time.

#### **METHODOLOGY**

This research is based on various research avenues, steps and methodologies. Basically, three types of data sources are used in this research, documentary, interview, and survey. The documentary data, while offering excellent detail, facts and analysis on the liberalization process in Thailand and the Philippines, cannot be used to accurately predict the future trends. Therefore, the data from the documentary analysis are used to set up the theoretical framework and provide background on what factors affected the penetration rates of the three services in the past and how liberalization reform efforts have been developed in different countries from the past up to the present. It also provides the predictions of the effects of liberalization in the future for LDCs.

However, considering historical trends as a determinant for future predictions of the effects of the liberalization can be misleading. A good researcher should collect empirical data and analysis to verify that the theoretical predictions are correct. As a result, for this study, several semi-structured interviews with policymakers, industrial players, and international organizations in telecommunications were set up to gather the comments from leaders in the industry about the future trends for the industry and the nations and to predict the impact of liberalization.

Nonetheless, the data from these two sources, documentary and interviews, share one characteristic that could weaken the analysis of this research: they both provide only estimations of future telecommunications demands and industry structure. Even though it is true that the estimations from these two sources are based partly on hard data that is statistically analyzed, such estimates might be vulnerable to errors since they assume that future trends are based on past patterns. While trends generally follow patterns, they do not always follow predictable courses. These assumptions could lead to a bias in the data analysis and consequently the proof of the main hypothesis since there is no formal statistical work to base the analysis on when it comes to future trends. As a result, the survey of more than 400 users in Thailand was set up as the third and last data collection procedures. The

researcher expects that the survey will provide a more statistically reliable and a more rigorous framework for the analysis. The results of the survey should provide a statistically reliable, and hopefully, a more precise prediction of the effects of the liberalization on future trends of the three services.

Another reason for using all three types of data for the analysis is that each type of data can provide a bias check for the another, an important part of any research plan. After all, the results of the research are unreliable if the data are biased. While documentary research might introduce so-called theoretical bias, that is, bias that comes from making predictions or recommendations based solely on the theories, interview and survey data can verify to a degree that the assumptions and the predictions based on theory are correct.

**BACKGROUND OF THE CASE STUDIES**

In Thailand, for the fixed-line telephone networks, the nature of the telecommunications concessions in Thailand is based on the build-transfer-operate (BTO) contracts. Private companies have no control or rights over concession agreements until 2014. As a result, the government maintains tight control over telecommunication services and infrastructure and private companies can only invest as the government allows.

The contrary situation can be seen in the case of the Philippines. The pace of liberalization increased under President Fidel Ramos in 1993, whose administration introduced a new law to create a better climate for industry growth and investment. New laws, including the Public Telecommunications Policy Act, and other regulations, including Executive Order 59 and 109 were issued.

In the telecommunications industry, the administration took several crucial initiatives. First, it drafted a new law to promote a better climate for growth and investments. Second, it granted licenses for international gateway facilities (IGF) and cellular mobile telephone systems (CMTS), and radio paging. Third, it opened the local exchange to competition.

In February 1993, the government adopted a strict and mandatory interconnection of telecommunications services and uniform standards to enhance competition and to achieve a universally accessible and fully integrated nationwide telecommunications network.

Three months later, the government refined a policy to aggressively promote interconnection and the development of alternative and profitable local exchange carriers (LEC) was directed, in pursuit of universal access. The provision of LEC service in unserved or underserved areas in the country within three years became a mandatory condition for a firm seeking licenses and permits to operate more profitable international gateway facilities (IGF) and cellular mobile telephone systems (CMTS). The NTC divided the country into 11 service areas, and each grantee of an IGF or CMTS authority was assigned an exclusive service area with a fixed rollout period.

It can be seen clearly from the analysis in this section that the Philippine government has followed the liberalization guidelines of the WTO Agreement on Telecommunications Services outlined earlier and implemented their liberalization policies more extensively than Thailand by allowing new competitors to enter the market and promoting free competition. The Philippine government put in place the necessary regulations and legal entities to support the liberalization and open competition, with an explicit aim of enhancing telecommunications services.

However, the similarity between both countries lies in the fact that both governments have implemented the policies that emphasize the distribution of basic telephone service to all users at an affordable price and the idea of universal service.

**ANALYSIS AND STATISTICAL RESULTS**

Once again, it is noteworthy to point out that liberalization in this research refers only to the opening of the market to new entrants and providers. It should also be made clear at this point that the goal of the analysis is to determine mainly whether the extent of the liberalization efforts (the opening of the market) are a major factor contributing to a higher penetration rates of the three services. Also, since this research focuses on penetration rates, the main analysis in this chapter will focus on penetration rates and universal services with a secondary focus on competition issues that can affect the penetration and universality of these services.

	Thailand	The Philippines
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Policies on Fixed Penetration Rate telephone service and Universal access	No specific policies; mostly indicated in the National Economic Development plan; the number of lines to be increased is determined by the Telephone Organization of Thailand (TOT). Implementation of the line expansion plan through concession granting was successful. Penetration in both metro and provincial areas increased. Distribution to rural areas increased. No specific policies since 2000. One concession was awarded for the installation of 1.5 million lines in rural areas. Telecommunications Master Plan promoted the increase in lines into the rural areas. But no specific goals set.	EO109 mandates that each cellular and international gateway operator licensed must install 700,000 local exchange lines in 5 years. The policies were successful. Penetration rates increased sharply and targets were met. The spread of telephone services also improved, although not to the 10-to-1 ratio goal.  EO109 specifies the ratio of urban to rural lines of 10 to 1. But as of 1999, no licensed providers were able to achieve this goal. The Basic Telephone Program set goal of 87% of all urban and rural communities.
New Entrants	No policies. Service providers can only operate in the form of concessions and BTO arrangements.	E059 requires compulsory interconnection but puts the access charge issue in a contractual agreement basis. Licensing has been extensive even though there is a limited number of providers in a service area. The Service Area Scheme (SAS) was abandoned in 1999, leaving the license granting authority to the National Telecommunications Commission (NTC).

Table 7.1: Comparison of fixed line service policies in Thailand and the Philippines

Table 7.1 shows quite clearly that the Philippines has had more experience liberalizing its telecommunications market than Thailand. It has had the necessary policy elements of the liberalization framework in place since 1993, which are interconnection and universal service regulations. These two regulations are most important from a policy-maker perspective because they ensure fair competition and equal service distribution after the liberalization process is completed.

Based on the 20 interviews conducted by the author, the author found that policy makers usually make many implicit assumptions when framing a policy or regulations. One of the most common mistakes of policymakers is to assume they understand consumers' perceptions of and demand for different services. Moreover, policymakers often think that they know and can precisely predict future trends and usage patterns. The sad fact is they do not and that consumers can voice best how they perceive the services and the reasons why they would or would not want the services. Input from consumers is very important and definitely should be incorporated into the process of any policy making.

As described in the previous section, after the documentary analysis and the interviews are completed, the survey is conducted. This survey was designed to achieve better understanding on consumers' perceptions of the three services, fixed telephone, cellular mobile telephone, and Internet, and of the liberalization effects.

Statistical data was collected through the survey distributed in Thailand. The survey was conducted in two locations, Bangkok and Ang-Thong. Bangkok, a capital of Thailand, has the highest telephone penetration rate in the country, while Ang-Thong, a province in the central region, has the lowest telephone penetration rate of 3 lines per 100 inhabitants. More than 400 people answered the survey,

which randomly selected respondents. The samples include 266 respondents from Bangkok and 248 respondents from Ang-Thong.

The data in each location was tested by the T statistics to determine if they were statistically significant within one location. The test, however, was done for samples of 30 or more to ensure a proper standard distribution. The data was also tested at the 95% confidence level. The data from each location was then combined and analyzed to compare the differences in two sample groups.

#### **BASED ON THE ANALYSIS, THE FOLLOWING RESULTS ARE DRAWN:**

**1) Fixed telephone is currently the most common service because users perceive it as the most basic service.**

Based on the survey, fixed telephone service is the most common communications method, with about 70% of the respondents, followed by cellular mobile telephone service. In addition, 18% of the respondents have no communications equipment or services at all. Those who have no communications equipment or services account for 79% of the metropolitan users and 77% of the province users who do not have basic fixed telephone service. That is, the remaining 21% and 23% of those who do not have a basic fixed telephone service, in the metropolitan area and province area respectively, use mobile cellular telephone service as their only means of communication. Moreover, the statistic shows that users who do not have basic fixed line telephone service in the province area appear to use mobile phones as a substitute for fixed line phones more than those in the metropolitan area.

When asked about the importance of different communications methods, users perceived basic fixed telephone service as the most important, followed by cellular mobile telephone service, and Internet service, respectively. This trend is similar for users both in the metropolitan and provincial areas.

When the current fixed telephone users were asked why they use this service, more than 75% of users (at the 95% confidence level) in both areas attributed it to necessity.

**2) Most current fixed telephone users are unlikely to ask for an additional line or change providers of their fixed telephone service in the future.**

When asked if they would be interested in changing to a new fixed telephone service provider or for an additional line, 80% of the current fixed phone users in both areas said they had no interest in doing so because it is not necessary and they are satisfied with the current rates and services.

For the 20% of the users interested in changing to a new service provider or asking for an additional line, no specific statistically significant factors appeared (at the 95% confidence level): not a reduction in usage fees, not because of the value-added service, such as, the Internet, and not because of the new wireless local loop application.

**3) Users in the metropolitan areas who do not have the fixed line service lack it because the service costs too much compared to their usage, while in the provincial areas, it is because there is no service available.**

When asked why they do not have basic fixed telephone services, 50% of the respondents in this group from the metropolitan area said the service costs too much compared to their usage; 40% said the telephone service is not necessary.

In contrast to metropolitan users, users who do not have the fixed telephone service in the provincial area said they are still on the waitlist and were told that there are not enough lines in their area.

As for the future, 78% of respondents in the metropolitan area and 55% of respondents in the provincial areas who have no fixed telephone service said they want to get a basic phone service because they see it as a basic necessity. The remaining 21% of the metropolitan respondents will not ask for the service because they cannot afford it and felt that the service is not necessary because they can use payphones. The remaining 45% of the provincial respondents will not ask for the service because they do not think the service is necessary. They said they can borrow their neighbors' phones instead of paying for one of their own.

**4) Less than a quarter of the respondents knew about the liberalization.**

Only 24% of the respondents in the metropolitan area and 14% of the respondents in the provincial area knew that there will be a full-scale telecommunications liberalization in Thailand. Those who knew expected the fiercer competition for services and service fee reductions as the most likely outcome.

**5) Those who knew about liberalization expected the cellular service penetration to increase the most.**

When asked about the trend of the three services after liberalization, the users from both areas predicted that after liberalization, mobile cellular phone penetration would increase the most because of price reductions, with the Internet as the second fastest growing service. More than half (53%) of this user group believe that the penetration of basic telephone services will remain at this level and will not increase or decrease with the liberalization process because they believe there are enough telephones for users and that it is not necessary to have more than one telephone line in their homes.

**CONCLUSION**

In summary, the analysis from all sources- documentary, interview, survey and statistical tests- shows that extensive liberalization does not increase penetration rates of fixed telephone service better than the less competition-oriented policy alternative. In addition, the liberalization in the area of fixed telephone service does not guarantee the increase in penetration rates of the service because the fixed telephone service is almost at its saturation level.

The results from the survey also supported this conclusion because it shows that if users perceive fixed telephone service as a necessity then they tend to be less sensitive to price changes. In fact, the survey did not find that price was a statistically significant factor for users requesting fixed telephone service.

Besides the fact that consumers tend to be less sensitive to price changes once they perceive fixed telephone service as a necessity, another possible reason as to why liberalization has had less of an effect on the penetration rates of fixed telephone service than on cellular mobile telephone and Internet services could be that the governments, using the penetration rate as an international measurement of infrastructure development, focused on the fixed telephone service as a necessity and have reasoned that intervention in competition for the service is necessary to ensure universal service at an affordable price.

The results of this research show that extensive telecommunications liberalization does not increase the penetration rate of the fixed telephone service better than other, less competition- oriented, policy alternatives.

## IMPLICATIONS FOR OTHER COUNTRIES

In sum, it is found that, in contrast to common beliefs, an LDC that implements extensive liberalization reforms could be less successful in increasing the penetration rate of fixed telephone service than those with less competition-oriented policies.

Extensive liberalization reform efforts alone will not likely lead to higher penetration rates of telecommunications service under the following conditions,

**1) In the case where the services have not reached its saturation levels, users perceive the service as a necessity and are able to afford it.**

As one can see, the penetration rates of the fixed telephone service in both countries varied with the GDP per capita. This implies that if users can afford the service, that is, if their income (GDP per capita) readily covers other basic necessities, they will get the service because they see it as the next most important necessity. This is why the GDP is shown to be a good indicator of the penetration rates. However, after they get the service, the survey found that users are less sensitive to price changes, expected from the liberalization and increased competition, in getting an additional line, if they think they are already getting the current one at a reasonable price. And, the government perceive the service as a necessity

**2) In the case where liberalization occurs after the service reaches its saturation level, it is found that liberalization efforts will not increase the penetration rate as effectively as had it occurred before the service reaches its saturation level, as in the case of cellular mobile telephone and Internet services in both case studies**

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## **DOING WELL BY DOING GOOD: CONSUMER REACTIONS TO CORPORATE SOCIAL RESPONSIBILITY (CSR) IN THAILAND**

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### **ABSTRACT**

The aims of this paper are twofold. First, it contributes to understanding the business case for Corporate Social Responsibility (CSR) in developing countries by focusing on the consumer-organizational relationship. Second, it tests the conceptual framework of *Du, Bhattacharya and Sen (2007)* which suggests that determinants and consequences of consumers' CSR beliefs vary depending on the extent to which CSR initiatives are integral to the competitive positioning. Using survey data from 250 Thai mobile phone service provider consumers, findings show that a CSR brand is more likely than non-CSR brands to accrue consumer CSR awareness, positive attitude to company motivations, and beliefs in the CSR of that company. Although beliefs are associated with consumers' greater identification and advocacy behaviors towards the CSR brand than the non-CSR brands, they are not associated with loyalty. These results demonstrate some support for a business case for CSR in developing countries.

**Keywords:** consumer reactions, corporate social responsibility, competitive positioning

### **BACKGROUND**

Corporate Social Responsibility (CSR) has been the subject of academic study for over fifty years, and is now a major issue in organizational studies (*Dentchev, 2009*). The concept of CSR is broad, and characterized by considerable debate. This debate is largely driven by a lack of consensus on CSR, and is attributable to the myriad theories, measures, and empirical methods used in the field (*Punch, 2003*). One significant issue in CSR scholarship is the scarcity of research about CSR in developing countries (*Dobers & Halme, 2009; Jamali & Mirshak, 2007*). In these countries, CSR shows a distinctive set of agenda challenges that are collectively quite different to those faced in developed countries (*Visser, Matten, Pohl, & Tolhurst, 2010*).

Recently, the focus of much CSR work has shifted from an ethics to a performance orientation. Additionally, the level of analysis has moved from the macro level of society to the micro level of organization (*Carroll & Shabana, 2010*). Many scholars have thus turned their attention to the significance of managerial and strategic issues regarding CSR, particularly the relationship between Corporate Social Performance (CSP) and Corporate Financial Performance (CFP). However, most research into this relationship remains inconclusive (*Margolis & Walsh, 2003*). As a result, many scholars call for more specific and carefully developed studies that go beyond generalizations.

Studies from developed countries reveal that consumers are becoming more aware of CSR activities (*Bhattacharya & Sen, 2004*), in part because companies are increasingly engaging in them and communicating their efforts. Further, some consumer groups are punishing irresponsible corporate behavior by calling for large-scale boycotts (*Snider et al. 2003*). Marketplace polls (*Cone, 2010*) and an increasing body of experimental studies (e.g., *Becker-Olsen et al. 2006; Brown & Dacin, 1997; Ellen et al. 2006; Sen & Bhattacharya, 2001*) also show that consumers are more likely to purchase from companies that engage in CSR initiatives. An unusual curiosity is evident however, in that consumer behavior is not always consistent with these findings, and CSR may not be the most

dominant criterion in consumer purchase behavior, being well behind price, quality and brand familiarity (Boulstridge & Carrigan, 2000).

Despite assumptions about the ability of CSR to affect consumer behavior, there is a dearth of empirical studies into consumer reactions to companies engaging in CSR (Peloza & Shang, 2011), and even fewer on how this relationship functions in developing countries (Arli & Lasmono, 2010). As a result, consumer reactions to CSR, particularly in developing countries, require further investigation.

(Bhattacharya & Sen, 2004) realized that an important force in consumer reactions to CSR is competitive positioning. Due to highly competitive contexts affecting the marketing mix, companies formulating CSR strategies require an understanding of consumer responses to such activities, not in isolation but in context of the different CSR activities generated by competitors. In this context, the specific focus of this study is the moderating effect of competitive positioning on consumer reactions to CSR activities in Thailand.

### DU ET AL.'S CONCEPTUAL FRAMEWORK

As the focus of this study is to investigate how differences in competitive positioning influence consumer reactions to CSR, it has adopted the conceptual framework of Du et al. (2007). This framework has been considered as the most appropriate because it is well regarded, and has been widely cited and used to study business case in developed countries (Alcaniz et al. 2010; Hoeffler et al. 2010; Marin et al. 2009; and Peloza & Shang, 2011) This framework was used to examine the determinants (CSR awareness, CSR attributions) and consequences (Company-Consumer (C-C) identification, loyalty, & advocacy) of consumers' CSR beliefs, and how differences in CSR positioning influence these relationships in the context of a developed country (see Figure 1). Du et al.'s overall findings suggested that the determinants and consequences of consumers' CSR beliefs vary, depending on the extent to which CSR initiatives are an integral part of the brand's positioning relative to its competitors. They found that positive CSR beliefs held by consumers are associated with loyalty and advocacy behaviors.

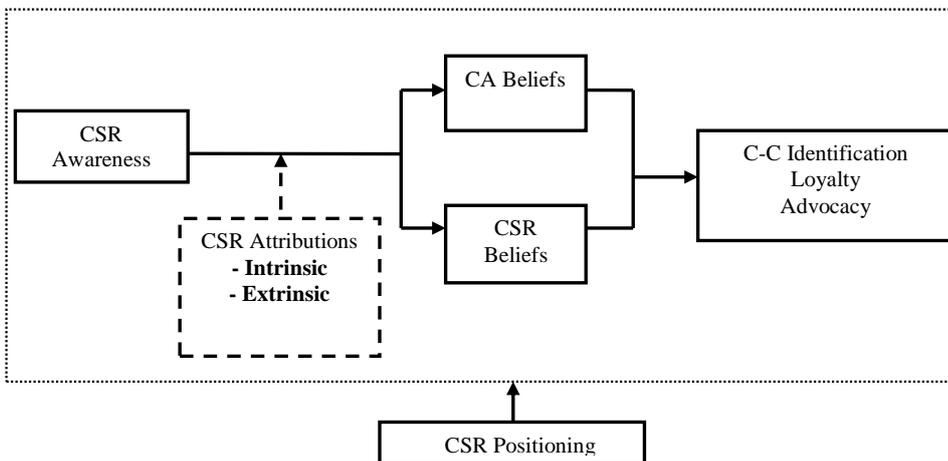


Figure1 Du et al. (2007) conceptual framework

### METHODOLOGY

#### Research Design

This study involved a questionnaire survey of the customers of the three largest mobile phone service providers in Thailand: Advanced Info Services (AIS), Total Access Communication (DTAC), and

True (True Move). This industry was the focus for three reasons. First, as all three brands (AIS, DTAC and True Move) engage in CSR activities that differ in CSR emphasis, the moderating influence of differences in competitive positioning can be tested. Second, AIS, a dominant brand in this category, is positioned primarily on corporate ability (CA), while the other two brands, DTAC and True Move, are more focused on CSR. However, only DTAC is clearly positioned as a CSR brand, as evidenced by the CSR press (CSRThailand, 2011) and revealed in a review of the company web sites and annual reports of all three brands. In brief, these three brands clearly comprise a continuum in terms of CSR emphasis, with the corporate ability (CA) focused AIS at one end, and the CSR brand DTAC at the other. Lastly, mobile phone service providers represent an active business sector with respect to CSR, illustrated by the fact that AIS and DTAC have been ranked among the top 20 companies in Thailand in the Asian Sustainability Ratings (ASR) of 2008 and 2009 (CSRAsia, 2010). Here, all three brands have CSR practices in place that reflect current societal and cultural expectations, and incorporate CSR information into their various corporate communications (Jamonmarn, 2008). However, as one of the problems in undertaking this study has been a lack of information about the CSR items adopted by Thai mobile phone service providers, initial exploratory research which used focus group interviews have been undertaken to determine CSR measurements suited to testing Thai mobile phone service providers. The verification of suitable CSR measurement items is then used for conducting the substantive research and analysis phase.

### Measures

The main items included in the survey were drawn from Du et al. (2007). The questionnaire included six sections: (1) consumers of a brand; (2) consequences of CSR beliefs (loyalty, advocacy and consumer-company (C-C) identification); (3) corporate associations (corporate ability (CA) beliefs and CSR beliefs); (4) determinants of CSR beliefs (CSR awareness, CSR support and media channels of CSR awareness); (5) CSR attributions (intrinsic and extrinsic); and (6) consumer's background characteristics. All items were measured using a five-point Likert-type scale (1= strongly disagree; 5= strongly agree). The resulting questionnaire was pilot tested with two groups, one of two research experts and the other of 30 respondents from the sample group. This questionnaire was first developed in English, then translated into Thai and back-translated into English with a bilingual expert checking for accuracy and parallel meaning.

Using the reduced dataset (n=184), the study validated multi-items measures by gauging the corrected-item-total correlation scales for Advocacy, CA beliefs and CSR beliefs. The corrected-item-total correlations of those scales showed no negative correlation. This result indicated scales that had the discriminating power to elicit items accurately. Furthermore, Cronbach's alpha values for Advocacy, CA beliefs and CSR beliefs in this study showed good internal consistency at 0.734, 0.809 and 0.851, respectively. However, as the Pearson correlation coefficient (r) of the present study was 0.721, the two measurement items of CSR beliefs measured the same underlying construct.

Common method variance was also applied to assess the construct validity of research data. (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Due to the antecedents and consequences of CSR beliefs, data were collected from the same sample using similar types of response scales (Likert scales). As this could be a problem, in addition to using reliable and valid measures, Harman's single-factor test was used to check measurement errors. In applying Harman's single-factor test, all items were loaded into Exploratory Factor Analysis (EFA) in order to examine the un-rotated factor solution to determine the number of factors necessary to account for variance in the variables. Common-method variance checking found that the unrotated factor solution was eleven factors with eigen values greater than one. This accounted for 72.709% of the total variance, with the first factor accounting for 20.947% of total variance. This means that there was no general factor in the unrotated structure, suggesting that the common-method variance was not of great concern.

### Sample and Collection

The principal method used to collect data was an adaptation of the questionnaire used by Du et al (2007), distributed via a mall intercept survey. Quota sampling was applied to control the categories of population elements, with convenience sampling used to select the sample population. Self-

administered questionnaires were used to collect responses from 250 Thai mobile phone service provider consumers at three main metropolitan areas in Bangkok, Thailand. From the overall sample (n=250), respondents who chose 'NA' (Not Aware) on measures of CSR awareness and CSR beliefs (n=60), and who had missing values on the key variables (n=6) were excluded. As a result, the total number of respondents was 184.

#### **DATA ANALYSIS**

Data were analyzed using a t-test and logistic regression analysis with SPSS and Multiple Regression Analysis (MRA) using an R package. The paired-samples t-test showed that assumptions of normality and normality of difference mean scores were not violated after outputting and visually inspecting the Normal Probability Plot (P-P plot). Furthermore, the independent-sample t-test showed that Levene's test was non-significant indicating that thus equal variances could be assumed. Predictors and moderator variables of MRA were centered before formulating the product terms and regression equations to maximize interpretability and minimize problems of multicollinearity (Aiken & West, 1991; Cohen, Cohen, West, & Aiken, 2003). These problems were inspected using Tolerance and VIF. As the tolerance range from 0.412 to 0.994 was well above the critical value of 0.10, and the VIF range from 1.006 to 2.425 was below the critical value of 10 was indicated (Hair, Black, Babin, & Anderson, 2010). The regression models from Du et al. 2007 was estimated, and model fit structures were found to be adequate in all cases. P-P plot and scatterplot indicated that the fitted model was safe to interpret. The multiple regression models were analyzed using both hierarchical regression and forced entry methods, with both yielding the same results.

#### **FINDINGS**

The main findings of this study suggest that the moderating effects of competitive positioning influence the determinants and consequences of Thai consumers' CSR beliefs. However, the consequences in terms of loyalty are not moderated by competitive positioning. This may suggest that Thai consumers' perceptions of philanthropic corporate behavior are not determinants in consumer relationships (e.g. loyalty) because they are more conditioned by quality of service, perceived price, and brand preference of specific company.

The moderating role of CSR attributions (a company's motive in engaging in CSR) in the relationships between consumers' CSR awareness and CSR beliefs, and relationships between consumers' CSR awareness and attributions and corporate ability (CA) beliefs (expertise in producing and delivering services), are not stronger for a CSR brand than its competitors in Thailand. This may suggest that Thai consumer perceptions of the motives for engaging in CSR of the three Thai mobile phone service providers (e.g. DTAC, AIS and True Move) show no differences. There is the possibility that Thai consumers may hold intuitive beliefs that CSR is primarily motivated by company self-serving rather than for the benefit of society. In addition, Thai consumer perceptions of a CSR brand are not significant in determining consumer CA beliefs because these are more conditioned by the commercial aspects which spill-over into their assessments of value of promotion or quality of service, rather than perceptions of being socially responsible. Although this study has only partially confirmed Du et al.'s (2007) conceptual framework, it extends the applicability of brand-specific differences in the determinants of consumers' CSR beliefs to Thai consumers.

Comparative results of the findings of this study with Du et al.'s (2007) findings show that both investigations confirm brand-specific differences in the determinants of consumers' CSR beliefs, and (in Thailand) partially confirm Du et al.'s brand-specific differences in the consequences of consumers' CSR beliefs. However, in the case of the moderating role of CSR attributions in CSR awareness-CSR beliefs relationships and relationships between consumers' CSR awareness and attributions and CA beliefs, were not confirmed in Thailand.

There appears to be three main reasons why Thai consumers behave differently to those in Du et al.'s (2007) study in the United States. One difference is the attitude-behavior gap - the gap between the positive attitude of consumers and their actual purchase behavior (Boulstridge & Carrigan, 2000). Another difference was the sceptical in Thai consumer views of corporate motivations for supporting social initiatives, perceiving that companies treat CSR as a cosmetic, public relations exercise, with

some spending more on CSR advertising than on actual initiatives. The last important reason is the possible existence of cross-cultural differences in perceptions and positioning related to CSR.

This study provide a valuable basis for further investigation into the moderating effect of competitive positioning on the determinants and consequences of consumers' CSR beliefs, particularly in the context of developing country. This study has extended the theoretical understanding of CSR positioning and its strategic benefits in developed countries to include developing countries. The findings of this study can be implemented in brand or company positioning on CSR as well as in communicating their CSR initiatives to create differential advantages and maximize business returns.

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## **EXPLORING FACTORS ASSOCIATED WITH BANGKOKIAN'S PURCHASE INTENTION: A CASE STUDY OF ONE TAMBON ONE PRODUCT (OTOP) IN THAILAND**

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### **ABSTRACT**

Introduction of One tambon One product by Thai government has grown fondly among local consumers through intense retail competition. Hence it is purposing to explore the association of Perceived quality, Attitude toward package, Personal societal perception, and Certification and Marketing campaign towards Purchase Intention of 322 Bangkokian respondents who are housewife, government officer, private company officer and business owner. Pearson's correlation coefficient analysis and one-way ANOVA have used in analysis, which shown that Certification and Personal societal perception are high contributing on purchase intention, meanwhile housewife and private company officers have low interest in purchase. This study advises marketer or business owner of local brand or small business operation to what are the key factors to secure the purchase intention from consumer by their merchandise.

Keywords: Perceived quality, Attitude toward package, Personal societal perception, Certification, Marketing campaign, and Purchase intention.

### **INTRODUCTION**

One Tambon One Product or OTOP is a project that was formed to encourage local business entrepreneurs. This project aims to support a product which is unique. Local manufacturers in each district by getting inspiration from the One Village One Product (OVOP) that the success of Japan OTOP program encouraged communities and villages to improve the quality of local products with marketing by choosing products featured on one piece from each district to embed it as "OTOP" and supply both the domestic and international in order to promote these products. In addition, OTOP products are a wide range of local products which includes handicrafts, pottery, silk, jewellery, herbal, food and drinks (Official Statistics Thailand, 2001).

From 2014, the government has the policy to increase the efficiency of OTOP management project for developing the local business entrepreneurs in term of product attributes and skills. In addition, the government has the policy to expand distribution channels and target customers to increases revenue of the local business entrepreneurs. Therefore, The Community Development Department (CDD) who is responsible for OTOP project had the OTOP distribution centers under the expressway in Bangkok which responses to the government's policy. The objectives of this project are to expand the OTOP products' distribution channels, publish the heritage of wisdom Thailand which has a standard quality to Thai people and foreigners know, optimize the management of OTOP project to be sustainable, support the strengthening of the network of local business entrepreneurs to access capital both within and outside the country, and increase revenue of the local business entrepreneurs. Accordingly, the OTOP distribution centers under the expressway in Bangkok have three branches which are under the expressway at Phloen Chit, Silom, and Ramintra. Furthermore, The Phloen Chit and Silom branches have the target customers who are business owners, foreigners, and office workers around those areas. Ramintra branch has the target customers who are business owners, housewives and, family around that area (Matichon public co.,ltd, 2014).

2015, Thailand advance to the Asean Economic Community (AEC) which aims for economic integration as "Single market and production base" by the movement of goods, services, investment and skilled labour within ASEAN independently including the free capital movement which is driven the large, medium, and small sized enterprises and local business entrepreneurs as One Tambon One Product (OTOP) operators. The local business entrepreneurs have to learn and adapt to accommodate changes resulting from liberalization with the countries of ASEAN and will also develop themselves to be a manufacturer which meet the needs of local or domestic in order to meet the needs of

consumers internationally (The National Statistical Office (2015). Thus, the goal of the Community Development Department (CDD) is 100,000 million baht in 2015 (prachachat.net, 2015).

In addition, sales of OTOP products have grown increasingly every year and the average growth rate is 10 percent per year. Recently, total OTOP sales are 109,000 million baht which is more than the sales target at 100,000 million baht. However, the sales in 2014 and 2013 were 97,500 million baht and 86,900 million baht respectively (prachachat.net, 2015).

The prior study explored the opinion among Thai people towards OTOP products; hence this research focuses on study of what are factors or variables associated with the purchase intention of OTOP products among Bangkokian, also whether there is a difference on the purchase intention of OTOP product among difference occupation. The researcher aims to study what are the key important features for retailers or companies to incorporate in order to achieve level of purchase intention from their target customers.

## **LITERATURE REVIEW**

### **2.1 Perceived quality**

Product perceived quality is the judgment of customers which is overall worthy of products and it is not only an evaluation of customers as a part of brand value (Zeithaml, 1998), but also it is a variable to drive customers to choose one brand rather than other brands. In addition, Retailers always develop their high quality store brands aiming to achieve with manufacturer brands on brand image and quality, and also promote their store brands by the media (Verhoef *et al.*, 2002).

### **2.2 Attitude toward package**

The packages are the most important thing that the customers make the product's expected quality evaluation in the shop when they are shopping at the shop (Ragaert *et al.*, 2004). The concept of attitude toward package is defined that the customers' feeling of favourableness to new packages, perceived beneficial of new packages and a likeliness of purchase (Ratneshwar, Chaiken, 1991).

From the changing of customers experience from indirect to direct experience with new packages, the customers' attitude toward the container or product has a chance to increase (Folkes, Matta, 2004; Schoormans, Robbens 1997; Gardial *et al.*, 1994). In addition, the process which helps customers to develop an attitude toward the package is that customers are willing to perceive a direct experience with new packages (Schoormans, Robbens 1997).

### **2.3 Personal societal perception**

Personal societal perception is perceived behavioural control and subjective norm. The definition of perceived behavioural control is a extent of perceptions which behaviour is determined to be manageable. Moreover, it also determines the point which individuals discriminate and have mechanism to ensure the behavior of interest (Liou, Contento, 2001). The subjective norm is the individuals are pressured to their behaviour by social. It also indicates that the other groups which are called referents consider that individual should do the action and inspiration to gather to the referents (Nilsson *et al.*, 2004). Furthermore, the subjective standards assess the social desires on the individuals to perform or not to perform particular actions (Rhodes, Courneya, 2003).

### **2.4 Certification**

The OTOP certificate is a product which is listed in the survey and registered OTOP operators from 2014 to 2015. In addition, the product must be certified by Thailand FDA. In case of the product which does not have any provision of law, that product must have at least one certified standard before applying to the selection to get OTOP certificate such as Thai Industrial Standards Institute certificate, Halal, Q (Qmark), GAP, GMP, HACCP and Organic standards. The certification of OTOP Products are divided into five categories such as food, beverage, clothing apparel, souvenirs and herb (non-food). OTOP certificate has three component parts as the criteria such as the products and the strength of community, the marketing and the story of products, and the quality of products. Furthermore, OTOP certificate divides the five product levels according to the following points: 5-star (scores ranging from 90 -100 points) is the product quality standard or have the potential to export. 4 stars (scores ranging from 80-89 points) is the potential product which is recognized nationally and internationally to develop. 3-star (scores ranging from 70-79 points) is a middle-class quality products that can be developed into a four star. 2-star (scores ranging from 50-69 points) is a product that can be developed into a three star potential assessed periodically. 1-star (scored less than 50 points) is a product which cannot be developed because the two stars are very vulnerable and difficult

to develop (Bureau of Local Wisdom and Community Enterprise Promotion, Community Development Department, 2015).

**2.5 Marketing concept**

Marketing of entrepreneur is a tool to use and measure purchase intentions of products (Hossein *et al.*, 2011). In addition, Verbeke, (2000) acknowledged that entrepreneurs should establish satisfy consumer needs and trust through safe products and reliable, and they should use an efficient communication of products through efficient marketing campaign. The communication can change customers' attitudes which effect to new attitudes. Furthermore, the purchase decisions can be defined by the communication. On the other hand, the lack of communication effects individuals' decisions to purchase products (Richardson *et al.*, 1994).

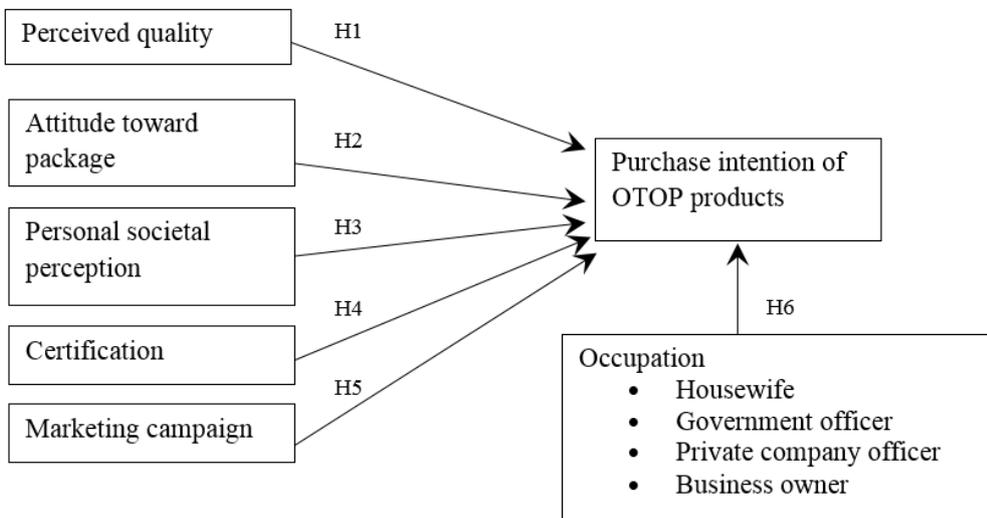
**2.6 Purchase intention**

Zeithaml (1988) emphasized that many variables as perceived quality and price can effect to purchase intention. Furthermore, the variables have an effect on perceived value that the customers use this value to develop their purchase intention. In addition, Murphy (1997) focused attention on the package design and consumer decision-making process. Thus, there are two steps in decision process that customers shop convenience packaged goods. The first step is the customers make the decision and consider the product when they shop at supermarket. The package design is a first player to create the primary decision for product consideration. The second is the customers have done for product consideration. The package design is the silent salesman to stimulate and conduct continuously to a purchase intention.

**RESEARCH FRAMEWORK AND METHODOLOGY**

From literature reviews, researcher identified many factors that associated with purchase intention. The researcher selected them to five factors such as Perceived quality, Attitude toward package, Personal societal perception, Certification, and Marketing campaign to explore factors associated with Bangkodian's purchase intention.

**Figure 1: Conceptual framework**



Source: Developed by the researcher for this study.

This study explores six hypotheses to complete the research objectives. They are:

H1: There is a positive significant relationship of Perceived quality with Purchase intention of OTOP products.

H2: There is a positive significant relationship of Attitude toward package with Purchase intention of OTOP products.

H3: There is a positive significant relationship of Personal societal perception with Purchase intention of OTOP products.

H4: There is a positive significant relationship of Certification with Purchase intention of OTOP products.

H5: There is a positive significant relationship of Marketing campaign with Purchase intention of OTOP products.

H6: There is a significant difference in Purchase intention of OTOP products based on Occupation.

### 3.1 Research Methodology

This research used a quantitative approach to explore the five hypotheses. In addition, this research used the convenience sampling research technique to collect data from the target population. This research conducted the data by using online and paper-based questionnaire. It also used Pearson's correlation coefficient analysis in order to explore a positive significant relationship of independent variables with dependent variable (H1-H5) and one-way ANOVA in order to explore difference in dependent variable based on four groups of occupation (H6).

**Table1:** Instrument Development

Variables	Items	Authors	Likert scale
Perceived quality	1	Shalom Levy and Hanna Gendel-Guterman, 2012	5
	2		
	3		
Attitude toward package	1	Gary R. Holmes Audhesh Paswan, 2012	5
	2		
	3		
	4		
	5		
Personal societal perception	1	Hayat M. Awan Ahmad Nabeel Siddiquei Zeeshan Haider , 2015	5
	2		
	3		
Certification	1	Hayat M. Awan Ahmad Nabeel Siddiquei Zeeshan Haider, 2015	5
	2		
	3		
Marketing campaign	1	Hayat M. Awan Ahmad Nabeel Siddiquei Zeeshan Haider, 2015	5
	2		
	3		
	4		
Purchase intention	1	Gary R. Holmes Audhesh Paswan, 2012	5
	2		

	3	OTOP products are available in market.	
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The 5-points Likert scale questionnaire employed on this research are ranging from strongly disagree to strongly agree as suggested by Churchill (1995). The questionnaire of this research was prepared in English and Thai because this research was done among Bangkokians who are housewives, government officers, private company officers and business owners who purchase OTOP products. The survey was designed in three parts. There were screening questions, demographic factors, and studied variables. The screening question was assigned in order to choose respondents who are living in Bangkok. The second part was to measure five variables on a Likert scale. The third part was the demographic factors were assigned in order to gather respondents' personal information including gender, age, income, occupation, and education.

For measurement of variable, this research targeted Bangkokian respondents who are housewives, government officers, private company officers, and business owners who purchase OTOP products.

For Population and sample, the online and paper questionnaire of this research were distributed to 350 Bangkokian respondents who are housewives, government officers, private company officers, and business owners who purchase OTOP products by using non-probability sampling which is a convenience sampling. From the completed online and paper questionnaire, 322 respondents were returned.

For reliability test, this research used Cronbach's Alpha Coefficient to test the reliability of questions by using 30 target respondents. Cronbach's Alpha is greater than 0.6 on all variables which are an acceptable reliability coefficient (Hair, J., Black, B., Babin, B., Anderson, R., & Tathan, R.,2006).

**Table2:** Consistency of the scales test

Variables	N of Items	Cronbach's Alpha
Perceived quality	3	0.748
Attitude toward package	5	0.861
Personal societal perception	3	0.692
Certification	3	0.845
Marketing campaign	4	0.622
Purchase intention of OTOP product	3	0.852

## RESULTS AND DISCUSSION

For the Data analysis, this research employed Pearson's correlation coefficient analysis and one-way ANOVA.

Descriptive analysis is used in the study to explore the data which was gathered from 322 respondents. In addition, it also used the descriptive analysis to explore the information with mean, standard deviation, and variance.

In questionnaire, the screening question was assigned in order to choose respondents who are living in Bangkok. The result is 100 percent of respondents were living in Bangkok. For descriptive analysis of demographic, gender proportion of respondents was 40.7 percent male and 59.3 percent female. Most of the respondents were in the 30 to 39 years old range at 33.2 percent and had an income (Baht per month) in the 25,001-35,000 Baht range at 31.4 percent. Furthermore, this research targeted to explore four occupations. The result is 24.5 percent housewives, 25.2 percent government officers, 26.1percent private company officers, and 24.2 percent business owners.

For Inferential analysis, this research used Pearson's correlation coefficient analysis in order to test first to fifth hypothesis and one-way ANOVA in order to test sixth hypothesis.

H1: There is a positive significant relationship of Perceived quality with Purchase intention of OTOP products.

Pearson's correlation coefficient analysis showed that H1 is supported and reject Ho at P-value of 0.000 and the correlation of 0.670. Therefore, there is a positive significant relationship between Perceived quality and Purchase intention of OTOP products.

H2: There is a positive significant relationship of Attitude toward package with Purchase intention of OTOP products.

As the result of Pearson's correlation coefficient analysis, it showed that H2 is supported and reject Ho at P-value of 0.000 and the correlation of 0.631. Therefore, there is a positive significant relationship between Attitude toward package and Purchase intention of OTOP products.

H3: There is a positive significant relationship of Personal societal perception with Purchase intention of OTOP products.

There is a positive significant relationship between Personal societal perception and Purchase intention of OTOP products. From Pearson's correlation coefficient analysis, it showed that H3 is supported and reject Ho at P-value of 0.000 and the correlation of 0.720.

H4: There is a positive significant relationship of Certification with Purchase intention of OTOP products.

Pearson's correlation coefficient analysis showed that H4 is supported and reject Ho at P-value of 0.000 and the correlation of 0.730. In addition, the result showed that there is a positive significant relationship between Certification and Purchase intention of OTOP products.

H5: There is a positive significant relationship of Marketing campaign with Purchase intention of OTOP products.

The result showed that there is a positive significant relationship between Marketing campaign and Purchase intention of OTOP products. In addition, Pearson's correlation coefficient analysis showed that H5 is supported and reject Ho at P-value of 0.000 and the correlation of 0.484

**Table3:** Pearson's correlation coefficient analysis

		<b>Purchase intention of OTOP product</b>
Perceived quality	Pearson Correlation	.670**
	Sig. (1-tailed)	0.000
	N	322
Attitude toward package	Pearson Correlation	.631**
	Sig. (1-tailed)	0.000
	N	322
Personal societal perception	Pearson Correlation	.720**
	Sig. (1-tailed)	0.000
	N	322
Certification	Pearson Correlation	.730**
	Sig. (1-tailed)	0.000
	N	322
Marketing campaign	Pearson Correlation	.484**
	Sig. (1-tailed)	0.000
	N	322

\*\* Correlation is significant at the 0.01 level (1-tailed)

H6: There is a significant difference in Purchase intention of OTOP products based on Occupation.

The result of one-way ANOVA shows that there is a significant difference in Purchase intention of OTOP products based on Occupation - housewives, government officers, private company officers, and business owners. Regarding to P value, housewives have a significant difference in Purchase intention of OTOP products among government officers, private company officers, and business owners. Furthermore, government officers have a significant difference in Purchase intention of OTOP products with private company officers.

**Table4:** The result of one-way ANOVA

<b>Housewife</b>	<b>Government officer</b>	<b>Private company officer</b>
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Housewife			
Government officer	0.000		
Private company officer	0.000	0.021	
Business owner	0.000	0.099	0.947

The mean difference is significant at the 0.05 level.

**Table5:** The descriptive of one-way ANOVA

	<b>N</b>	<b>Mean</b>	<b>Standard Deviation</b>
Housewife	79	2.63	0.886
Government officer	81	3.94	0.713
Private company officer	84	3.58	0.789
Business owner	78	3.65	0.853
Total	322	3.45	0.944

95% Confidence Interval for Mean

The result of Pearson's correlation coefficient analysis shows that Certification has the most contribution to Purchase intention of OTOP products ( $r = 0.730$ ,  $p = 0.000$ ). On the other hand, Marketing campaign is the least significant factor to Purchase intention of OTOP products ( $r = 0.484$ ,  $p = 0.000$ ). In addition, the five independent variables in this research (H1-H5) have a positive significant relationship with Purchase intention of OTOP products as dependent variable. For the result of one-way ANOVA, it showed that there is a significant difference in Purchase intention of OTOP products based on Occupation. Furthermore, the group housewife is statistically different than other groups ( $p = 0.000$ ).

## CONCLUSIONS AND RECOMMENDATIONS

From the conceptual framework of this research, it is supported by the empirical findings that there is the association of Perceived quality, Attitude toward package, Personal societal perception, Certification, and Marketing campaign with Purchase intention of OTOP products among Bangkokian. In order to associate with high purchase intention, by having the credential or guarantee over the products features and characters will ease the worry and associate the customer in having purchasing mind, while making the product image being welcoming or accepting by social is also crucial.

Government officers tend to have the favourable higher intention towards OTOP, possibly from its well-recognized of the products and supportive social surrounding, meanwhile the Housewife group is having the low interest toward OTOP product, this suggest for OTOP producer or project supporter to initiate the certified over OTOP product, which are keen and accepted by the Housewife group, also to shape up the image of the product to be in favourable perception and more socially versatile with Housewife group.

It recommends to other retailers or business entrepreneur the focus to understand what are associating with the purchase intention within their targeted customers. Credential and Acceptance regards the products and services are the areas enhancing the purchase intention. However this is limited for further study in other retails business, especially the small and medium enterprises, in order to examine the association of the purchase intention among other industries, also to enhance the study towards different region of respondents in order to examine the results of the purchase intention framework in other environment.

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**APPENDIX**

**Appendix 1:** The Analysis of Demographic Factors by Using Frequency and Percentage

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	male	131	40.7	40.7	40.7
	female	191	59.3	59.3	100
	Total	322	100	100	
Age	20-29	90	28	28	28
	30-39	107	33.2	33.2	61.2
	40-49	76	23.6	23.6	84.8
	more than 50	49	15.2	15.2	100
	Total	322	100	100	
Income (Baht per month)	less than 15,000	32	9.9	9.9	9.9
	15,000-25,000	99	30.7	30.7	40.7
	25,001-35,000	101	31.4	31.4	72
	more than 35,000	90	28	28	100
Occupation	Housewife	79	24.5	24.5	24.5
	Government officer	81	25.2	25.2	49.7
	Private Company Officer	84	26.1	26.1	75.8
	Business owner	78	24.2	24.2	100
	Total	322	100	100	

**Appendix 2:** Descriptive Statistics of variables

N = 322

Variables	Description	Minimum	Maximum	Mean	Std. Error	Std. Deviation	Variance
Perceived quality	OTOP product is a great in overall quality.	1	5	3.57	.051	.918	.843
	OTOP product is a value.	1	5	3.52	.053	.958	.917
	The quality of OTOP product is superior.	1	5	3.32	.057	1.026	1.052
Attitude toward package	OTOP package is easy to open.	1	5	3.43	.051	.915	.837
	OTOP package is easy to use.	1	5	3.45	.048	.853	.728
	OTOP package is easy to store.	1	5	3.39	.050	.898	.807
	OTOP package is easy to handle.	1	5	3.41	.053	.943	.890
	OTOP package prevents from breakage.	1	5	3.20	.060	1.077	1.160
Personal societal perception	Social pressure me to purchase OTOP	1	5	2.61	.073	1.305	1.702

	products.						
	I have a positive perception to purchase OTOP products.	1	5	3.32	.063	1.128	1.272
	I believe that OTOP product leads to favourable attitudes.	1	5	3.45	.062	1.105	1.221
Certification	The product which is approved by OTOP certificate as standard.	1	5	3.59	.060	1.073	1.152
	I purchase an OTOP product which shows OTOP certification's logo.	1	5	3.40	.063	1.126	1.269
	OTOP certification's logo has more attraction than those without logo.	1	5	3.45	.071	1.265	1.601
Marketing campaign	Brand is vital to purchase an OTOP product.	1	5	3.76	.061	1.097	1.203
	Celebrity endorsement is important in purchasing the OTOP product.	1	5	3.39	.074	1.322	1.747
	I purchase an OTOP product with familiar brand name.	1	5	3.68	.062	1.114	1.241
	Sales promotion influences my purchase of OTOP product.	1	5	3.80	.061	1.087	1.182
Purchase intention of OTOP products	I have a willingness to purchase OTOP products.	1	5	3.38	.060	1.070	1.145
	I have a probability to	1	5	3.42	.059	1.060	1.123

	purchase OTOP products.						
	OTOP products are available in market.	1	5	3.56	.057	1.019	1.038

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### ABSTRACT

With the advent of internet and connective technologies, customer has increasingly participating in value co-creation process. Hence, this studies aims to investigate the customer perspective on co-creation and its effects on behavioural outcomes. It dwell deep to find the consequences of active customer participation in co-creation. The results of study empirically validate the effect of customer participation on consequences of value co-creation process in e-services. The result could be helpful for manager in developing strategies for managing and maintaining long term relationships with the customers who are participating in co-creation. The framework proposed is not a comprehensive framework as there can be other behavioural outcomes which needs further investigations. The present framework has been teste in case of services and can be elaborated in various other industries.

Keywords: Customer participation, value co-creation, consequences, consumers

### INTRODUCTION

Transition of economies from production to marketing orientation has marked the previous era. The era has witnessed the mass production of goods at the lower cost to entice their customers. The gradual changes in the aspiration of customer to superior product has propelled organizations to rethink on different other aspects such as quality, image, features and designs. But these product aspects are not alone sufficient to satisfy the demand of their customer, instead whole rethinking of organizational strategy has to be done, to meet the customer need. Adoption of marketing approach came into picture, when an organization starts enticing their customer through assessment of their need and successful satisfaction of those needs. Need-satisfaction approach was credited to establishment of customer patronage and long term customer loyalty. The need-satisfaction approach has also undergone tectonic shift with the change in time, environment and globalization. Advent of new technologies, rise of internet, connecting up of customers across boundaries has empowered the customers and turned them into more informed decision maker.

Radical changes occurring in this new era has brought the customer more closely to the organizations, which otherwise were always situated on the other end of their supply chain. This transformed customer wants greater involvement in the value creation process. To him value is not limited to trade-off between benefits and sacrifices. Instead value has turned into the rich, delightful and meaningful experiences achieved through consumption. Therefore we find participation of customer is particularly to create personalised offering and satisfy their need

The present study deals with the development and testing of relationship between customer participation in co-creation (CPC) and various consequences of it on customers. The modelled relationship is tested in the context of e-retailing in India. In the following section, we present the various important constructs of the study and develop several hypothesis in regard to model. Further we explain the model validation process and results of the study. Finally we provide discussion and implications of results and suggestion for the future research.

## LITERATURE REVIEW

Various definition of value co-creation is being discussed in management literature from various discipline and perspective such as Marketing, Service, Interaction, Design, Innovation and NPD. Kambil et al. (1996) were the first one to coin the term value co-creation, for emphasizing the role of customers in business strategy and marketing. But the term was popularised and disseminated by Prahalad and Ramaswamy (2000, 2004a, 2000b), who conceptualized value co-creation as the “co-creation of personalised experiences with the customers”.

Table 1: Definitions of co-creation

Authors	Value co-creation definition
Gronroos and Voima (2013)	“[...] refers to customers’ creation of value-in-use where co-creation is a function of interaction.”
Roser et al. (2013, p.23)	“[...] an interactive, creative and social process between stakeholders that is initiated by the firm at different stages of the value creation process.
Ind and Coates (2013, p.92)	“[...] as a process that provides an opportunity for on-going interaction, where the organization is willing to share its world with external stakeholders and can generate in return the insight that can be derived from their engagement.
Lambert and Enz (2012, p.1601)	“[...] as a three phase cycle comprised of (1) joint crafting of value propositions, (2) value actualisation (3) value determination.
Gronroos (2012, p.1523)	“[...] is a joint collaborative activity by parties involved in direct interactions, aiming to contribute to the value that emerges for one or both parties.”
Edvardsson et al.(2011, p.327)	“[...] is shaped by social forces, is reproduced in social structures, and can be asymmetric for the actors involved.”
Gummesson and Mele (2010, p.190)	“[...] is enabled by actor to actor (A2A) involvement and commitment. It is a time-based process which simultaneously comprises parallel and sequential phases.”
Xie et al.(2008)	“[...] Prosumption as value creation activities undertaken by the consumer that result in the production of products they eventually consume and that become their consumption experiences.”
Payne et al. (2008, p.84)	“[...] process involves the supplier creating superior value propositions, with customers determining value when a good or service is consumed.

Customer acceptance in value creation first started in service literature (Lovelock and Young, 1979; Bitner et al., 1997). Services which were high on credence quality need higher involvement of customers than those on search and experience. Therefore, Hilton et al. (2012) argues that customer involvement in value creation can vary from being optional to the mandatorily participation.

Recent service dominant logic proposed by Vargo and Lusch (2004) has brought goods also in the ambit of services by considering it as an appliance for distributing service. Historically role of customer was considered from various perspectives such as a personal resource, human resource, productivity enhancer (Agrawal and Rahman, 2015). Role of customer is classified into three categories by Bitner et al. (1997) as a: (1) Productive resource (2) Contributor to service quality and satisfaction and (3) as competitor. Customer has a reservoir of various operand and operant resources that are actively used to create value.

Grounded in service dominant logic, Bolhius (2003) presented interactive model of customer learning based on cognitive, emotional and volition elements. Technology has played the revolutionary role as a resource for harnessing the customer resources. Emergence of internet and its role in rise of social networking sites (Facebook, Twitter, Myspace), customer generated content (Videos, New, Blogs, Reviews, Information), creation of freely distributed open source content (software, massive online open learning) has bridged the distances among the customers around the world. It has made the open source and value co-creation movement more fast and rapid.

Acknowledging their customers importance, firm have started extending their boundaries to integrate customer in value creation. But integrating customer is not an easy task, which means firms are dire to face challenges. Heterogeneity of customers, defining the jobs of customers, selection and recruitment

of customers, and managing the customer mix in co-creation are the key challenges ahead in front of organizations.

### CONCEPTUAL FRAMEWORK AND HYPOTHESES

Based on thorough investigation of literature we enunciate that active customer participation in co-creation has several profound consequences. We found following factors enumerated in Figure 1 as important consequences of customer participation in co-creation process. Though these are not the comprehensive list of construct, yet they serve an important factors which marketer wants to achieve.



Figure 1: Various consequences of customer participation in co-creation

#### Customer participation and experience

Technology advancement and internet familiarity has let customers today to contribute, enhance, evaluate and create learning experiences for themselves and others through interactions with other actors in the process. Regular follow ups and contacting customers for feedback enables effective communication between firms and customers. Tynan et al. (2010) found that active dialogue among customers and firm resulted in personalized co-created experiences. Franke & Schreier (2010) and Füller et al. (2009) identified that providing tools for co-creation made customer experiences more enjoyable and innovative. Payne et al. (2008) pointed out that experiences inherent in, and arising out of the co-creation process could also prove beneficial for the firm. Firms could achieve competitive advantage, customer loyalty and satisfaction through the enhancement of these experiences (Gebauer et al., 2010). Consider these points, we hypothesize that:

H1: Customer participation in co-creation has positive influence on customer loyalty

#### Customer participation and satisfaction

Customer participation in co-creation enables various benefits for the customers such as economic, social, experiential and personal. These benefits are the major reason of customer satisfaction. Etgar (2008) argued that customer participation enables close relationships and profound experiences to the customers. These experiences leads to a deep sense of accomplishments. Additionally, Franke et al. (2010) insist that outcome of co-creation hugely relies on the evaluation made by customers for their own contributions. Grisseman and Stokburger-Sauer (2012) found out that customer active participation enhances customer value and hence it results in increased satisfaction of customers. Hence we posit that:

H2: Customer participation in co-creation has positive influence on customer satisfaction

### **Customer participation and loyalty**

Participation of customers in co-creation process is a source of value for them as it turn them more informed, connected and empowered. According to Prahalad and Ramaswamy (2004) and Dellande et al. (2004) customer participation in co-creation leads to increased amount of mutual understanding which further influences customer satisfaction and their loyalty (Mohr and Bitner 1991). Further Dick and Basu (1994) and Wallace et al. (2004) argued that participation influences customer loyalty as both attitudinal and behavioural loyalty which means customer satisfaction and experiences of customer enable customer decision to be loyal to organisation. Taking these consideration we hypothesise that:

H3: Customer participation in co-creation has positive influence on customer loyalty

### **Customer participation and Word of Mouth (WOM)**

Customer participation in co-creation results into customer communicating the advantages of co-creation to others. Customer spreads the good words about co-creation if they have compelling experiences in co-creation process. According to Hennig-Thurau et al. (2004) customer spread WOM as they looks for social interaction, monetary benefits and self-appraisal. Kohler et al. (2011) found eWOM as a strong factor which pulls other customer also to co-creation process. Therefore we hypothesis:

H4: Customer participation in co-creation has positive influence on Word of Mouth (WOM)

### **Customer participation and further interest**

Customer further interest to stay in co-creation deeply depends on kind of previous experiences it encountered in collaboration. Greater participation of customer if leads to formation of positive experiences can greatly enhance customer future or further interest in co-creation. However, according to Deci and Ryan (1985) and Kohler et al. (2011) opposite of it can lead to value co-destruction and resist them to participate in future. Thus customer participation in co-creation can entice further interest if it is supplemented with enjoyable and higher quality of experiences (Csikszentmihalyi, 2002). Thus customer motivation to remain in co-creation depends heavily on associated benefits

H5: Customer participation in co-creation has a positive effect on customer further interest.

## **METHOD**

The empirical analysis is based on the survey research performed in New Delhi, India. To collect data we reach to banking customers who are using ATM as we found that Kaushik and Rahman referred that customer who are using one type of SSTs are very likely to use another kind of SSTs. Our sample represent those customers who are using online banking. For this we administered questionnaire to 350 ATM users at different interval and different location in Delhi. After checking missing data we find 320 usable questionnaire which were further analysed using statistical software.

### **Measures**

Based on extensive literature we used adopted scale from literature to measure each construct. Customer participation is measured with four item scale given by Uzokurt (2010) consist of customer's informational, physical, behavioural, and emotional contributions (i.e., provision, production, presentation, and evaluation) which further affect experiences measured by 5 items (Kohler et al. 2011), satisfaction measured by 2 items (Grissemann and Stokburger-Sauer, 2012), loyalty measured by 4 items (Grissemann and Stokburger-Sauer, 2012), WOM measured by 3 items (Gebauer et al., 2013), and further interest measured by two items (Kohler et al. 2011)

Table 3-Calculation of validity and reliability

	CR	AVE	MSV	ASV	EXP	SAT	LOYA L	WOM	FIN
EXP	0.924	0.804	0.100	0.063	0.897				
SAT	0.963	0.866	0.100	0.040	0.317	0.931			
LOYA L	0.869	0.571	0.059	0.041	0.243	0.077	0.756		
WOM	0.892	0.676	0.071	0.039	0.105	0.128	0.242	0.822	
FIN	0.828	0.617	0.081	0.057	0.285	0.192	0.198	0.266	0.786

### Validation of measurement model

We followed the Anderson and Gebring (1988) steps for validating measurement model and then testing hypothesis. Confirmatory factor analysis (CFA) was carried out using IBM AMOS software. Item with loading below .6 were dropped at again model was run. Modification indices were checked which leads to good model fit. The result obtained through CFA procedures are  $\chi^2 (320) = 310.40$   $p < .00$ , and RMSEA, GFI, AGFI, NFI, and CFI values of .20, .86, .81, .92, and .92 respectively. Next we tested convergent validity and reliability test and it is found that all are within the acceptable limits.

### Assessing Common Method Bias

We performed the common method bias analysis to further refine the finding of our data. For this study we used, Harman's one factor test which requires varimax rotation in exploratory factor analysis. The results of the test indicates that the single factor accounts for only 22 % of variance which means 78% of the rest variance is being explained by another factors. Thus no single factor accounts for variance and hence there is absence of common method biasness.

## RESULTS

### Hypothesis Testing

After application of CFA, Structural equation modelling (SEM) is employed for hypothesis testing. Alike measurement model, finding of structural model also reflects a good-fit ( $\chi^2 = 320$ ,  $p < 0.000$ , NFI= 0.81, CFI= 0.84, GFI= .92, RMSEA=) exhibited in Table 3. The result shows all the hypothesis are having significant value and it indicates that all of them are having positive relationship and are in accordance to theorized directions. H1, H2, H3, H4, H5, all of the consequences are positively related to customer participation in value co-creation.

Hypotheses	Standardized loadings	<i>p-value</i> (<0.05)	Result
H1 CPC- Experiences	0.40	0.00	Supported
H2 CPC- WOM	0.36	0.00	Supported
H3 CPC-Satisfaction	0.31	0.00	Supported
H4 CPC-Loyalty	0.22	0.00	Supported
H5 CPC-Further Interest	0.18	0.00	Supported

## DISCUSSION

The study extends various researches on customer participation in co-creation by providing empirical evidences regarding significance of consumers and their roles. Consumer's participation in value co-creation has a strong influence on their experiences, customer satisfaction, loyalty, word of mouth and further interest in co-creation. Thus firm should always work in direction to facilitate customer participation through training, resource offering and mutual sharing. Firms who are successful in integrating active participation of their customer in value creation process can achieve competitive advantage over their competitors. However firm should also play caution while integrating customer into their value chain as in case of failure, this strategy can backfire and can create bad word of mouth

for the firm. Also firm has to understand that co-creation is not fit for all strategy and hence it has to be personalised to each customer.

On the customer's end, it can be a great way to involve in the value creation process which traditionally was meant for firms. They can achieve satisfaction and can be strong loyalists if the firm is allowing their participation. These customers can also act as evangelists in inviting other customers to join and continue their participation in the co-creation process which would ultimately help in their need satisfaction. There are various implications of these findings for managers which can create compelling experience environments and participation opportunities to achieve various behavioural outcomes for their customers.

#### **LIMITATIONS AND FUTURE RESEARCH AGENDA.**

The present study is cross-sectional in nature which allows it to be replicated as a longitudinal study. Further, the present context is online banking, hence this can be studied in various other offline and online contexts.

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## **THE IMPACT OF PERCEIVED HUMOR IN ADVERTISEMENTS TO CONSUMER'S ATTITUDE AND PURCHASE INTENTION**

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### **ABSTRACT**

Humor and its effect in advertisement have long been of great concern to academicians as well as industry practitioners. Humor in advertisement has been employed by numerous brands, yet little understanding of its mechanism has been presented. Further, cultural distinctiveness also contributes to the effectiveness of humor, as people in different culture perceive humor differently. In line with other researches, this study collects data on a quantitative survey and utilizes Partial Least Square-Structural Equation Modeling (PLS-SEM) analysis for a sample size of 348 respondents. The results have demonstrated significant impacts of Perceived Humor on Consumers' Cognitive and Affective Response as well as their Advertisement and Brand attitude and their Brand Purchase Intention. Importantly, thoughtful recommendation for marketers in Vietnam market is also given accordingly.

**Keyword:** Perceived Humor, Cognitive response, Affective response, Consumers' Attitude, Brand Purchase Intention

### **INTRODUCTION**

#### **The role of Brand advertising**

Brand advertising has become irreplaceable in the contemporary world. In fact, most manufacturers can hardly be successful without advertising as it is effective communication tools to inform and persuade consumers and stakeholders about the products. Consumers often take into account the brand when they choose a specific line of products and as consumers perceive it as an added value to the products and refer to it when making decision (vietnambranding.com, 2013). As a result, luxurious, high-involvement products are heavily advertised, and so are branded daily necessities. Television Commercials (TVCs) from Fast Moving Consumer Goods (FMCG) can widely be seen from various channels.

The impact of advertising activities is so tremendous that despite the economic hardship in Vietnam, expenditure for advertising activities in the FMCG industry is increasing at a phenomenal rate and various companies spends more than 20% of its profit for such business activities (massogroup's research, 2009). The same article stated that the increase of budget used for media advertising of FMCG is among the highest, constituting 59% compared to 2008. Noticeably, not only multi-national organizations such as Unilever, P&G, Coca-cola, Suntory Pepsico but also domestic firms (e.g. Vinamilk, Tan Hiep Phat, Acecook, to name three large firms) confirmed the importance of advertising and continue to spend in such activities.

#### **Humor in Advertisements**

The use of humor in advertisements has been common for a long period of time. Previous research has demonstrated the effects of humor including consumer attraction, improvement in the attitude of the ads (Rossiter and Percy 1997). Marketing researchers devoted considerable effort in understanding humor, yet it still remained an ambiguous component of advertising (Sutherland and Sylvester, 2000). Although the overall effect of humor is still in controversy, its impacts on consumer psychology have widely been recognized by both academicians and industry practitioners (Weinburger and Gulas, 1992; Speck 1987; Duncan and Nelson 1985; Belch and Belch 1984; Madden and Weinberger, 1984; Gelb and Pickett 1983; Sternthal and Craig, 1973).

Quickly glance through the low-involvement product market in Vietnam, it can be seen that many adverts include humor in an attempt to attract consumers and enhances their feelings toward the ads. The most outstanding are the Television Commercials of Mentos (e.g. Candy and Chewing gums), Calofic (e.g. Meizan Oil), Vinamilk, Nissin Foods (e.g. “365” and “Waxada” Instant Noodles), Universal Robina Corporation (e.g. C2 bottled tea), Suntory Pepsico (e.g. 7Up soft- drink) etc. The excessive use of humor in Vietnam FMCG market calls for an urgent need to understand what humor is as well as which parts of the advertising activities that humor mostly influences (the adverts and/or the brand). This study is designated for the exact purposes. The study is divided into two parts, incorporated two following objectives. Firstly, we will examine the cognitive and affective responses of consumers as well as the manipulation of humor and humorous adverts on the responses. Subsequently, we analyze consumer attitude toward the advertisements and the brand as well as their purchase intention under the effect of humorous advertisements.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Perceived Humor

Considerable effort has gone into defining such an ambiguous concept as humor. According to Sternthal and Craig (1973), there were three distinctive approaches to define humor in term of its characteristics. Firstly, humor was assimilated to its stimulus, jokes, understatements, puns, satire, irony or incongruity, to name a few. Secondly, humor is often linked to responses such as laughter and smiles manifested by the audiences who are exposed to humor messages. However, Sternthal and Craig (1973) considered this approach difficult to measure as different people exhibited various responses with different length accordingly. The last measurement is the perceptual reactions of the respondents or, in order words, the extent to which the messages are perceived to be humorous.

Catanescu and Tom (2001) developed a comprehensive multi-dimensional measurement of humor. In their research, there were seven terms that can generalize humor. In detail, they were (1) Comparison: the use of two or more factors together, (2) Personification: impersonal objects and animals, (3) Exaggeration: overstatement and magnification of a fact, (4) Pun: Alternation of language that eventually creates humor, (5) Sarcasm: ironic judgments and circumstances that often attributed to silliness, (7) Silliness: humorous reactions and ludicrous situation, and Surprise: Unexpected situation causing humor.

In an attempt to understand the influences of Perceived Humor on the consumers, prior scholar included cognitive and affective responses in their frameworks, both as independent constructs and as an integration of the two factors (Eisend, 2011). Several past literature have suggested the correlation between affective and cognitive response, indicating that the affection and cognition can work together (Vakratsas and Ambler, 1999; Burke and Edell, 1989; Zajonc and Markus, 1982). With respect to the impacts of Perceived Humor, the result of Perceived Humor and Affective Response and Attitude was consistent and supported from previous studies (Speck, 1987; Duncan and Nelson, 1985; Belch and Belch, 1984; Gelb and Pickett, 1983). The result of cognitive response, on the other hands, was contradictory. Although Madden and Weinberger (1984) and Weinberger and Spotts (1989) questioned the findings of Sternthal and Craig (1973) that humor enhance source credibility, a cognitive component, strong support has been found for the result in both advertising and non-advertising studies. Therefore, this study formulates its three first hypotheses:

H1: Perceived Humor positively affects Cognitive response

H2: Perceived Humor positively affects Affective response

H3: Perceived Humor positive affects Attitude toward Advertisement

The issue of mediating effects of affective and cognitive responses in the relationship of humor and Attitude toward the advert and the brand has attracted special attentions of marketing authors (Batra and Ray, 1985; Edell and Burke, 1985; Gardner, 1985; Lutz, 1985; Lutz, Mac'Kenzie and Belch, 1983; MacKenzie and Lutz, 1983; Mitchell, 1983; Mitchell and Olson, 1981; Shimp, 1981). This paper reviews and discusses in detail both types of responses and their potential mediating relationship to consumers' attitude.

### **Cognitive Response**

Ajzen and Fishbein (1975) and Eagly and Chaiken (1993) first found that cognitive factors are generated when human acquire information of the attitude object. Further, Wilkie (1994) classified cognition as the first level in the hierarchy of human emotion and attitude and is the stage of rational thoughts in consumers. The finding of Schiffman and Kanuk (2007) is identical in that he conceptualized cognition as the perception that related to consciousness and is gained when consumers directly interact with the objects and its information from various sources. The constructs has also been mentioned as one of the two antecedents of consumers attitude by Shimp (1981). He also suggested that in this state of consciousness, consumer attitude is influenced by the procedure of processing cognitive elements.

In order to explain the effect of cognitive response when the consumers are exposed to perceived humor, previous scholars clarified the relationship with different explanations. Firstly, in 1978, McGuide developed an information processing approach. As humor is a high attention attractive stimulus (Eisend, 2009), exposure to advertisement with humor stimulate consumer to produce more cognitive response. The response, however, is more on a favorable side to the advertisement and the brand given the positive message provided by the advertisement and by humor (Eisend, 2011).

The second explanation is the reduction in counterargument from Eisend (2011). When consumers are watching advertisements with an aim to persuade them, they will produce cognitive thoughts about the reliability of such adverts (Krishnan and Chakravarti, 2003). The case, however, is different with the availability of humor, as it distracts viewers from those arguments, resulting in more positive thoughts of the commercial and the brand. Although there are researches with the relationship between Cognitive response and Attitude toward Brand, several previous papers has emphasized the “vampire effect”, in which the occupation of humor increases consumers’ attention toward the advertisement, but not the brand, as humor reduces the attention to the other parts with no humorous messages, which is the brand in this case (Zillmann et al, 1980, Even, 1988, Eisend, 2011). When examining several models of Attitudes, MacKenzie and Lutz (1982) and Lutz, MacKenzie and Belch (1983) also confirmed the mediating effects of cognitive response for the attitude toward the Adverts and Brand. For that reason, later studies has confirmed that the cognitive components, also referred to as belief and defined as logical processes of the positive and negative aspects incurred in the advertising form a positive relationship with attitude toward advertising (Wang et al., 2009; Wolin et al., 2002). Hence, the third hypothesis is formulated according to the theoretical foundation.

H4: Cognitive response positively affects attitude toward advertisements

#### **Affective response**

Besides cognition, affection is considered the second stages of human emotions (Wilkie, 1994) and the other distinct construct of attitude toward the advertisement (Shimp; 1981; Lutz, 1985). It is defined as consumers’ emotions about a particular product (Schiffman and Kanuk, 2007). Later in his study, Michell (1983) pointed out that affection is not a mere separated dimension, which contradicts Shimp’s findings (1981). Affection included both cognition and psychological emotions. In other words, the affective response was the result of conscious feelings rather than unconscious reaction (Liu and Stout, 1987). Humor further deepen the correlation between emotions and cognitive evaluations, as exposure to humorous adverts triggered an “integral effect” that directly connects with the advertisement as well as the object in the commercials and results in a direct impact of emotions on assessment (Eisend, 2011). Further investigation showed that affection could influence cognitive aspects such as thoughts and decisions (Eisend, 2011) by altering consumers’ perception of a specific target (Fishbein and Middlestadt, 1995). One of the reasons for this is that consumers’ judgment often assimilated to emotions and feelings, which eventually shaped their conscious thoughts and perceptions of a target (Cline and Kellaris, 2007; Isen et al., 1978). For instance, people with positive affective reactions to a product or service are more likely to generate positive and favorable evaluations than people with negative sentiments (Eagly and Chaiken, 1993; Oliver, 1980).

Alternatively, Schwarz and Clore (1983) developed an affect-as-information hypothesis, which stated that: “people tend to inspect how they feel about objects they are about to evaluate”. In accordance with this theory, people take their feelings into consideration as they assess something but not automatically depend on their emotion (Eisend, 2001). Furthermore, previous papers pointed out that people tend to avoid ruining their positive affective state by eliminating negative rational thoughts and harsh judgments (Eisend, 2011; Andrade, 2005; Gross, 1998). People are likely to seek constructive

criticism to maintain the positive emotions. Therefore, it is obvious to assume that Affective response influence cognitive response in consumers in a positive way:

H5: Affective response positively affects Cognitive response

With respect to the attitudes, an advertisement can partly influence the consumers' attitude by generating not only different positive emotions such as amusement, delight, affection, hopefulness but also negative ones including opposition, defiance, and offense (Edell and Burke, 1987). These affective elements are essential in determining and measuring the effectiveness of advertising, for they are connected with attitudes. Specifically, Affective response directly affected Advertisement attitude and indirectly affected Brand attitudes. There were several explanations for the potential relationships. Firstly, according to De Houwer et al.'s (2001) procedure of simple evaluation theory, humor elicited affective reactions toward the advertisement, and eventually transfer it to the Brand of the product in such advertisement. Additionally, Holbrook and Batra (1987) and Burke and Edell (1989) showed that the affective response was a significant predecessor of advertisement attitudes and brand attitudes. However, the most notable contrary between the two authors was the inconsistent finding regarding to the direct link of Affection and Brand attitude. While Holbrook and Batra (1987) pointed out that the connection was mediated by Advertisement Attitude, Burke and Edell (1989) confirmed the proposed direct relationship. Other previous studies have also reported the positive influence of Affection and the attitude toward advertisements of consumers (Eisend, 2011; Hwang et al., 2011; Strick et al; 2009; Brown and Stayman, 1992; Aaker and Stayman, 1990; Liu and Stout; 1987; Gelb and Picklett, 1983). Thus, we explicitly formulate the hypothesis reflecting the relationship between Affective response and Attitude toward advertisement

H6: Affective response positively affects Attitude toward Advertisement.

#### **Attitude toward Advertisement and Brand and Consumer Brand Purchase Intention**

Consumers' attitude toward the advert and the brand is widely used in previous papers as a reliable construct for advertising effectiveness measurement (Lutz; 1982 and Lutz, MacKenzie and Belch 1983; Liu and Stout, 1987; Eisend, 2011). Attitude toward the ad has been defined in term of the conscious and emotional responses to a specific ad at a particular time (MacKenzie and Lutz, 1989). There are a large body of articles referred the attitude toward the ad as "liking the ads" and indicated that the construct is identical to the "Attitude toward the ad". They only differed in their operational procedure of measurement, beside their distinctive names (Greyser, 1973; Biel and Bridgwater, 1990; Haley and Baldinger, 1991; Hollis, 1995). Attitude toward the ads included both positive and negative assessment whereas "liking the ads" are more on the favorable side of emotions. Traditional advertising papers have indicated that positive attitude toward the ads was associated with positive purchase intentions (MacKenzie and Lutz, 1989; MacKenzie et al., 1986).

With respect to Brand attitude, it is a well-established construct, defined as an overall judgment of a brand (Engel et al., 1995; Eagly and Chaiken, 1993). Brand attitude is an essential construct in most marketing studies as it is considered a determinant in consumers' behavioral intention, specifically intention to use and to purchase a brand of a particular product (Howard, 1989; Engel et al., 1995). Additionally, the mediating role of Brand attitude in the measurement models of advertising has been long hypothesized and widely tested. In their theoretical model examination, MacKenzie and Lutz (1982) and Lutz et al. (1983) confirmed the one-way relationship from Advertisement Attitude to Brand Attitude and ultimately to behavioral intention. In addition, the result of the meta-analysis of Brown and Stayman (1992) also confirmed the direct influence of Attitude toward Advertisement to Brand attitude and of Brand attitude to Purchase intention as well. Their findings are homogenous to other studies of the related area (Eisend, 2011; Levenson and Blackston 1997, Homer, 1990; MacKenzie and Lutz, 1989; Stayman and Aaker, 1988; Liu and Stout, 1987; MacKenzie et al., 1986). From the previous foundation, it is reasonable to establish the next hypothesis:

H7: Attitude toward advertisement positively affects Brand Attitude.

The last dependent construct to be included in the study is Brand Purchase Intention, which regularly appeared in advertising papers. Many author employed this constructs as a reliable dependent variable without any justification because the construct has been well-established (O'Maholley and Meenaghan, 1997; Tripp et al., 1994). In their published work, Fishbein and Ajzen (1975) proved that Purchase Intention can predict actual behaviors, so it has been repeatedly used in prior marketing studies (Morwitz, 1997; Jamieson and Bass, 1989; Kalwani and Silk, 1982). Their results revealed a

positive link between purchase intention and actual behavior. Later researches considered that Purchase Intention was generated after consumer has purchased the products, also known as a “post-purchase process” (Solomon et al., 2006; Blackwell et al., 2001; Wilkie, 1994). Because post-purchase intention is believed to predict future behaviors (Kuo and Wu, 2012; Kuo et al., 2009; Wierenga, 2008; MacDonald and Smith, 2004; Jones et al., 2000), it is of paramount importance in consumers’ decision making process (Perugini and Bagozzi, 2001; Bagozzi and Dholakia, 2006).

The establishment and confirmation of the hypothesis between Brand attitude and Brand Purchase Intention has been widely recognized. Besides theoretical researches, empirical studies also confirmed the relationship. Zinkhan and Fornell, 1985 and Levenson and Blackston (1997) both discovered a strong influence of Brand attitude on Brand Purchase Intention. Interestingly, Laroche et al. (1996) also noted the negative correlation of Attitude toward Competitors’ Brand and Purchase Intention of the targeted brand. In brief, as Brand Purchase Intention is routinely used as predictor of advertising effectiveness in previous study, so we formulated our last hypothesis:

H8: Brand attitude positively affects Brand purchase intention

**PROPOSED MODEL**

Our proposed theoretical model is as follow:

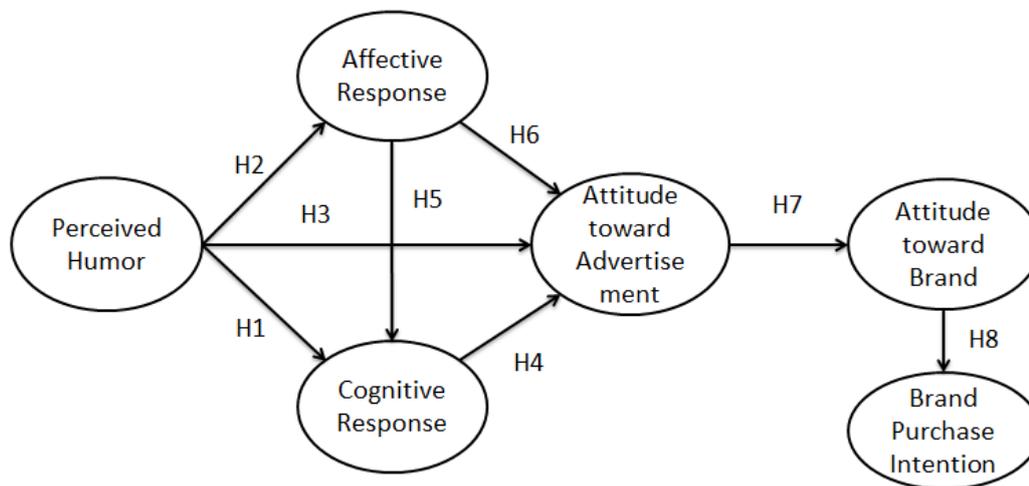


Figure 1: Theoretical Model

**METHODOLOGY**

**Instrument development**

There are six factors included in the proposed framework, and each factor was carefully measured using multiple items. Perceived humor is adapted Zhang and Zinkhan (2006), who credited Zhang (1996) for using his questionnaire. Cognitive Response and Affective response measurement are adapted from the adjective list of Burke and Edell (1987), Cheng and Well (1999) and Bruner (2009). Attitude toward Advertisement is measured with items adapted from MacKenzie et al (1986) and Attitude toward Brand are adapted from Spears and Singh (2004) and Guzman (2012). Lastly, Purchase Intention is developed using Hausman and Skiepe’s (2009) items. As the construct in this study is Brand Purchase Intention, the items are adjusted to be appropriate. After being fully developed, the instrument was examined among fifty random people, who were shown 7 different Adverts. Then some items were amended basing on respondents feedbacks in order to logicize them and make them become more understandable. The adjusted items and their sources are listed in the

Appendix. All the items were evaluated using five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

**Sampling and data collection**

A quantitative method is the compatible approach for measuring the advertisement effectiveness and customer’s purchase intention of a brand. Questionnaires were distributed randomly to the people who live in Ho Chi Minh City from November 20<sup>th</sup>, 2015 to December 8<sup>th</sup>, 2015.

Firstly, the respondents are presented with an ad that contains humor, chosen randomly from 7 outstanding humorous ads of leading brands in its industry. After the exposure to the ads, consumers will answer the carefully developed questionnaire basing on their own opinion about the ad, and the corresponding brand.

A total of 450 questionnaires were distributed. However, only 429 questionnaires were collected. As shown in the Table 1, that is, the summary of the demographic information of the respondents. Furthermore, after eliminating the invalid responses which are not fully answered, only 384 of the whole 429 are considered valid

To calculate the minimum sample size needed, this research used the below sample size formula (Tabachnick and Fidell, 1996):

$$N = 8M + 50$$

N: the necessary sample size

M: the number of items in the questionnaires

As in this research case, the questionnaire consists of 28 items. Therefore, according to the formula above, to meet the sample size requirement, the least sample size needed should be equal 274 or more. Therefore, a sample size of 384 is adequate

**Table 1: Demographic profiles**

	Number	Percent
<b>Gender</b>		
Male	189	49.2
Female	195	50.8
<b>Age</b>		
18-29	88	22.9
29-39	106	27.6
39-50	92	24.0
>50	98	25.5
<b>Occupation</b>		
Student	71	18.5
Employee	169	44.0
Housewife	68	17.7
Others	76	19.8
<b>Frequency</b>		
<2 times/day	65	16.9
2-5 times/day	129	33.6
>5 times/day	190	49.5

Based on the table, among 384 respondents participated in the survey, the percentage of female respondents (50.8) is approximate the percentage of male respondents (49.2). There are four age brackets which are 18-29, 29-39, 39-50, and above 50. It is clearly that all age brackets have

approximate proportion, the 29-39 accounts for 27.6%, followed by the >50 year age bracket (25.5%), then the 39 – 50 year age bracket and the 18-29 year age bracket have 92 and 88 respondents, which comprise 24% and 22.9% of the sample population respectively. Majority of the respondents are employee, which accounts for 44%, while the other 3 categories have approximate percentage 17.7% for housewife, 18.5% for student and 19.8% for other jobs. The finding from table 1 shows that a large proportion of the sample are respondents who see adverts five times per day, comprises 49.5%. Follow up is the number of respondents who see adverts from two to five times per day which holds 33.6% of the sample population. Meanwhile, there are only a small number of respondents that see less than two adverts per day (16.9%). This result reflects that most of respondents have to encounter many adverts in their lives.

## DATA ANALYSIS AND DISCUSSION

### Data Analysis

This research use Partial Least Squares (PLS) software version 2 to analyze the data. The structural equation modeling analysis was used to analyze the research model. First, confirmatory factor analysis (CFA) was conducted to test the validity of the data. The validity test included examining both the convergent validity and discriminant validity of the data. To examine whether the factors can be efficiently reflected by their items, a convergent validity test was employed; while to examine whether two different factors are statistically distanced, a discriminant validity test was employed. Table 2 lists the average variance extracted (AVE), composite reliability (CR), the outer loading, and the Cronbach's Alpha value. As shown in the table, after eliminating CR1 and ATA5 due to their insufficient outer loading value (smaller than 0.7), the retained items loading value are larger than 0.7, all AVEs surpassed the standard of 0.5, and all CRs surpassed the standard of 0.7. Therefore, the scale safely passed the convergent validity test (Bagozzi and Yi, 1988; Gefen et al. 2000). Moreover, as seen in the table, all the Alpha values are greater than the standard of 0.7, which displaying the good reliability of the scale (Nunnally and Bernstein, 1994). Table 3 lists and factor correlation coefficients and the square root of the AVE. As shown in the table, the square root of AVE for each variable is higher than the highest correlation with any other variables. Therefore, the measurement scale safely passed the discriminant validity test (Fornell and Larcker, 1981; Gefen et al., 2000).

Second, we applied structural equation modeling (SEM) and bootstrapping to examine the proposed model. Table 4 lists the factor's path coefficients and their significance. As shown in the table 4, the p-value indicates that all the Hypotheses are statistically significant with the p-values smaller than 0.01. Based on the path coefficients, among three factors affecting attitude toward advertisement, affective response is the most important factor, followed by perceive humor and, finally is the cognitive response.

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**Table 2: Assessment of reliability and convergent validity**  
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	<b>Outer loading</b>	<b>AVE</b>	<b>Composite Reliability</b>	<b>Cronbach's Alpha</b>
<b>AR</b>	0.7011-0.8365	0.5927	0.8526	0.7797
<b>ATA</b>	0.8056 -0.8667	0.7218	0.912	0.8712
<b>ATB</b>	0.7782-0.8482	0.6924	0.9183	0.8886
<b>CR</b>	0.8017-0.8344	0.6734	0.8608	0.7574
<b>PH</b>	0.8291- 0.8631	0.7116	0.925	0.8991
<b>PI</b>	0.7563-0.8742	0.6788	0.9134	0.8825

**Table 3: Assessment of discriminant validity**

	AR	ATA	ATB	CR	PH	PI
AR	0.770					
ATA	0.384	0.850				
ATB	0.173	0.505	0.832			
CR	0.301	0.324	0.112	0.821		
PH	0.258	0.363	0.296	0.241	0.844	
PI	0.182	0.410	0.253	0.205	0.148	0.824

**Table 4: Result for research model (\*p<0.1, \*\*p<0.05, and \*\*\*p<0.01)**

Hypothesis	Path coefficient	T Statistics ( O/STERR )	P-value	Status
H1: Perceived Humor positively affects Cognitive response	0.175	2.7886	***	Supported
H2: Perceived Humor positively affects Affective response	0.258	5.2951	***	Supported
H3: Perceived Humor positive affects Attitude toward Advertisement	0.25	4.4314	***	Supported
H4: Cognitive response positively affects attitude toward advertisements	0.185	3.4958	***	Supported
H5: Affective response positively affects Cognitive response	0.256	4.3891	***	Supported
H6: Affective response positively affects Attitude toward Advertisement	0.264	5.6513	***	Supported
H7: Attitude toward advertisement positively affects Brand Attitude.	0.504	14.1633	***	Supported
H8: Brand attitude positively affects Brand purchase intention	0.253	5.1512	***	Supported

**Discussion**

In general, from table 4 above, all hypotheses are supported, and all factors have positive influence as from the proposed model. The results have shown that the most important factor affecting attitude toward advertisement of respondents is affective response, followed by perceive humor and, finally is the cognitive response all of which indirectly affect Brand Attitude and Brand purchase intention.

The results from analyzing show that perceived humor does enhance attitude towards advertisement and then indirectly and positively affects Brand Attitude and Brand purchase intention, which is similar to Eisend’s (2009) result. Moreover, it is clear that Perceived Humor are primarily based on affective response ( $\beta = 0.258$ ) rather than on Cognitive response ( $\beta = 0.175$ ). This conclusion is in contrast with Eisend (2009); Duncan and Nelson (1985) and Speck (1987) as they supposed humor only affect viewer through affective process while it did not have any effect on Cognition. However, this finding is identical to Stenthal and Craig (1973) research. The reason for this difference is maybe because the chosen ads have high message involvement in which consumers process the content in more detail, thus there was a present of cognition.

The finding shows that Cognitive response and Affective response effect brand attitude by enhancing attitude towards the Advertisement, which is identical to MacKenzie and Lutz (1982); Lutz, MacKenzie and Belch (1983); Strick et al (2009); Eisend (2011); Hwang et al (2011). In fact, while watching an advertisement, consumers’ judgment often embrace their emotions and feelings, which in

time affect their opinion and attitude toward that advertisement (Cline and Kellaris, 2007; Isen et al., 1978) and then indirectly sharpen their rational thoughts and perception about brand. For instance, people with positive affective and cognitive reactions to a product or service produced by a brand are more likely to generate positive and favorable evaluations to it (Eagly and Chaiken, 1993; Oliver, 1980). Moreover, a positive relationship ( $\beta = 0.256$ ) between Affective response and Cognitive response is formed, which is corresponding to Eisend (2011) research. Apparently, some cognitive components, which referred to as belief and defined as logical processes, can be influenced by affection (Eisend, 2011), which then alter consumers' perception of an advertisement (Fishbein and Middlestadt, 1995).

With respect to the research of Lebenson and Blackston (1997), Homer, (1990); Zinkhan and Fornell, (1985) and Lebenson and Blackston (1997), there is a strong positive relationship between Attitude toward Advertisement and Brand Attitude ( $\beta = 0.504$ ), which in turn effect consumer's purchase intention. This finding is contrary to Liu & Stout (1987) finding as they stated Attitude toward Advertisement have relatively weak influence on Brand attitude as it is only transitory and its effect is directly transferred to Purchase intention without passing through Brand attitude. However, these assumption were rejected in Mitchell (1983) and MacKenzie & Lutz (1982) studies, as they examined these issue and did not find conclusive support for them. Moreover, it is a fact that when a consumer has positive judgement about an advertisement, it is more likely that they will recognize the brand. The relatively weak but significant effect from Brand Attitude to Brand purchase intention ( $\beta = 0.253$ ), however, is contrary to Zinkhan and Fornell, 1985 and Lebenson and Blackston (1997) as they discovered a strong influence of Brand attitude on Brand Purchase Intention. The conclusion identified in this research may be subject to the explanation that consumer's purchase intention is affected by many factors, and Brand Attitude is among vital elements determine consumer buying behavior.

## RECOMMENDATION

Through the literature review, the studies of humor and its impacts are not consistent and contain controversy among the influence of humor on consumers cognition and affection, as well as their attitude and their intention. The study provides another set of empirical evidence regarding the effectiveness of humor that is beneficial not only for scholars but also industry practitioners.

### The Impacts of Humor on Consumer Psychology

The attitude of consumers and their behavioral intention is formed through their responses related to both cognitive and affective aspects, indicating that consumers not only used their emotions but also their rational thought to shape their attitude about the adverts in the product when they are exposed to advertisements.

In line with recent study, this research incorporated both cognitive and affective responses in the proposed models despite the inconsistent findings in previous literature. The model also integrated two kinds of response to have a fuller understanding about its impacts. The result supports hypothesis 3, which denote the significant positive impact of affection on cognition. Product marketers and manufacturers should note that **the influence of consumers' emotion also reduces a need for cognition.**

The effect of Perceived Humor is significant and positive in both types of responses. Humor, with its ability to attract attention, creates favorable thoughts and at the same time, reduces counterarguments toward the messages in the adverts. The characteristic of humor such as fun, surprise enhances positive emotions, and their fondness toward the adverts. Overall, **the importance of humor is increasing**, especially in the market of FMCG products, due to the fierce competition in the market.

**Humor attracts consumer attentions and positively influences their cognitive and affective response**, which eventually create more purchase intention.

Another notable point is the confirmation of the hypothesis H4 and H5, indicates that Perceived Humor not only directly affects Advertisement Attitude but also indirectly impact the attitude through consumer process of rational thought and emotions. The study suggests that marketers should **carefully evaluate their adverts and the underlying messages** so that it can create positive cognitive and affective responses, both of which are essential mediators of Advertisement attitude.

### The Impacts of Humor on Consumer Attitudes and Purchase Intention

As demonstrated in the result of the hypothesis testing, Humor positively affects Attitude toward the adverts the most significantly because it is considered the source of humor. Through the Advertisement Attitude, Brand Attitude and Purchase Intention is enhanced in a one-way direction relationship, similar to the finding of previous studies (Brown and Stayman; 1992; MacKenzie and Lutz, 1982; Lutz et al., 1983, to name a few).

The effectiveness of Humor on Consumers attitude and eventually to their Purchase Intention is apparent and significant in the study. Therefore, this study suggests that **marketers should utilize this interesting stimulus**. Overall, Humor on the published form, like Television Commercial (TVC) **creates positive impacts on consumers' attitude and purchase intention**.

#### APPENDIX. MEASUREMENT ITEMS AND THEIR SOURCES

Factor		
Attitude toward Advertising	I am in favor of this advertisement	MacKenzie et al (1986)
	I think that this advertisement is good	
	I think that this is a pleasant advertisement	
	I think that this advertisement is believable	
	I think that this advertisement is useful	
Attitude toward Brand	It is important that it is a sustainable brand	Guzmán (2012)
	I find it important that it is a healthy brand	
	This brand match my expectation	Spears and Singh (2004).
	I think that this brand is appealing to me	
	I think that this brand is good	
Brand Purchase Intention	I will use the branded products in this ad	Hausman and Skiekpe's (2009)
	I will actively seek for the products in this ad	
	I will choose the products from others in the same category	
	I will choose the products from others with the same price	
	I will choose the product regardless of price	
Perceived Humor	I find this advertisement humorous	Zhang and Zinkhan (2006)
	I think that the advertisement is funny	
	I think that this advertisement is playful	
	I find this advertisement amusing	
	In my opinion, this advertisement is dull	
Affective Response	Imaginative	Burke and Edell (1987)
	Interesting	Cheng and Well (1999) Bruner (2009)
	Exciting	
	Cool	
Cognitive Response	Useful	Burke and Edell (1987)
	<b>Informative</b>	Cheng and Well (1999) Bruner (2009)
	<b>Believable</b>	
	<b>Unique</b>	

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## EVIDENCE OF J-CURVE BETWEEN ASEAN ECONOMIC COMMUNITY

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### INTRODUCTION

The ASEAN Economic Community (AEC) Blueprint was adopted during the 13<sup>th</sup> ASEAN summit in 2007 to serve as a master plan for the establishment of AEC 2015. Since 2010, more than 99.65 percent of goods have been traded at zero tariff in ASEAN. The arrival of January 2016, the official effective date had been started which mean the member of AEC will trade with each other at zero duty on most of their goods. Therefore, one important factor which will effect trade balance between countries will fall to the fluctuation of exchange rate.

By Marshall-Lerner condition, the depreciation leads to an increase in trade balance in the long run if sum of value of import and export demand elasticity exceed one. The depreciation of currency would make domestic goods cheaper comparing to foreign goods, thus make export good more competitive. On another hand, depreciation on domestic currency would make import goods more expensive compared to local goods, therefore, country would import less. However, the amount of export and import may not response immediately from the time of depreciation. Thus, trade balance may be worsen first and improve some time later. This is called J-Curve phenomenon.

The propose of this paper is to investigate the short run (J-curve) and long run relationship of exchange rate to trade balance between Thailand and ASEAN countries; Singapore, Malaysia Philippine, and Indonesia.

This study used monthly data from 2000-2015. The study employ Augmented Dickey Fuller (ADF) test to check stationary of data and Autoregressive Distribution Lag (ARDL) model to find the short run and long run relationship.

The rest of this study is organized as follows. Section 2 provides a brief review current trading between Thailand and trading partners. Section 3 reviews the relevant literature. Section 4 describes methodology used in the analyses. Section 5 explains model specification. Section 6 reports and discusses the empirical results. Section 7 is the conclusion.

### THAILAND TRADE OVERVIEW

#### Thailand-Malaysia

In year 2014 Malaysia is the fourth largest trading partner of Thailand and ranked as the first of Thailand trade in ASEAN region in the last five years (2010-2014). Thailand-Malaysia trade value accounted for US\$ 24,672.83 million with the average growth rate of 4.62 percent per year in 2014. Thailand has a trade surplus of US\$18.53 million. Malaysia is Thailand's fourth largest export market in the world and ranked as number one if Thailand in the ASEAN region. Thailand exports to Malaysia accounts for US\$ 12,764.45 million in year 2014. The import in the year 2014, Malaysia was the imports of Thailand ranked fourth in the world and ranked first of Thailand in the ASEAN. Thailand's imports from Malaysia worth an estimated annual average of US\$ 12,438.86 million.

#### Thailand-Singapore

Singapore's total trade in 2014 was the second largest trading partner of Thailand in ASEAN after Malaysia and is the fifth largest trading partner of Thailand in the world after US, China, Japan and Malaysia. Over pass five year (2010-2014), trade between Thailand and Singapore was average annual value of about US\$ 18,195 million. Thailand had a trade surplus of US\$ 2,570.7 million. In 2014, Singapore is the second largest export market of ASEAN after Malaysia. The exports value with in past five year (2010-2014) to Singapore is an average of US\$ 10,588 million per year with the average growth rate of 4.06 percent per year. In year 2014, Thailand exported to Singapore US\$ 10,454.8 million. Thailand imported goods from Singapore ranked second in the region estimated annual US\$ 7,605 million. In year 2014, Thailand imported from Singapore of US\$ 7,884.1 million.

### **Thailand-Philippine**

In 2014 Philippine is the fifth largest trading partner of Thailand in ASEAN after Malaysia, Singapore, Indonesia and Vietnam and is the 16<sup>th</sup> largest trading partner of Thailand's trade with the world. In the past five year (2010-2014) the average annual value of US\$ 7,666.66 million with the average growth rate of 3.96 percent per year. In year 2014, the retail value trade between Thailand and Philippine was US\$ 8480.45 million with Thailand had a trade surplus of US\$ 3,255.69 million. Philippine is the fifth largest export market for Thailand in ASEAN and is the 10<sup>th</sup> largest export market of Thailand to the world in the past five years (2010-2014). Thailand's exports to Philippine are worth an annual average of US\$ 5,058.02 million with an average growth rate of 4.63 percent per year. In 2014 Thailand had exported to Philippines valued at US\$ 5,868.07 million. In the import size, in year 2014 Philippine market is ranked sixth of Thailand in ASEAN and rank twentieth of Thailand to the world in past five year (2010-2014). Import of goods from Philippine are worth an annual average of US\$ 2,608.64 million, with an average growth rate of 2.41 percent per year. In 2014 from the Philippine, Thailand imported a value of US\$ 2,612.38 million.

### **Thailand-Indonesia**

Total trade in 2014, Indonesia is the third largest trading partner of ASEAN after Malaysia and Singapore respectively, and is the seventh largest trading partner in the world within five years (2010-2014) of international trade. Thailand and Indonesia have an average annual value of US\$ 17,110.07 million, with an average growth rate of 6.52 percent per year. In the year of 2014, Thailand-Indonesia is valued at US\$ 16,788.96 million, which Thailand had a trade surplus valued at US\$ 2,231.61 million. In year 2014, Indonesia is the third largest export market of ASEAN and is is the seventh largest export market of Thailand to the world in past five years (2010-2014). Thailand exports to Indonesia were worth an annual average of US\$ 9,876.68 million, with an average annual growth rate of 6.67 percent per year. In 2014 Thailand exported to Indonesia valued at US\$ 9,510.29 million. Import of Thailand from Indonesia ranked third in the region and ranked 10<sup>th</sup> in the world over the past five year (2010-2014). Import valued worth an annual average of US\$ 7,306.63 million, with the average growth rate of 6.34 percent per year. In year 2014 Thailand import from Indonesia valued at US\$ 7,278.67 million.

### **LITERATURE REVIEW**

Marshall Lerner Condition explain the relationship between exchange rate and trade balance of one country. A depreciation of currency should lead to an improvement of country's trade balance. Since a weaker in currency would make trade partners buy more hence increase export of the country. At the same time, import become more expensive, thus, import would decrease. However, Marshall-Lerner Condition is true on the assumption of the sum of demand price elasticities for export and import is greater than one or elastic. Sinha (2001), Bahmani and Kara (2003), Onafowora (2003), Bahmani, Harvey and Hegerty (2013) estimated the export and import elasticities for Asia countries which all in included Thailand data. All above studies found the results support Marshall-Lerner Condition. However, there are some of studies that were not found the relationship between real exchange rate and trade balance such as Hussain (2003) and Thorbecke (2006).

Literature on evidence of J curve, Himarios (1989) and Bahmani-Oskooee and Wang (2008) studied the impact of the devaluation on trade and found the evidence of J curve. Bahmani-Oskooee and Kanitpong (2001) test J curve Thailand's trade balance with major trading partner; including U.S., Japan, Singapore, U.K. and Germany in period of 1973-1997. There results found J-Curve phenomenon only in the case of U.S. and Japan. Baharumshah (2001) and Liew (2003) also tested of the J curve for Malaysia Thailand and Singapore trading data and found no evidence of J-curve effect. In contrast, study by Harvey (2012) found the support of J-curve in trade balance between Philippine and Thailand.

## METHODOLOGY

The empirical of this study start with the test of Augmented Dickey-Fuller (ADF Test) for Stationary of all data. The Augmented Dickey Fuller (ADF) unit root test is expressed as

$$y_t = \beta' D_t + \phi y_{t-1} + \sum_{j=1}^p \phi_j \Delta y_{t-j} + \varepsilon_t \quad (1)$$

The hypotheses of interest are

$$\begin{aligned} H_0: \phi &= 1 \rightarrow y_t \sim I(1) \\ H_1: |\phi| &< 1 \rightarrow y_t \sim I(0) \end{aligned}$$

The ADF t-statistic and normalized bias statistic are based on the least squares estimates of (1) and are given by

$$ADF_t = t_{\phi=1} = \frac{\hat{\phi}-1}{SE(\hat{\phi})} \quad (2)$$

where  $\hat{\phi}$  is the least squares estimate and  $SE(\hat{\phi})$  is the standard error estimate.

If  $ADF_t >$  MacKinnon critical value, the hypothesis ( $H_0$ ) will be rejected, which implies that  $\{y_t\}$  is stationary (i.e.,  $|\phi| < 1$ ). After the unit root test was applied to all variables, the cointegration test by Autoregressive Distributed Lag (ARDL). ARDL model is widely used by Pesaran and Shin (1995), Pesaran and Smith (1996), Pesaran (1997) and Pesaran *et al.* (2001). ARDL can be applied regardless of whether the variables are  $I(0)$  or  $I(1)$  and can be easily choose optimum of lag by many criteria which in this study choose optimum number of lag by Akaike's Information Criterion (AIC). ARDL model is as follow;

$$\Delta y_t = \alpha + \beta_t + \sum_{i=1}^p \gamma_i \Delta y_{t-i} + \sum_{i=0}^{q1} \phi_i \Delta x_{t-1} + \sum_{i=0}^{q2} \delta_i \Delta z_{t-1} + \lambda_0 y_{t-1} + \lambda_1 x_{t-1} + \lambda_2 z_{t-1} + u_t \quad (3)$$

To test if model has long run relationship, Bound test had been applied. It F-statistic of Bound test greater than upper bound value from Pesaran critical value, then variables has long run relationship or it move together in the long run. The stability of model also checked by CUSUM test. Lastly, error correction model (ECM) had been regressed as the follow equation:

$$\Delta y_t = \alpha + \beta_t + \sum_{i=1}^p \gamma_i \Delta y_{t-i} + \sum_{i=0}^{q1} \phi_i \Delta x_{t-1} + \sum_{i=0}^{q2} \delta_i \Delta z_{t-1} + ect_{t-1} + u_t \quad (4)$$

## MODEL SPECIFICATION

There are four economic variables in long run model which follow study of Bahmani and Harvey (2014)

$$LnTB_{i,t} = a + bLnFX_{i,t} + cLnY_{i,t} + dLnY_{th,t} + \varepsilon_t \quad (5)$$

Where;  $TB_{i,t}$  is Trade balance defined as ratio of Thailand exports over imports to/ from trading partners; Indonesia, Malaysia, Philippine and Singapore.  $FX_{i,t}$  is real bilateral exchange rate defined as Thai currency over foreign currency, thus, an increase in real bilateral exchange rate means Thai currency depreciate. Then, an estimate of coefficient  $b$  should has positive expecting sign. Since an increase in real depreciation of Thai baht will improve trade balance.  $Y_{i,t}$  is trading partner manufacturing product index (MPI) and  $Y_{th,t}$  is manufacturing product index (MPI). Due to the limited of data, this study use MPI as proxy of economic performance of each country, assuming that an increase of MPI indicate the growth of country's income. The expect sign of  $c$  and  $d$  will be positive and negative sign, respectively. The positive sign of coefficient  $c$  explain that an increase in trading partner country's income lead to increase in Thai export. On another hand, Thailand will import more if Thai income increase. Finally,  $\varepsilon_t$  is an error term.

In order to explain J-curve effect, short run model had been derived from long run model (eq.5).

$$\begin{aligned} \Delta LnTB_{i,t} &= \alpha + \sum_{k=1}^n \beta_{t-k} \Delta LnTB_{i,t-k} + \sum_{k=0}^n \delta_{t-k} \Delta LnFX_{i,t-k} + \sum_{k=0}^n \gamma_{t-k} \Delta LnY_{i,t-k} + \\ &\sum_{k=0}^n \pi_{t-k} \Delta LnY_{th,t-k} + \lambda ec_{t-1} + \mu_t \end{aligned} \quad (6)$$

Short run pattern can explain J curve phenomenon by coefficient of REX will be negative followed by positive.

All data are in period of 2000M1-2015M3 except Philippine which data available from 2000M1-2013M3. The source of data is from Ministry of Commerce Thailand, Bank of Thailand and International financial Statistic of IMF.

### EMPIRICAL RESULTS

Augmented Dickey Fuller Test (ADF) is tested for stationary of all variables and the results find that all variables have unit root at level and are stationary in the first difference level. Equation (6) is imposed the maximum of twelve lags to comply with monthly data by using Akaike's Information Criterion (AIC) select the optimum lags for each model. AIC results for each model are as follow; Trade between Thailand-Indonesia (6,0,0,0) Thailand-Malaysia (4,2,4,0) Thailand-Philippine (11,1,0,0) and Thailand-Singapore (1,1,3,4). We check the stability of model by CUSUM Test which found that all model are stable. Table 1 show the result of long run relationship by Bound Test. Two model from data of Malaysia and Singapore has long run relationship and another two; Indonesia and Philippine has no long run relationship.

Table 1 ARDL Bound Test

	Indonesia	Malaysia	Philippine	Singapore
F-Statistic	2.5873	3.7657	2.1725	21.9536
Critical Value Bounds				
10%	2.37-3.2			
5%	2.79-3.67			
2.5%	3.15-4.08			
1%	3.65-4.66			

Table 2 show the result for short run coefficient for all the model. Following the J curve phenomenon, the coefficient of real exchange rate have to have negative sign follow by positive sign. From the table there is no evidence support J curve in all cases. However, in all case support Marshall Learner Condition, depreciation of currency improve trade balance in both short run and long run. When consider the growth of income effect trade balance, from the result reported expected sign in case of income of Indonesia and Philippine. Increase in Indonesia and Philippine income leads to increase in Thailand export which improve Thai trade balance. However, Malaysia and Singapore income has negative effect on Thai trade balance. That mean those two countries might produce more of import substitution goods, therefore import less of Thailand products. Thailand income variable has negative expected sign only in case of Singapore. Explaining that when Thai income increase, Thailand import more product from Singapore but not from Indonesia, Malaysia and Philippine. The coefficient of the error-correction term is significant and also has a negative sign for Indonesia, Malaysia and Singapore which are -0.4819, -0.4169, and -0.7318 respectively. The results indicate the existence of a long run relationship between the variables and the speed of adjustment toward equilibrium in long run. For Philippine case, coefficient of error-correction term has negative sign but not significant

Table 2

	Indonesia	Malaysia	Philippine	Singapore
$\Delta \ln FX_t$	0.3890 (0.6394)	0.3388 (0.3928)	1.7037 (1.8305)	3.6852 (2.6325)
$\Delta \ln FX_{t-1}$		2.1056 (2.3295)	-0.3678 (-0.3909)	0.7098 (0.4556)
$\Delta \ln FX_{t-2}$		0.5478 (0.6242)		
$\Delta \ln Y_{i,t}$	0.2345 (0.8672)	0.3299 (1.1256)	-0.0549 (-0.2956)	-0.0097 (-0.0535)
$\Delta \ln Y_{i,t-1}$		0.6624 (1.8202)		0.1785 (0.8274)
$\Delta \ln Y_{i,t-2}$		0.0026 (0.0070)		0.4970 (2.2938)

$\Delta \ln Y_{i,t-3}$		-0.5836 (-1.6307)		0.0321 (0.1746)
$\Delta \ln Y_{i,t-4}$		-0.1704 (-0.5826)		
$\Delta \ln Y_{th,t}$	0.2322 (0.7857)	0.2313 (0.2058)	-0.0764 (-0.3305)	-0.4096 (-1.2401)
$\Delta \ln Y_{i,t-1}$				0.3279 (1.0079)
$\Delta \ln Y_{i,t-2}$				-0.4611 (-1.3011)
$\Delta \ln Y_{i,t-3}$				0.8338 (2.5275)
$\Delta \ln Y_{i,t-4}$				0.1542 (0.4574)
Ecm(-1)	-0.4819 (-3.1006)	-0.4169 (-3.8685)	-0.0991 (-1.2526)	-0.7318 (-7.5575)

Table 3 Long Run coefficients

	Indonesia	Malaysia	Philippine	Singapore
$\ln FX$	0.2051 (0.5788)	0.6576 (0.7279)	9.2982 (0.7015)	0.8915 (1.1736)
$\ln Y_i$	0.6755 (1.5312)	-0.2670 (-0.5835)	0.3209 (0.1796)	-0.2829 (-1.5511)
$\ln Y_{th}$	0.0766 (0.3304)	0.6156 (2.0269)	2.3989 (0.7690)	-0.2231 (-1.0184)

## CONCLUSION

This study examined the relationship of real exchange rate and trade balance in both short run and long run for Thailand and its trading partners in ASEAN country. The study found that real exchange rate has positive relationship with trade balance in all cases. However, there are no evidence of J curve in all countries which support the previous study of Himarios (1989) Bahmani-Oskooee and Wang (2008) Bahmani-Oskooee and Kanitpong (2001) Baharumshah (2001) and Liew (2003). The coefficients of error correction term are negative and less than one, that means there are an adjustment to long term equilibrium.

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**THAILAND'S EXPORT OPPORTUNITIES AND EXPORT POTENTIAL IN  
ASEAN+3:  
AN ANALYSIS OF THE DECISION SUPPORT MODEL (DSM) RESULTS**

Comment [UP18]: No APA Format

by  
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**ABSTRACT**

Export promotion often leads to diminishing returns, and therefore it requires a clear focus and strategy. The Decision Support Model (DSM) is designed to analyse export opportunities in the world at large, ultimately providing export promotion agencies, exporters' organisations and individual exporters with a list of product-country combinations that represent realistic export opportunities.

In this paper, Thailand's realistic export opportunities in the ASEAN+3 countries (ASEAN, Greater China, Japan and South Korea), which can be considered as the country's 'backyard', are analysed. This is done by following the 'data filtering procedure' of a Decision Support Model in which macro-economic country performance, as well as imports, market access and import market concentration at product level are considered. The identified export opportunities are further investigated according to their potential export value and Thailand's comparative advantage at product level, and the importing country's market share and import market characteristics.

Given the region's deepening integration and Thailand's clear export potential in the ASEAN+3 markets, we advocate that Thailand adopts a much more focused regional approach to formulating its export promotion policies and strategies, notably at product level, with a view to enhancing its competitive position in terms of increased exports.

Keywords: export promotion, ASEAN+3, export opportunities, decision support model, comparative advantage, international market research.

**INTRODUCTION**

The ASEAN+3 region, which consists of the ten ASEAN countries (Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam), Japan, China and Korea, is rightly considered to be the most dynamic economic region in the world (for a comparison of ASEAN with other systems of regional economic integration in the world, see Chen, Cuyvers and De Lombaerde, 2015). ASEAN+3 cooperation started in December 1997 and was institutionalised in 1999 when the ASEAN Leaders issued a Joint Statement on East Asia Cooperation at their Third ASEAN+3 Summit in Manila. In November 2004, the ASEAN+3 leaders agreed on the establishment of an "East Asian Community" as a long-term objective and affirmed the role of ASEAN+3 as the main vehicle for this eventual establishment. International trade and investment links between ASEAN countries, such as Thailand and China, have increased significantly since China joined the WTO in December 2001, and will be further strengthened under the China-ASEAN Free Trade Area, which came into being in January 2010.

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The ASEAN countries themselves have made great strides in terms of regional economic integration - as evidenced, inter alia, by the creation of the ASEAN Free Trade Area (AFTA) in 1992 and of the ASEAN Economic Community (AEC) at the end of 2015, a market of some 622 million people. The commitments under AFTA have cleared the way for less-developed member countries, such as Vietnam, Laos and Cambodia, to forge international trade and investment relationships with the more developed ASEAN countries, including Thailand. On 22 November 2015, the leaders of the ten ASEAN member countries signed a declaration establishing a formal economic, political, security and socio-cultural community. The ASEAN Economic Community (AEC) is collectively the third largest economy in Asia and the seventh largest in the world. Economic growth in the AEC countries is projected at 3.3% in 2015, slightly lower than the previous year's growth at 3.4%, but projected to accelerate to 4.9% in 2016 (ASEAN, 2015: xvii). In 2014, after the continued liberalisation of trade in goods within ASEAN since 1992, 99.2% of the tariff lines are duty-free in the ASEAN-6 (Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand) and 72.6% for the "CLMV" (Cambodia, Laos, Myanmar, Vietnam), and the latter share is expected to increase to 90.8% in 2015 (ASEAN, 2015: xviii). Moreover, also the many non-tariff barriers are continuously reduced or harmonised, and intra-ASEAN trade in a number of services liberalised. It will be clear that all these factors warrant attention to the export opportunities within the ASEAN and the ASEAN+3.<sup>12</sup>

In this paper, we endeavour to make a quantitative assessment of Thailand's export opportunities in the ASEAN+3 region, Thailand's "backyard". Therefore, Thailand's export opportunities in the other ASEAN countries (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore and Vietnam), as well as in China, Hong Kong, Taiwan<sup>13</sup>, Japan and South Korea, will be identified and investigated.

In the next section, we outline the methodology used to identify Thailand's realistic export opportunities (REOs), after which we show how this methodology was applied using macro-economic and international trade data up to 2013. In contrast to the previous "runs" of the DSM, we use averaged and weighted international trade data, allowing us to focus on the more sustainable REOs.

In Section 3 we discuss the results based on the number of REOs identified. In contrast to the previous analyses of Thailand's export opportunities (Cuyvers, 1996; Cuyvers, 2004), Section 4 briefly describes the enhanced methodology of the DSM in order to quantify Thailand's REOs based on potential export values. In Section 5, we investigate the REOs at product level. We then bring the paper to a close with a number of conclusions.

#### **METHODOLOGY: DECISION SUPPORT MODEL APPROACH**

A small but growing body of literature addresses the question of how to identify opportunities for exporters. The bulk of this literature focuses on attempts made to segment export markets or on the decisions of firms entering export markets.

The DSM methodology (Cuyvers *et al.*, 1995; Cuyvers, Steenkamp & Viviers, 2012a, Viviers *et al.*, 2014) discussed in this paper was developed from similar methodologies described in the international market research literature. It consists of consecutive steps, using the most recent statistical data, aimed at selecting markets and products in such a way that it eventually produces a list of product-country combinations of realistic export opportunities. The methodology is summarised in Figure 1.

<Figure 1 about here>

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<sup>12</sup> For the most recent assessment of the progress made in economic integration in ASEAN, we refer to ASEAN, 2015.

<sup>13</sup> Taiwan is not a member of ASEAN+3. Moreover, due to the absence of international trade data for Taiwan in the Comtrade database, this country will only be analyzed in terms of macroeconomic performance, but not given further consideration.

In *filter 1* of the DSM, countries are eliminated that pose too high a political and/or commercial risk to the exporting country, and do not show adequate size or economic growth patterns. The rationale for filter 1 is that, with 210 countries as a starting point<sup>14</sup>, the researchers are able to eliminate uninteresting countries in order to give focused attention to a more limited set of product-country combinations in the subsequent filters. Countries that lack general potential are therefore eliminated in this filter. In *filter 2*, the various product categories for the remaining countries are assessed in order to identify product-country combinations that show adequate import size and growth. However, according to Cuyvers *et al.* (1995:180), being selected on the basis of size and growth does not necessarily mean that the markets in question can easily be penetrated. In *filter 3*, trade restrictions and other barriers to entry are considered in order to further screen the remaining possible export opportunities. Two categories of barriers are considered in this filter, namely the *degree of concentration* and *trade restrictions* (Cuyvers, 2004:261). In the fourth and *last stage* of the analysis, the realistic export opportunities that were identified in filters 1 to 3 are categorised (see Tables 2a-2b and 3a-3b)<sup>15</sup>.

The DSM methodology has previously been used for Belgium (Cuyvers *et al.*, 1995; Cuyvers, Steenkamp & Viviers, 2012b), the Philippines, Thailand (Cuyvers, 1996; Cuyvers, 2004; Cuyvers, Steenkamp & Viviers, 2012c), South Africa (Pearson *et al.*, 2010; Cuyvers, Steenkamp & Viviers, 2012c) and the Netherlands (Viviers *et al.*, 2014). For the first time, and in contrast to the previous “runs” of the DSM, instead of using the international trade data for only the latest year available, we calculate five year weighted averages<sup>16</sup> for the size of the import market (filter 2), the degree of concentration (HHI in filter 3.1), the revealed absence of trade barriers proxy (filter 3.2), Thailand’s exports to each market (filter 4) and Thailand’s Revealed Comparative Advantage and Revealed Trade Advantage values when determining “actual” *versus* “potential” realistic export opportunities (see section 3.2). Using the weighted average imports and exports values smooths out years with unprecedented high or low values and allows a better focus on the more sustained REOs.

It should be stressed that although we investigate Thailand’s REOs in ASEAN+3, these are derived from the list of Thailand’s REOs worldwide. Therefore, the filtering process starts with all countries in the world for which data are available, and cut-off values for determining which export opportunities should be ignored are derived from characteristics of the relevant statistical distributions on a world scale.

### **Filter 1**

As indicated above, filter 1 of the DSM assesses importing countries against two sets of criteria. We first analysed the country risk posed by 210 countries based on information from the *Office National du Ducroire* (ONDD, 2014), and followed this with an assessment of the macro-economic performance of such countries, as determined from World Bank data. After this first round of filtering, we retained 167 countries that had met the two sets of criteria. For a detailed account of the process, the reader is referred to Cuyvers, Steenkamp and Viviers (2012a).

The ONDD rates countries on a scale of 1 to 7 for political risk, where 1 indicates a low political risk and 7 indicates a high political risk. Political risk ratings are provided for the short, medium, and long term. The commercial risk rating is presented as either an “A”, “B”, or “C”, where an “A” indicates low commercial risk and a “C” indicates high commercial risk. Laos and Myanmar do not pass the country risk threshold. In practice, in previous “runs” of the DSM, a country is considered as too risky

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<sup>14</sup> This constitutes a total of 1 096 200 possible export opportunities (5 220 HS 6-digit level products multiplied by 210 countries in the world for which data is available).

<sup>15</sup> For a more detailed explanation of the DSM methodology and the determination of cut-off values in each filter, see Cuyvers *et al.* (1995:173-186), Cuyvers, Steenkamp and Viviers (2012a:58-84) and Viviers *et al.* (2014).

<sup>16</sup> In this weighted five-year average the most recent year weights the most and each year before approximate half of the preceding one. Therefore year 5 weights 51.61%, year 4 weights 25.81%, year 3 weights 12.9%, year 2 weights 6.45% and year 1 weights 3.23%

from the point of view of public export promotion if its ONDD rating is 6C, 7A, 7B or 7C. Both Laos and Myanmar have an ONDD score of 6C for the period of analysis and therefore are not considered further.

### **Filter 2**

In filter 2, Comtrade annual import trade data (as adjusted by the French International Economics Research Centre (CEPII) in their BACI world trade database) at HS 6-digit level for the period 2009 to 2013 were analysed for the countries that passed filter 1. However, for some of these countries, no import data were available from this source<sup>17</sup>, e.g. for Antigua and Barbuda, Puerto Rico, the Channel Islands, and also Taiwan. In filter 2 we investigated 1 049 220 product-country combinations according to their size and growth rates.

A given country's imports for a specific product were seen as offering interesting export potential to Thailand if they showed either sufficient volume and/or growth in the short and longer term. The sufficiency criterion applied was derived from the calculation of cut-off values for each product group  $j$  at HS 6-digit level, as described in Cuyvers, Steenkamp and Viviers (2012a). Based on this, we selected 275 541 product/country combinations in the world market as possible realistic export opportunities for Thailand.

### **Filter 3.1: Import market concentration**

Filter 3 evaluates a country's ability to penetrate foreign markets, which is dependent on various trade barriers and restrictions. In the past, Cuyvers *et al.* (1995:180-181) and Cuyvers (2004:261-262) had considered the import market concentration of each country's imports, as measured by the Herfindahl-Hirschmann Index (HHI). Again, applying this statistical method (which is outlined in full in Cuyvers, Steenkamp & Viviers, 2012a), cut-off values were calculated, leading to the selection of 159 798 product-country combinations that showed import market concentration ratios that were smaller than the respective cut-off values.

### **Filter 3.2: Import market access restrictions**

As in our previous research on the realistic export opportunities for Belgium and Thailand (Cuyvers, 1996; Cuyvers, 2004; Cuyvers *et al.*, 1995), we refrained from attempting at a quantification of market access barriers, and instead used an index of "revealed absence of barriers to trade" as proxy. This index showed the share of Thailand's fellow ASEAN-5<sup>18</sup> countries' exports to country  $i$  of product group  $j$  in their respective exports of product group  $j$ , corrected for the share of that country  $i$  in world trade of product group  $j$ . It was assumed that Thailand has no "revealed barriers to trade" for a possible export opportunity in a market if at least one of the four other ASEAN-5 countries has a "revealed comparative advantage" in exporting to that market.

Applying this criterion led to the selection of 67 260 product-country combinations with an apparent market accessibility that is similar to that which at least one of Thailand's neighbouring countries is experiencing for the same product group in the same importing country.

For export opportunities to be realistic export opportunities (REOs), we require that the respective import markets are both sufficiently accessible and reasonably competitive (less concentrated). Mathematically, this means that we take the union of the product-country combinations selected on the basis of import market concentration and market accessibility. The union thus constructed in this case yielded 51 620 REOs.

### **Filter 4: The categorisation of Thailand's realistic export opportunities according to import market characteristics and import market share**

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<sup>17</sup> For purposes of consistency a single consolidated source of international trade data is used.

<sup>18</sup> ASEAN-5 consists of Thailand, Indonesia, Malaysia, the Philippines and Singapore.

The last step in the DSM methodology categorised into a matrix consisting of 20 cells the REOs identified in the previous steps according to the import market characteristics and Thailand's relative import market share for each REO taken separately (details are provided in Cuyvers, Steenkamp & Viviers, 2012a, see also Tables 2a, 2b, 3a and 3b). Figure 2 below summarises the filtering process followed.

<Figure 2 about here>

## THAILAND'S REALISTIC EXPORT OPPORTUNITIES IN THE ASEAN+3 COUNTRIES

### ASEAN+3's share in Thailand's export opportunities

Table 1a depicts the distribution of the number of REOs in the ASEAN+3 countries of the DSM for Thailand.

<Table 1a about here>

Of the 51 620 REOs in the world at large, 10 338 are situated in the ASEAN+3 countries, which represents 20% of Thailand's worldwide REOs.<sup>19</sup> The REOs to Greater China (China, Hong Kong, Macao) and South Korea constitute 22% and 7.82 % respectively % of the total REOs of ASEAN+3, with China showing the highest number of REOs (1 342), being 12.98% of the total REOs. Vietnam comes a close second place with 1 264 REOs, being 12.23% of the REOs. Japan is in the third place, with 979 and 9.27% of the total REOs. For more detail on the specific products which have REOs in all individual ASEAN+3 countries, please contact the authors. However, if we take into account the potential export values involved<sup>20</sup>, the picture is very different from that based on the number of REOs, with the ASEAN+3 countries being good for as much as 40.23% of the value of Thailand's potential exports in the world. Of Thailand's total potential export value in the ASEAN+3 countries, Greater China (China, Hong Kong, Macao) represents 44%, followed by Japan (21.35%) and South Korea (15.47 %). The ASEAN market constitutes 19.15 % of Thailand's potential export value in ASEAN+3.

### Thailand's realistic export opportunities in ASEAN+3 according to Thailand's market share and import market characteristics

In order to further analyse Thailand's REOs in ASEAN+3, we categorised these REOs according to Thailand's relative market share and the import market characteristics into a matrix, consisting of 20 cells.

In short, this categorisation into the 20 different cells, is firstly according to Thailand's relative market share per REO (the columns), which was based on the degree of market importance of Thailand's exports of product group  $j$  to country  $i$  compared with the combined degree of market importance of the six exporting countries with the largest exports of the product category to the country in question. Secondly, the categorisation in the rows is obtained from Filter 2, which indicates the size and growth of imports of the different countries.<sup>21</sup>

We also took into account Thailand's present export potential by considering, for each REO, Thailand's "revealed comparative advantage". Therefore we distinguished between "potential" REOs (all REOs that come out of filter 3) and "actual" REOs (only those REOs for which Thailand's "revealed comparative advantage index" – is sufficiently high, e.g. 0.7 (see Balassa, 1965) as well as the cases where Thailand is a net exporter of the product with a "revealed trade advantage index" above zero (see Vollrath 1991). Table 2a shows the distribution of Thailand's 10 338 "potential"

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<sup>19</sup> Including Myanmar and Laos which dropped from the list of countries to be considered further in Filter 1 due to too high political and commercial risk, would add 933 REOs for Myanmar and 103 REOs for Laos.

<sup>20</sup> For the way potential export values are calculated we refer to section 4

<sup>21</sup> For full details, the reader is referred to Cuyvers *et al.* (1995), Cuyvers, (2004), Cuyvers, Steenkamp and Viviers (2012a) and Viviers *et al.* (2014).

REOs in ASEAN+3, whereas Table 2b shows the distribution of the “actual” REOs in ASEAN+3, thus where the  $RCA \geq 0.7$  and the  $RTA > 0$ .<sup>22</sup>

<Table 2a about here>

In Table 2a, Cell 2 shows the highest number of REOs, followed by Cell 7. Cell 1 ranks third. From Table 2a it can also be concluded that 70.38% of Thailand’s “potential” REOs are in markets where Thailand’s market share is negligible or very small (cells 1 to 5), whereas 11.17% are in markets where Thailand’s market share is high or moderately high (cells 11 to 20), thereby offering immediate export potential. This improves when considering Thailand’s “actual” REOs, where 22% of the export opportunities are in markets where Thailand enjoys a high or intermediately high market share (see Table 2b).

<Table 2b about here>

The largest number of REOs, both “potential” and “actual”, is found in markets that are growing in the short and long term (cells 2, 7, 12 and 17): 67.94% and 62.46%, respectively, and of these in markets where Thailand’s market share is small (cell 2), 47.08% and 31.24% are situated in growing import markets, respectively. In other words, almost 70 % of the number of “potential” REOs are in growing markets, and 50 % of the number of “actual” REOs has a small (if any) market share. If Thailand wants to develop suitable offensive market exploration export promotion strategies of “taking advantage of a growing market” (Cuyvers, Viviers, Sithole-Pisa and Kühn, 2012) special attention will have to be devoted to exploiting its competitive advantage in terms of price, quality and service/delivery and to create awareness in these markets for the Thai products. However, as will be seen in section 4, the picture changes dramatically when considering the potential export values involved.

### **THAILAND’S EXPORT POTENTIAL IN ASEAN+3**

The present section attempts to provide an estimate of the export values associated with the number of REOs. We follow Viviers, et al. (2014), by equating the potential export values associated with REOs of product  $j$  in country  $i$  as the average imported from the top six countries which contribute these imports. It is then assumed that this “average” sufficiently approximates Thailand’s export potential, measured in US\$. The potential export values of the REOs that share common characteristics, e.g. as belonging to the same cell of Table 2a or Table 2b, can then be added up.

#### **Thailand’s potential exports in ASEAN+3 according to its market share and import market characteristics**

In Tables 3a and 3b, the distribution of these total potential export values of Thailand is shown, according to import market characteristics and Thailand’s relative market share in the import markets concerned.

<Tables 3a and 3b about here>

From Tables 3a and 3b it appears that Thailand’s total potential export value in ASEAN+3 amounts to US\$251.42 billion, of which US\$101.98 billion is related to products that Thailand is already successfully exporting to other markets. However, these values should rather be considered as a means to weight each REO against the others. Weighting each REO by the assumed US\$ value of its export potential makes quite a difference in the distribution of the REOs over the cells of the categorisation matrix, as it appears that Thailand’s potential REOs in ASEAN+3, in which Thailand has already achieved high or moderately high market share (cells 11 to 20) and when weighted by potential export values as defined above, account for only 3.5% of the potential export value in ASEAN+3 of the “potential” REOs, and only 7.55% of the potential export value in ASEAN+3 of the

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<sup>22</sup> Myanmar, which dropped from the list of countries in Filter 1, shows 933 REOs for Thailand, of which 407 with  $RCA \geq 0.7$  and 302 if the condition  $RCA \geq 0.7$  and the  $RTA > 0$  is applied. As to Laos, which fared like Myanmar, it presents 103 REOs, of which 51 with  $RCA \geq 0.7$  and 39 if  $RCA \geq 0.7$  and the  $RTA > 0$ .

“actual” REOs. Accordingly, the importance of the “potential” REOs in ASEAN+3 with a small or negligible market share of Thailand (cells 1 to 10) is much more, representing 96.52% of the potential US\$ export value. When considering only the “actual” REOs (see Table 3b), the share in the total potential export value of the REOs in which Thailand has established a small or negligible market share is 92.45%. The reduction of the share of Cells 1 to 5 from 83.45% to 67.45% is largely due to the impact on Cell 2 of weighting by potential export values. Thus, Cell 2 represents only 6.02% of the “potential” export value and 3.35% of the value of “actual” REOs, compared with 47.08% and 31.24%, respectively, if unweighted (see Table 2a and 2b). In contrast, of the export value of Thailand’s actual REOs in ASEAN+3, 15.89 % is found in Cell 1, 24.13 % in Cell 4 and 17.99 % in Cell 5 of Table 3b. Again, for many REOs offensive export promotion strategies of market exploration seem to be appropriate (Cuyvers, Viviers, Sithole-Pisa and Kühn, 2012), but particularly attuned to the specific market characteristics (large market, large market showing growth in the short and/or longer run).

### **Thailand’s export potential in ASEAN+3 per broad product category and some policy implications**

Tables 4a and 4b show Thailand’s “potential” and “actual” REOs in ASEAN+3 per broad product category.

Machinery represents the largest share of the “potential” REOs, 35.56%, as compared with 33.32% in Thailand’s worldwide (excluding ASEAN+3) REOs, followed by mineral products (32.23%) and chemicals (5.87%).

Restricting our analysis to the “actual” REOs (see Table 4b), when weighted with potential export values, machinery even represents a larger share (52.66%, as compared with 33.49% in the worldwide REOs). Mineral products (22.03%, as compared with 21.76% worldwide) and chemicals (4.39%, as compared with 1.98% worldwide) show a somewhat smaller share, to the benefit of plastics/rubbers (7.89%, as compared with 8.83% worldwide).

<Tables 4a and 4b about here>

Table 5a depicts at the HS 6-digit level the 30 products with the highest export potential for Thailand in ASEAN+3. Thirteen products belong to the category of machinery and equipment (HS 84-85), and another three to mineral products (HS 25-27). HS 854221 - Cards incorporating an electronic integrated circuit (smart cards) rank first, and is good for a potential export value of approximately US\$33.1 billion in seven countries. Petroleum oils, oils from bituminous minerals (HS 271000) ranks second and third, followed by HS847330-Parts and accessories (excluding covers, carrying cases and the like) in six countries with an estimated total potential export value of US\$4.88 billion. In fifth place is HS847170-Analogue/hybrid automatic data processing machines, in eight countries with a total potential export value of US\$2.86 billion.

Table 5a can be compared with Table 5b which shows the top-30 of Thailand’s REOs in the world (excluding ASEAN+3) based on export potential. Seventeen products now belong to the category machinery and equipment (HS 84-85), but only one to mineral products (HS 27). Strikingly, nine products in the top-30 list of “actual” REOs in ASEAN+3, belonging to the chemical products of HS 28-39 (six belong only to HS 39) are not featuring in the top-30 of Thailand’s REOs in the world, thus requiring a regional focus of public export promotion. There are also some striking changes in the ranks of the products. HS 271000 - Petroleum oils and oils obtained from bituminous minerals, other than crude, ranks first in the world, but second in the top-30 in ASEAN+3. Exactly the reverse holds for HS 854221 - Cards incorporating an electronic integrated circuit (smart cards), ranking first in the ASEAN+3 top-30 and fourth in the world’s top-30. Apparatus for carrier-current line systems/digital line systems (HS851750) ranks second in the world’s top-30 (representing a potential export value of US\$6.98 billion) and only fifth in the ASEAN+3 top-30 (for US\$2.05 billion). Also, some more labour-intensively produced exports products are in demand in the world, but are absent in the top-30 of ASEAN+3: HS 640399 - Footwear (excluding waterproof) incorporating a protective metal toe-cap (ranking 9<sup>th</sup>), HS 940360 - Furniture of materials other than metal/wood/plastics, including cane/osier/bamboo (ranking 12<sup>th</sup>), HS611030 - Jerseys, pullovers, cardigans, waist-coats and similar

articles, knitted or crochet (ranking 15<sup>th</sup>) and HS 610910 - T-shirts, singlets and other vests, knitted or crocheted, of cotton (ranking 27<sup>th</sup>). This probably reflects similar comparative advantages of the ASEAN+3 countries.

While Thailand considers itself an agro-business centre, only one of the products in the HS 01 to 24 group is in the top 30 worldwide, and the REOs in this category represent, in the country's "backyard" (which ASEAN+3 is), hardly 2.7% of Thailand's total potential export value in the region and 11.3% of the total number of REOs in the region. This might be due, however, to the often still high levels of protection in the world of agriculture and agricultural products.<sup>23</sup>

<Table 5a and 5b about here>

Thailand's export potential in ASEAN+3 per country and some policy implications.

Since ASEAN+3 is Thailand's "backyard" and represents 40.23% of the potential export value of Thailand in the world (see Table 1), it is interesting to have a closer look at the REOs at HS 6 digit level per target market. In Table 6 some major products from the top-5 are listed, offering promising export potential, together with the actual and potential export values per country.

Again, it will be seen that many of these high potential exports are for products and target markets where Thailand market share is small or intermediately small (cells 1 to 10). For instance, for HS854221 - Cards incorporating an electronic integrated circuit (smart cards), which ranks highest in the top-30 (Table 5a), all REOs are located in the Cells 1 to 5 of Table 2a-b, and showing a huge difference between what potentially could be exported by Thailand and what is actually exported. From the point of view of public export promotion, the problem to tap these huge export potential, might well lie in that the production and exports of smart cards is in the hands of foreign companies, operating in Thailand, and therefore difficult to be influenced by national export promotion policy.

This observation is less applicable to petroleum oils (HS271000 - Petroleum oils and oils obtained from bituminous minerals, other than crude). Thailand has, however, limited domestic oil production and reserves. For the purpose of promoting petroleum exploration and production and to attract investors, the Petroleum Act (Thailand) and Petroleum Income Tax Act (Thailand) was enacted in 1971. The country has seven oil refineries, five of which belong to PTT (Petroleum Authority of Thailand). It follows that there is scope for export promotion activities of the mentioned petroleum oils in Japan, South Korea and Indonesia. Taking into account that for these petroleum oils in the ASEAN+3 countries Thailand's market share is small, the strategies to be developed should be offensive but exploratory, also taking into account that large markets for this product, such as Japan and South Korea (Cell 1), have to be approached differently from Indonesia (Cell 2: not sufficiently large market, growing in the short and long term).

Similarly, to the need for offensive exploratory export promotion strategies should be developed and adopted for promoting HS847330 - Parts and accessories (excluding covers, carrying cases and the like) in ASEAN+3 target markets such as Hong Kong, Japan, South Korea and Vietnam (but not in Malaysia where Thailand's market share is intermediately high), and for HS847170 - Analogue/hybrid automatic data processing machines, in countries such as South Korea, Indonesia, Brunei. However, regarding HS847170 offensive export promotion strategies of market expansion can best be developed for China, Hong Kong, Singapore and Vietnam, where Thailand has already an established presence (as evidenced by Cells 11 to 15 of Table 2a-b).

For the sake of brevity, we restrict ourselves to these few REOs in the ASEAN+3 countries discussed above. They are illustrative and are evidently far from exhausting deeper analysis and discussion of other REOs.

## CONCLUSIONS AND SOME POLICY IMPLICATIONS

Applying the latest DSM methodology using international macro-economic data and detailed international trade data for Thailand up to 2013 has led to the identification of 51 620 realistic export

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<sup>23</sup> We are grateful to Ms. Pimchanok Vonkhorporn, Minister (Commercial) and Head of Office of Commercial Affairs, Royal Thai Embassy to Belgium and Luxembourg and Permanent Mission of Thailand to the EU, Brussels, Belgium) for having pointed this out.

opportunities (REOs) in the world at large, of which 10 338 (20%) are in ASEAN+3. Of these 10 338 REOs, the largest number of REOs is found in China (1 342, representing 13% of the REOs) and Vietnam (1 264, representing 12.23% of the REOs). The other REOs in ASEAN+3 are more or less evenly spread over the remaining countries of the region. Somewhat disconcerting is that Thailand's neighbours, Laos and Myanmar, are deleted from the countries considered due to a political and commercial risk above the threshold level.

In previous research a headcount was taken of the REOs identified per importing country or per product, whereas in the present research (following Cuyvers, Steenkamp & Viviers, 2012b) an attempt is made to weight each individual REO by an (admittedly rough) estimate of its potential export value in US dollars. It is shown that such weighting allows the focus to be placed on the more important REOs (in export value), instead of those that are more often detected but that might easily dilute focused export promotion efforts (as to be applied to too many import markets). Based on our estimations, the markets of the ASEAN+3 represent US\$251.4 billion or even 40.23% of the total potential export value in the world, with China topping the list (30.9%), followed by Japan (21.35%) and South Korea (15.47%). Strikingly, Vietnam which represents 12.23% of the number of Thailand's REOs in ASEAN+3, only accounts for 2.36% in terms of potential export values involved.

A further distinction is made between "actual" REOs (for which Thailand has already reached a sizable comparative advantage in international trade) and "potential" REOs (i.e. the set of all REOs, irrespective of Thailand's comparative advantage). The distinction is of particular importance as it enables Thailand's export promotion agency to focus on the promotion of the exports of products that are already successfully exported by the country.

Although of the ASEAN+3 countries representing 40.23% of Thailand's potential exports value in the world, the vast majority of the REOs involved show relatively small or intermediately small market share of Thailand. Of the total export value of the "actual" REOs only 22% are relating to product/country combinations for which Thailand has high or intermediately high market share. This evidently has important implications for the export promotion strategies to be developed and implemented, which should be often of an offensive and exploratory nature, rather than aiming at immediate market expansion. This conclusion is also warranted by considering most of the top-15 REOs in ASEAN+3.

Based on the product composition of Thailand's "actual" REOs in ASEAN+3, the product category machinery and equipment takes up the lion's share (52.66%), thereby offering relatively quick export potential in the ASEAN+3 markets, and even more than in the world at large (the share of this product category in the "actual" REOs worldwide being smaller at 22.5%).

Furthermore, the export potential of the top-30 REOs in ASEAN+3 is almost as large as Thailand's top-30 REOs worldwide (excluding ASEAN+3), which advocates in favour of Thailand applying a strong regional focus in its export promotion efforts. For example, it is striking that in the former list, a number of products that can be considered as the traditional "playground" of multinational business are less prominent, thereby offering scope for the promotion of Thai export products, which include many machines, parts and components, electrical appliances and parts, etc. This is not to say that the export potential that multinational corporations are offering should be neglected, as a number of products in the top 30 REOs in ASEAN+3 can be outsourced to, and supplied by, Thai producers (such as number of products belonging to HS 84-85). However, promoting exports of products that are mainly, if not completely, produced and marketed by multinational companies, is evidently somewhat problematic.

Finally, as mentioned, nine products of the chemical industry (HS 28-39) that are in the top-30 of Thailand's "actual" REOs in ASEAN+3 (representing 8% of the potential export value of these "actual" REOs) are not featuring in the country's top-30 worldwide, thus also requiring a regional focus of Thailand's public export promotion.

Although it seems unwise to advocate that Thailand's export promotion efforts should focus solely on the region, our conclusions point to the fact that relatively more of the country's scarce public export promotion resources should be directed at ASEAN+3. As economic integration in the region deepens – and particularly taking into account the prospective launch of the ASEAN Economic Community on 31 December 2015 and the plans for the establishment of an East Asia Free Trade Area - an enhanced regional focus is likely to deliver the greatest successes on the export front. To this end, the specific

realistic export opportunities for Thailand as depicted in the Table 6 of this paper will help to direct Thailand's export promotion policies and strategies, with the desired outcome of increasing the country's exports and enhancing its competitive position.

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Table 1: Thailand's realistic export opportunities in ASEAN+3, 2013

Country	No of REO 2013	%	Potential export value (US\$ thousand)	%
Brunei	783	7.57%	158 700	0.06%
Cambodia	675	6.53%	309 114	0.12%
China	1342	12.98%	77 787 211	30.94%
Philippines	881	8.52%	2 336 692	0.93%
Hong Kong	795	7.69%	32 791 765	13.04%
Indonesia	931	9.01%	10 587 097	4.21%
Japan	979	9.47%	53 667 651	21.35%
Macao	138	1.33%	127 381	0.05%
Malaysia	854	8.26%	9 798 223	3.90%
Singapore	888	8.59%	19 021 870	7.57%
Taiwan	-	-	-	-
South-Korea	808	7.82%	38 905 783	15.47%
Vietnam	1264	12.23%	5 928 019	2.36%
Total ASEAN+3	10 338	100,00%	251 419 506	100.00%
World vs. ASEAN+3	51 620	20.03%	624 937 728	40.23%

Table 2a: Distribution of Thailand's potential realistic export opportunities in ASEAN+3 according to relative market position and market characteristics

		Relative Market Share of South Africa				
		Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Import demand size and growth	Large market	Cell 1 920 8.90%	Cell 6 227 2.20%	Cell 11 60 0.58%	Cell 16 43 0.42%	1 250 12.09%
	Growing (long- and short-term) market	Cell 2 4 867 47.08%	Cell 7 1 290 12.48%	Cell 12 388 3.75%	Cell 17 479 4.63%	7 024 67.94%
	Large market short-term growth	Cell 3 114 1.10%	Cell 8 21 0.20%	Cell 13 4 0.04%	Cell 18 2 0.02%	141 1.36%
	Large market long-term growth	Cell 4 372 3.60%	Cell 9 90 0.87%	Cell 14 33 0.32%	Cell 19 22 0.21%	517 5.00%
	Large market short- and long-term growth	Cell 5 1 003 9.70%	Cell 10 279 2.70%	Cell 15 57 0.55%	Cell 20 67 0.65%	1 406 13.60%
	Total	7 276 70.38%	1 907 18.45%	542 5.24%	613 5.93%	10 338 100.00%

Table 2b: Distribution of Thailand's realistic export opportunities in ASEAN+3 with  $RCA \geq 0.7$  and  $RTA > 0$ , according to relative market position and market characteristics

		Relative Market Share of South Africa				
		Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Import demand size and growth	Large market	Cell 1 222 6.56%	Cell 6 136 4.02%	Cell 11 55 1.63%	Cell 16 39 1.15%	452 13.36%
	Growing (long- and short-term) market	Cell 2 1 057 31.24%	Cell 7 566 16.73%	Cell 12 218 6.44%	Cell 17 272 8.04%	2 113 62.46%
	Large market short-term growth	Cell 3 23 0.68%	Cell 8 15 0.44%	Cell 13 4 0.12%	Cell 18 1 0.03%	43 1.27%
	Large market long-term growth	Cell 4 88 2.60%	Cell 9 54 1.60%	Cell 14 27 0.80%	Cell 19 17 0.50%	186 5.50%
	Large market short- and long-term growth	Cell 5 291 8.60%	Cell 10 187 5.53%	Cell 15 50 1.48%	Cell 20 61 1.80%	589 17.41%
	Total	1 681 49.69%	958 28.32%	354 10.46%	390 11.53%	3 383 100.00%

Table 3a: Distribution of Thailand's potential realistic export opportunities in thousand US\$ in ASEAN+3 according to relative market position and market characteristics

		Relative Market Share of South Africa				
		Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Import demand size and growth	Large market	Cell 1 84 636 073 33.66%	Cell 6 13 049 530 5.19%	Cell 11 1 163 896 0.46%	Cell 16 1 584 279 0.63%	100 433 778 39.95%
	Growing (long- and short-term) market	Cell 2 15 135 886 6.02%	Cell 7 6 284 036 2.50%	Cell 12 931 426 0.37%	Cell 17 706 609 0.28%	23 057 956 9.17%
	Large market short-term growth	Cell 3 14 441 257 5.74%	Cell 8 517 035 0.21%	Cell 13 39 125 0.02%	Cell 18 198 0.00%	14 997 615 5.97%
	Large market long-term growth	Cell 4 37 332 329 14.85%	Cell 9 2 837 227 1.13%	Cell 14 1 787 716 0.71%	Cell 19 194 278 0.08%	42 151 550 16.77%
	Large market short- and long-term growth	Cell 5 58 260 979 23.17%	Cell 10 10 161 269 4.04%	Cell 15 1 091 200 0.43%	Cell 20 1 265 159 0.50%	70 778 607 28.15%
	Total	209 806 523 83.45%	32 849 097 13.07%	5 013 363 1.99%	3 750 524 1.49%	251 419 506 100.00%

Table 3b: Distribution of Thailand's realistic export opportunities in thousand US\$ in ASEAN+3 with  $RCA \geq 0.7$  and  $RTA > 0$ , according to relative market position and market characteristics

		Relative Market Share of South Africa				
		Market share of Thailand relatively small	Market share of Thailand intermediately small	Market share of Thailand intermediately high	Market share of Thailand relatively high	Total
Import demand size and growth	Large market	Cell 1 16 205 353 15.89%	Cell 6 10 028 586 9.83%	Cell 11 1 050 103 1.03%	Cell 16 1 486 415 1.46%	28 770 457 28.21%
	Growing (long- and short-term) market	Cell 2 3 413 818 3.35%	Cell 7 4 314 058 4.23%	Cell 12 642 837 0.63%	Cell 17 438 935 0.43%	8 809 648 8.64%
	Large market short-term growth	Cell 3 6 310 340 6.19%	Cell 8 444 829 0.44%	Cell 13 39 125 0.04%	Cell 18 194 0.00%	6 794 489 6.66%
	Large market long-term growth	Cell 4 24 607 337 24.13%	Cell 9 2 336 131 2.29%	Cell 14 1 699 976 1.67%	Cell 19 184 461 0.18%	28 827 905 28.27%
	Large market short- and long-term growth	Cell 5 18 342 894 17.99%	Cell 10 8 277 105 8.12%	Cell 15 900 399 0.88%	Cell 20 1 255 563 1.23%	28 775 960 28.22%
	Total	68 879 742 67.54%	25 400 708 24.91%	4 332 440 4.25%	3 365 569 3.30%	101 978 459 100.00%

Table 4a: Thailand's REOs per broad product category

	Potential export value (US\$ thousand) in ASEAN+3	% of total potential export value in ASEAN+3	Potential export value (US\$ thousand) worldwide	% of total potential export value worldwide
01 - 05 Animal and animal products	2 249 898	0.89%	3 507 949	0.94%
06 - 15 Vegetable products	924 557	0.37%	5 578 611	1.49%
16 - 24 Foodstuffs	3 607 195	1.43%	10 370 128	2.78%
25 - 27 Mineral products	81 036 654	32.23%	38 606 074	10.34%
28 - 38 Chemicals and allied industries	14 746 223	5.87%	38 553 481	10.32%
39 - 40 Plastic/Rubbers	13 362 100	5.31%	19 920 984	5.33%
41 - 43 Raw hides, skins, leather, and furs	945 710	0.38%	1 913 770	0.51%
44 - 49 Wood and wood products	2 914 025	1.16%	8 653 674	2.32%
50 - 63 Textiles	4 027 272	1.60%	30 787 740	8.24%
64 - 71 Stone / Glass	12 636 586	5.03%	18 542 661	4.96%
72 - 83 Metals	12 637 209	5.03%	17 686 954	4.74%
84 - 85 Machinery / Electrical	89 400 982	35.56%	124 474 722	33.32%
86 - 89 Transportation	2 654 400	1.06%	19 692 040	5.27%
90 - 97 Miscellaneous	10 276 694	4.09%	35 229 432	9.43%
Grand total	251 419 506	100.00%	373 518 221	100%

Table 4b: Thailand's REOs per broad product category with  $RCA \geq 0.7$  and  $RTA > 0$ 

	Total potential export value (US\$ thousand) in ASEAN+3	% of total potential export value in ASEAN+3	Potential export value (US\$ thousand) worldwide (excluding ASEAN+3)	% of total potential export value worldwide (excluding ASEAN+3)
01 - 05 Animal and animal products	1 068 053	1.05%	1 463 303	0.97%
06 - 15 Vegetable products	379 733	0.37%	1 497 472	0.99%
16-24 Foodstuffs	1 782 444	1.75%	6 619 680	4.39%
25 - 27 Mineral products	22 461 242	22.03%	32 803 691	21.76%
28 - 38 Chemicals and allied industries	4 477 904	4.39%	2 981 140	1.98%
39 - 40 Plastic/Rubbers	8 041 065	7.89%	13 310 475	8.83%
41 - 43 Raw hides, skins, leather, and furs	498 146	0.49%	945 214	0.63%
44 - 49 Wood and wood products	527 552	0.52%	1 617 824	1.07%
50 - 63 Textiles	1 959 427	1.92%	11 573 204	7.68%
64 - 71 Stone / Glass	1 271 320	1.25%	9 666 134	6.41%
72 - 83 Metals	2 556 345	2.51%	4 464 622	2.96%
84 - 85 Machinery / Electrical	53 703 769	52.66%	50 472 397	33.49%
86 - 89 Transportation	876 189	0.86%	5 061 086	3.36%
90 - 97 Miscellaneous	2 375 270	2.33%	8 252 455	5.48%
Grand total	101 978 459	100.00%	150 728 696	100%

Table 5a: Thailand's top 30 products in potential export value within ASEAN+3,  $RCA \geq 0.7$  and  $RTA > 0$

HS 6-digit product category	Rank	Potential export value (US\$ thousand)	Number of opportunities
HS854221-Cards incorporating an electronic integrated circuit (smart cards)	1	33 103 712	7
HS271000-Petroleum oils and oils obtained from bituminous minerals, other than crude	2	21 377 218	6
HS847330-Parts & accessories (excluding covers, carrying cases and the like)	3	4 884 729	6
HS847170-Analogue/hybrid automatic data processing machines	4	2 860 485	8
HS851790-Apparatus for carrier-current line systems/digital line systems	5	2 048 274	3
HS290243-Benzene	6	1 538 067	2
HS740400-Copper waste & scrap	7	1 430 722	3
HS390120-Ethylene-vinyl acetate copolymers, in primary forms	8	859 142	7
HS390210-Polyisobutylene, in primary forms	9	851 299	6
HS850440-Ballasts for discharge lamps/tubes	10	830 614	7
HS852540-Still image video cameras & other video camera recorders; digital cameras	11	823 070	5
HS851750-Apparatus for carrier-current line systems/digital line systems	12	711 872	2
HS854430-Co-axial cable & other co-axial electronic conductors	13	648 481	4
HS390740-Alkyd resins, in primary forms	14	639 135	8
HS400122-Balata, gutta-percha, guayule, chicle & similar natural gums	15	619 026	3
HS330499-Beauty/make-up preparations & preparations for the care of the skin	16	573 518	6
HS390110-Ethylene-vinyl acetate copolymers, in primary forms	17	548 664	9
HS854121-Diodes (excluding photosensitive/light emitting diodes)	18	530 957	6
HS290122-Buta-1,3-diene & isoprene	19	527 849	4
HS854160-Diodes (excluding photosensitive/light emitting diodes)	20	476 376	6
HS711319-Articles of jewellery & parts thereof	21	464 944	4
HS850490-Ballasts for discharge lamps/tubes	22	464 081	7
HS030613-Crabs, whether or not in shell, frozen	23	461 548	9
HS390190-Ethylene-vinyl acetate copolymers, in primary forms	24	452 403	4
HS854390-Machines & apparatus for electroplating/electrolysis/electrophoresis	25	447 408	9
HS270750-Aromatic hydrocarbon mixtures of which 65% or more by volume	26	428 369	5
HS210690-Food preparations, not elsewhere specified	27	422 616	8
HS390230-Polyisobutylene, in primary forms	28	418 212	5
HS271320-Petroleum bitumen	29	405 418	4
HS847160-Analogue/hybrid automatic data processing machines	30	401 147	4
Total potential value for the top 30 within ASEAN+3		80 249 354	

Table 5b: Thailand's top 30 products in potential export value in the rest of the world (excluding ASEAN+3),  $RCA \geq 0.7$  and  $RTA > 0$

HS 6-digit product category	Product ranking by potential export values (US\$ thousand)	Potential export value (US\$ thousand)	Number of opportunities
HS271000 - Petroleum oils and oils obtained from bituminous minerals, other than crude	1	32 035 421	21
HS851750 - Apparatus for carrier-current line systems/digital line systems	2	6 975 350	23
HS847330 - Parts & accessories (excluding covers, carrying cases and the like)	3	5 411 393	48
HS854221 - Cards incorporating an electronic integrated circuit (smart cards)	4	4 597 467	5
HS711319 - Articles of jewellery & parts thereof	5	4 271 734	16
HS401110 - New pneumatic tyres, of rubber (excluding those with herring-bone)	6	3 567 704	68
HS847170 - Analogue/hybrid automatic data processing machines	7	3 004 963	64
HS850440 - Ballasts for discharge lamps/tubes	8	2 919 195	61
HS640399 - Footwear (excluding waterproof) incorporating a protective metal toe-cap	9	2 531 154	43
HS847160 - Analogue/hybrid automatic data processing machines	10	2 374 373	31
HS852812 - Reception apparatus for television, whether or not incorporating radio-broadcast receivers	11	2 154 222	55
HS940360 - Furniture of materials other than metal/wood/plastics, including cane/osier/bamboo	12	1 994 388	58
HS851790 - Apparatus for carrier-current line systems/digital line systems	13	1 800 104	36
HS870323 - Vehicles (excluding of 87.02 & 8703.10) principally designed for the transportation of persons	14	1 789 264	13
HS611030 - Jerseys, pullovers, cardigans, waist-coats & similar articles, knitted or crochet	15	1 613 061	32
HS210690 - Food preparations, not elsewhere specified	16	1 390 855	44
HS940161 - Parts of the seats of 94.01	17	1 388 566	43
HS852540 - Still image video cameras & other video camera recorders; digital cameras	18	1 354 927	37
HS847180 - Analogue/hybrid automatic data processing machines	19	1 279 913	46
HS853650 - Apparatus for protecting electrical circuits (excl. of 8536.10 & 8536.20)	20	1 089 074	44
HS852691 - Radar apparatus	21	1 018 553	28
HS190590 - Bread, pastry, cakes, biscuits & other bakers' wares	22	998 516	31

HS841590 - Air-conditioning machines	23	963 519	37
HS940350 - Furniture of materials other than metal/wood/plastics, incl. cane/osier/bamboo	24	916 857	62
HS848210 - Ball bearings	25	891 527	42
HS030613 - Crabs, whether or not in shell, frozen	26	887 234	23
HS610990 - T-shirts, singlets & other vests, knitted or crocheted, of cotton	27	799 803	53
HS852821 - Reception apparatus for television, whether or not incorp. radio-broadcast receivers	28	799 257	43
HS841430 - Air compressors mounted on a wheeled chassis for towing	29	772 561	30
HS850110 - AC generators (alternators), of an output >375kVA but not >750kVA	30	739 492	35
Total potential export value for the top 30 products outside ASEAN+3	92 330 448		

Table 6: Examples of product-country combinations with large export potential for Thailand in ASEAN+3

Country	Cell	Potential Export value	Actual export Thailand (2013)
HS854221 - Cards incorporating an electronic integrated circuit (smart cards)			
China	Cell 4	15 415 433	1 170 297
Hong Kong (SARC)	Cell 5	6 669 135	939 942
Singapore	Cell 3	4 738 873	419 706
South Korea	Cell 4	3 032 502	301 557
Japan	Cell 3	1 365 625	185 279
Malaysia	Cell 5	1 239 186	143 070
Viet Nam	Cell 2	642 957	48 573
HS271000 - Petroleum oils and oils obtained from bituminous minerals, other than crude			
Singapore	Cell 6	6 042 598	3 384 751
Indonesia	Cell 1	3 945 859	112 360
China	Cell 1	3 713 460	845 352
Japan	Cell 1	2 915 142	303 699
Malaysia	Cell 7	2 454 074	1 071 217
South Korea	Cell 5	2 306 083	36 701
HS847330 - Parts & accessories (excl. covers, carrying cases and the like)			
Hong Kong (SARC)	Cell 4	2 913 532	654 947
Singapore	Cell 6	770 442	253 705
Japan	Cell 1	454 123	35 163
Malaysia	Cell 11	361 619	736 508
South Korea	Cell 2	274 326	8 823
Viet Nam	Cell 2	110 688	2 092
HS847170 - Analogue/hybrid automatic data processing machines			
Hong Kong (SARC)	Cell 14	1 251 979	2 025 147
China	Cell 16	1 167 103	4 058 215
Singapore	Cell 15	250 254	428 868

South Korea	Cell 7	137 445	186 737
Indonesia	Cell 7	33 901	27 790
Viet Nam	Cell 12	18 720	34 180
Brunei Darussalam	Cell 2	770	48
Cambodia	Cell 7	315	426
HS851790 - Apparatus for carrier-current line systems/digital line systems			
China	Cell 5	1 550 850	149 591
South Korea	Cell 5	496 553	46 781
Brunei Darussalam	Cell 2	871	11

Figure 1: The basic methodology of the DSM

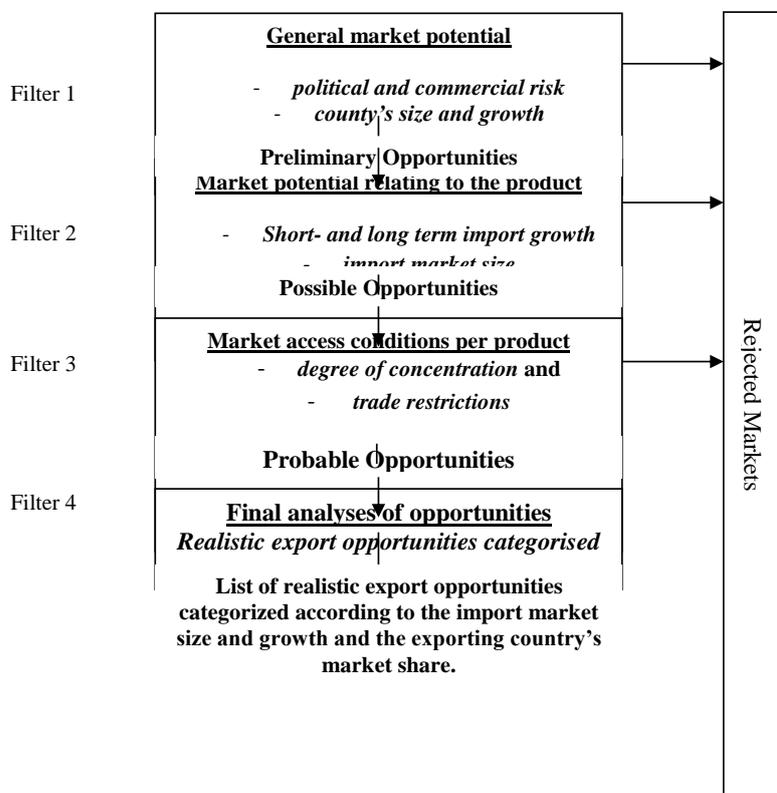
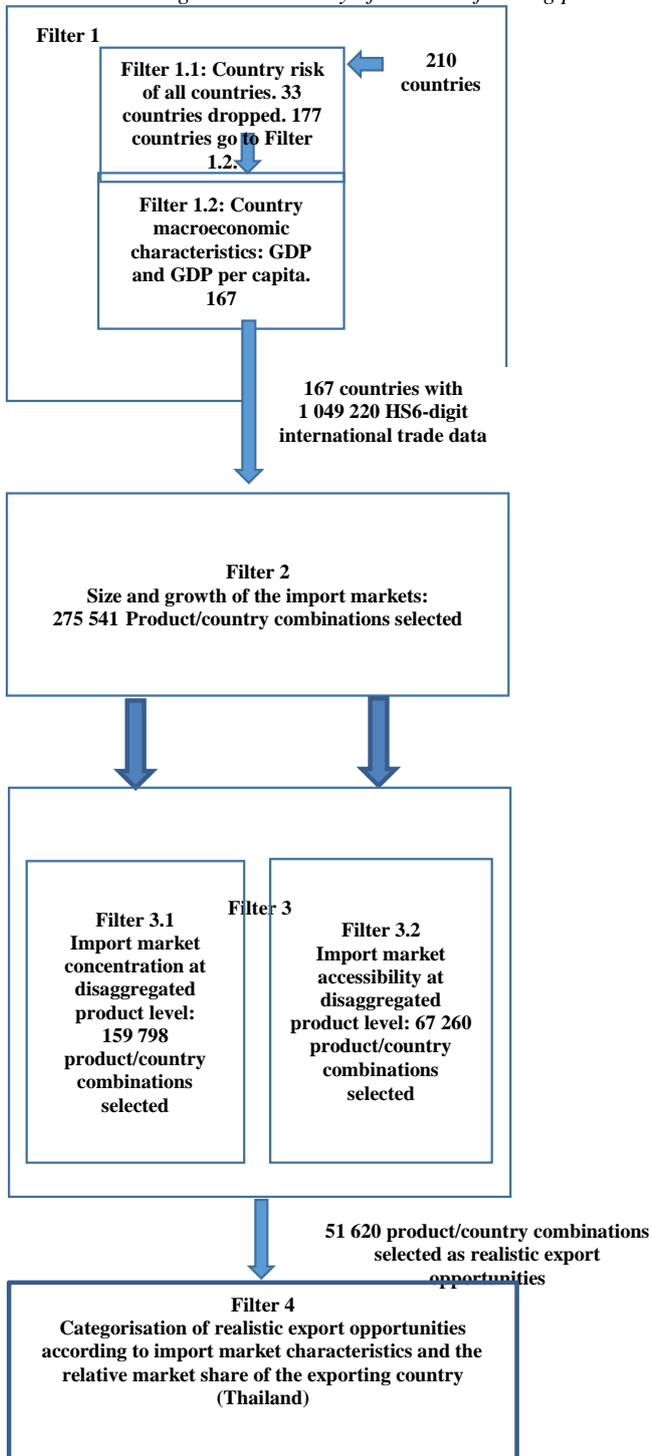


Figure 2: Summary of the DSM filtering process as applied to Thailand.



# A META-ANALYSIS OF THE RELEVANCE OF THE TECHNOLOGY ACCEPTANCE MODEL IN EXPLAINING TECHNOLOGY ADOPTION BEHAVIOR

## ABSTRACT

This article employed a meta-analysis to assess the generalization of the Technology Acceptance Model in the field of technology adoption behavior. Its results were compared with existing reviews on this model. Based on forty-nine empirical studies conducted during 2011-2014, our findings were similar to those of previous reviews. This confirmed the generalizability of Technology Acceptance Model. However, a main difference from previous reviews was found in employing students as surrogate of consumers in investigating technology adoption reaching similar conclusions to those collected from other sample groups.

Keywords: Technology Acceptance Model, perceived ease of use, perceived usefulness, meta-analysis, student sample

## INTRODUCTION

Over the past decades, communication technology has been evolved rapidly. Subsequently the behavior of consumer adoption of new technologies has been studied in many countries. The Technology Acceptance Model which has been widely applied in studies concerning technology adoption was employed in synthesizing existing empirical studies, e.g., King & He (2006) and Schepers & Wetzels (2007). After the meta-analysis of King & He (2006) and Schepers & Wetzels (2007), to the best of our knowledge, there is no other literature reviews relating to this topic. The computer-related technology in the last decade has advanced rapidly. Internet World Stats (2015) reports that 46.1 percent of the world's populations are internet users, and its average growth rate is 826.9 percent from 2000 to 2015. Thus, a subsequent meta-analysis of the literature on the adoption of computer-related technology is needed to update our understanding in this area.

This article intends to the assessment of the application of Technology Acceptance Model in more recent year by comparing similarities and differences with the findings of King & He (2006) and Schepers & Wetzels (2007). Computer-based Media Support Index (CMSI), a tool to measure influence of four dimensions on technology acceptance (Straub, Keil, & Brenner, 1997) was also included in this review. In presenting our findings, the article consisted of five sections. The first section described theoretical models using a foundation in reviewing empirical studies. They were the Theory of Reasoned Action, the Technology Acceptance Model and four cultural dimensions. In the second section, the data collection method methodology and the measurement of types of users and culture were explained. The third section presented findings by comparing similarities and differences among two existing reviews, i.e., King & He (2006) and Schepers & Wetzels (2007). This led to a revised model of the Technology Acceptance Model. The final section provided directions of future research and managerial implications.

## THEORETICAL BACKGROUND

The Technology Acceptance Model (Davis, 1989) was developed from the Theory of Reasoned Action (Fishbein & Ajzen, 1975) by extending it to be relevant to the context of technology. Some of the more recent studies (e.g., Gong, Stump, & Li, 2014) include factors relating to culture, and so cultural dimensions relevant to technology adoption were described in this section.

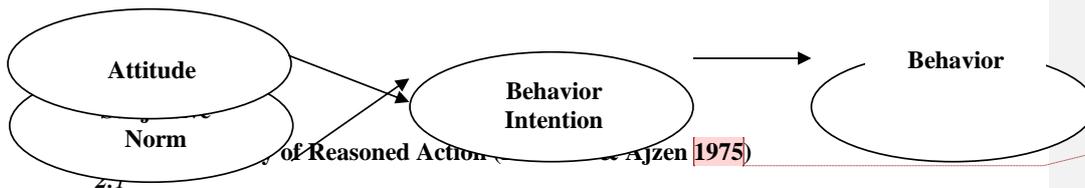
### Theory of Reasoned Action

The Theory of Reasoned Action explains how the pattern of a person's intention is influenced by his attitude toward and his subjective norms (Fishbein & Ajzen 1975). Since the subjective norm is a perceived social pressure arising from one's perception, individual's intention is related to both believe of an individual and others. The below equation formulates this relationship by expressing that intention to perform behavior consists of weighted of attitude toward performing behavior and weighted of subjective norm.

$$B \sim I = (A_B)w_1 + (SN)w_2$$

where, B is the behavior  
 I is the intention to perform behavior B  
 $A_B$  is the attitude toward performing behavior B  
 SN is the subjective norm  
 $w_1$  and  $w_2$  are the weight

This relationship can be expressed in the model below. Here attitude and subjective norm influences behavior intention which, in turn, affects actual behavior.

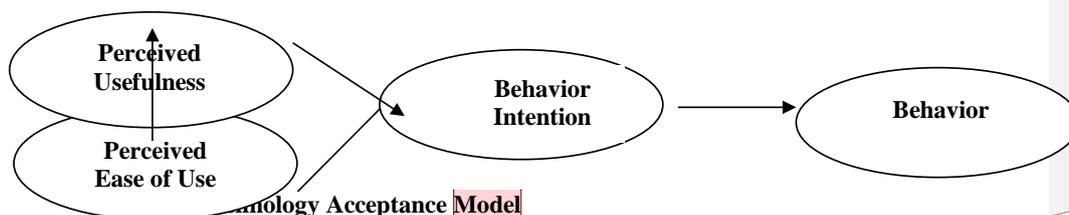


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### Technology Acceptance Model

As stated above, the Technology Acceptance Model (Davis, 1989) was developed based on the Theory of Reasoned Action (Fishbein & Ajzen, 1975). It is widely applied in investigating the behavior of individual adoption of new technology. In the Technology Acceptance Model, acceptance includes actual usage (Davis, Bagozzi, & Warshaw, 1989; Venkatesh, 2000) and intention to use (Tzou & Lu, 2009; van der Heijden, 2004) a particular technology. The model is parsimony (Bagozzi, 2007; Wu & Lu, 2013) since it consists of only three main constructs including perceived usefulness, perceived ease of use, and behavioral intention (Davis, 1989). Perceived usefulness refers to “the degree to which a person believes that using a particular system would enhance his or her job performance” (Devis, 1989, p.320). Perceived ease of use is “the degree to which a person believes that using a particular system would be free of effort” (Devis, 1989, p.320). This model has been employed to explain the underlying rationales of those subjects’ intention to use technology. That is, they are likely to adopt new technologies when they perceive ease of use and usefulness. The Technology Acceptance Model is shown in figure 2.

In assessing the generalizability of this model, King & He (2006) conducted a meta-analysis among eighty-eight studies published during 1989-2004. Their findings confirm the validity of this model. That is, behavioral intention is strongly explained by perceived usefulness and is influenced by perceived ease of use through perceived usefulness. However, perceived ease of use is not directly related to behavior intention.



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### Cultural Dimension and Technology Adoption

Hofstede (1980) defines culture as the collective mind of members in society that distinguishes from members of other societies. He proposes four cultural dimensions which are uncertainty avoidance, power distance, masculinity versus femininity, and individualism versus collectivism (Hofstede, 1980; 1983).

Uncertainty avoidance refers to the degree to which people accept uncertainty or risk (Hofstede, 1980; 1983). Hung & Chou (2014) found that uncertainty avoidance reduces the impact of perceived usefulness and perceived ease of use on behavioral intention. In weak uncertainty avoidance society,

people tend to accept higher risks than those in high uncertainty avoidance society. Moreover, perceived risk is negatively related to behavioral intention. This is, the less risk perceives, the more people intent to use. Thereby, people in low uncertainty avoidance society are likely to try using new technology rather than in high uncertainty avoidance society.

Power distance is the degree of “[inequality] in physical and intellectual capacities” (Hofstede, 1983, p.81). It measures the extent to which the less powerful members of an entity accept and expect unequally distributed power in the group. People in countries with a larger power distance tend to be more willing to adopt hedonic mobile commerce (e.g. game, ring tone), because, they are more relax and cheerful than people in countries with a smaller power distance (Harris, Rettie, & Kwan, 2005). This implies that when their personalities are matched with characteristics of technology, it increases the chance of their technology adoption.

Masculinity versus femininity society refers to different roles of gender (Hofstede, 1980; 1983). Masculinity society focuses on achievement (such as money), materialism, and assertiveness. On the other hand, feminine society is a keeping personal relationship with others rather than money. Therefore, in this society, an interdependent ideal is more important than an independent ideal. The study of Gong, Stump, & Li (2014) suggests that masculinity country is negatively related to social networking websites adoption. This technology is directly related to social purpose, but, masculinity emphasizes the independent ideal. This is a reason why the relationship is negative.

Individualism/Collectivism is a degree of integration between groups (Hofstede, 1980). In an individualism society, people tend to be interested in themselves and direct family. In contrast, a collectivistic society has tight tie between individual such as extended family (Hofstede, 1983). Hung & Chou (2014) reveals that individualism plays an important role in increasing the effect of perceived usefulness and perceived ease of use on intention to use mobile commerce. In the individualism society, people may incline to use the technology as self-expression. They are egocentricity and have freedom to try the technology. In contrast, people in the collectivism society have to comply with others’ expectations, and so they use the technology to enhance group harmony (Gong et al., 2014; Hung & Chou; 2014). To sum up, individualism society is related to achievement in own needs, while collectivism is to satisfy group needs. Both usefulness and ease of use are directly involved in own needs, therefore, individualism enhances effect of perceived usefulness on behavioral intention and effect of perceived ease of use on behavioral intention.

## **METHODOLOGY**

### **Sample**

We employed Business Source Complete (EBSCO Host Database) and the keyword “Technology Acceptance Model” in searching peer reviewed articles published during 2011-2014. Two hundred and twenty-five journals written in English were found during this initial search. Next, these studies were selected based on the following criteria:

They were empirical studies published in Q1 or Q2 journals.

They studied the relationship among perceived usefulness, perceived ease of use, and behavioral intention.

They provided the information on sample sizes and correlations or path coefficients among perceived usefulness-behavioral intention, perceived ease of use-behavioral intention, and perceived usefulness-behavioral intention.

They provided other useful information such as characteristics of subjects and countries that the authors studied.

Finally forty-eight articles containing forty-nine studies were selected for the subsequent analysis.

### **Measurement of types of users**

Types of users were classified for each study in the meta-analysis into three groups which are students, consumers (e.g. consumers, users, or members), and employees of company or organizations.

### **Measurement of Culture**

In this study, culture is measured by Computer-based Media Support Index (CMSI). The country has high CMSI when sum of uncertain avoidance, power distance, and masculinity is high, but individualism is low (Straub et al., 1997). The formula is shown below.

$$\text{CMSI} = \text{uncertainty avoidance index} + \text{power distance index} + \text{masculinity index} + 100 - \text{individualism}$$

Coding rules of measurement of CMSI is shown as following:

- 1) Sweden, Norway, Netherlands, UK, USA, and Canada were assigned as low CMSI
- 2) Israel, Germany, India, Spain, Jordan, Taiwan, Malaysia, Pakistan, Korea, Greece, and Saudi Arabia were assigned as high CMSI.

### ANALYSIS

We employed a random effects approach similar to King & He (2006). This approach assumes that every individual study in the meta-analysis is taken from population which is possible to have different effect sizes across studies. In addition, we explored types of users and culture as moderators to observe the impact of these moderators. The “Comprehensive Meta-Analysis” software version 3 was utilized.

### Construct Reliabilities

To assess adequate reliability, Cronbach's alpha value should exceed 0.70 (Hair, Ringle, & Sarstedt, 2011). All constructs in the Technology Acceptance Model --- perceived usefulness, perceived ease of use, and behavioral intention show reliability (see Table 1). Their average Cronbach's alpha values were greater than 0.7 and their variances were very low.

Table 1

*The reliability of Technology Acceptance Model's Constructs*

	Perceived usefulness	Perceived ease of use	Behavioral intention
Average reliability (Cronbach's alpha)	0.892	0.885	0.875
Minimum	0.690	0.700	0.602
Maximum	0.962	0.976	0.980
Variance	0.004	0.004	0.009
Number of studies	33	33	28*

Note. \* = Three studies include only some constructs.

### Technology Acceptance Model path coefficient

Out of forty-three studies investigating the relationship between perceived usefulness and behavioral intention, there were only four studies reporting insignificantly positive relationship. As we expected, most of studies (thirty-nine studies), perceived usefulness was significantly positively associated with behavioral intention. The path of perceived usefulness-behavioral intention (mean  $\beta = 0.316$ ) and perceived ease of use-perceived usefulness (mean  $\beta = 0.344$ ) were stronger than perceived ease of use-behavioral intention (mean  $\beta = 0.142$ ) (see Table 2). This is in line with findings of King & He (2006) and Schepers & Wetzels (2007).

From twenty-seven studies, seventeen studies showed a significant positive relationship. The mean of  $\beta$  of the path between perceived ease of use-behavioral intention is lowest compared to other paths and its standard deviation is quite high (0.139) relative to its mean suggesting a weak relationship. This result is consistent with those of King & He (2006) and Schepers & Wetzels (2007).

Thirty-six out of forty-one studies are found to have a positive and statistically significant relationship between perceived ease of use and perceived usefulness. The path between perceived ease of use and perceived usefulness is stronger than the path between perceived ease of use and behavioral intention. This implies that perceived ease of use is more likely to affect behavioral intention through perceived usefulness rather than has a direct effect to behavioral intention. This result is consistent with the finding of the meta-analysis of King & He (2006) and Schepers & Wetzels (2007).

Table 2  
*Summary Technology Acceptance Model Path Coefficients*

$\beta$	Perceived usefulness- behavioral intention	Perceived ease of use- behavioral intention	Perceived ease of use- Perceived usefulness
Minimum	0.010	-0.150	-0.350
Maximum	0.770	0.510	0.794
Mean	0.316	0.142	0.344
Standard Deviation	0.185	0.139	0.230

Table 3 shows the summary of effect size of each path. The distribution of Q statistic is similar to chi-squared with k-1 degrees of freedom (where k refers to number of studies that include in the meta-analysis) (Hedges & Olkin, 1985) while  $I^2$  represents the percentage of the total variation across studies owing to heterogeneity (Higgins & Thompson, 2002). The Q statistic of all three paths was greater than its critical value. Hence, the null hypothesis (homogeneity) was rejected ( $p < 0.001$ ).  $I^2$  is closed to 100% among all paths. The results of Q statistic and  $I^2$  confirmed that the random effect was suitable approach. They expect an underlying reason for this weak relationship is due to the presence of moderating variables. Hence, we expand our investigation to include types of users and culture as moderators.

Table 3  
*Summary of Effect Size of Path Coefficient in Technology Acceptance Model*

$\beta$	Perceived usefulness- behavioral intention	Perceived ease of use- behavioral intention	Perceived ease of use- Perceived usefulness
Number of studies	43	27	41
Range of Sample Size	55-1088	68-1004	68-1088
Total sample size	14263	8968	13348
Point Estimate of Effect Size	0.331	0.142	0.367
Z	10.045	4.299	10.087
$p$ (Effect Size)	0.000	0.000	0.000
Heterogeneity test (Q)	670.745	241.953	746.991
$p$ (Heterogeneity)	0.000	0.000	0.000
Lower Limit (95% interval)	0.270	0.078	0.301
Upper Limit (95% interval)	0.390	0.205	0.430
$I^2$	93.738%	93.972%	93.285%

### Moderator Analysis

#### Moderator Analysis by Type of Users

Users were classified into three groups which consisted of students, consumers, and employees. Tables 4 to 6 present the findings of the moderator analysis classified by types of users (student, consumers, and employees) respectively. There are no differences across types of users in perceived usefulness-behavioral intention, perceived ease of use-behavioral intention, and perceived ease of use-perceived usefulness. With a 95 percent confidence interval, the studies using student samples show similar results to those using consumers in general. Therefore, students could be the representative of consumers. This result departs the conclusion King & He (2006) which states that students cannot be a sample representing general users, i.e., consumers and employees. Schepers & Wetzels (2007) classify two types of users which are students and non-students. Their meta-analysis supports findings of King & He (2006). They found that student increases effect of perceived usefulness-behavioral intention, perceived ease of use-behavioral intention, and perceived ease of use-behavioral intention.

Table 4  
Moderator Analysis by Type of Users: Students

$\beta$	Perceived usefulness-behavioral intention	Perceived ease of use-behavioral intention	Perceived ease of use-Perceived usefulness
Number of studies	16	12	13
Range of Sample Size	55-760	80-760	80-682
Total sample size	4169	3671	3010
Point Estimate of Effect Size	0.332	0.178	0.341
Z	5.495	3.032	7.247
<i>p</i> (Effect Size)	0.000	0.000	0.000
Heterogeneity test (Q)	227.380	131.346	79.420
<i>p</i> (Heterogeneity)	0.000	0.000	0.000
Lower Limit (95% interval)	0.218	0.064	0.253
Upper Limit (95% interval)	0.436	0.288	0.422

Table 5  
Moderator Analysis by Type of Users: Consumers

$\beta$	Perceived usefulness-behavioral intention	Perceived ease of use-behavioral intention	Perceived ease of use-Perceived usefulness
Number of studies	17	9	18
Range of Sample Size	136-1004	234-1004	136-1004
Total sample size	6755	3927	6925
Point Estimate of Effect Size	0.305	0.119	0.416
Z	5.891	3.721	7.782
<i>p</i> (Effect Size)	0.000	0.000	0.000
Heterogeneity test (Q)	299.212	30.294	368.211
<i>p</i> (Heterogeneity)	0.000	0.000	0.000
Lower Limit (95% interval)	0.207	0.057	0.319
Upper Limit (95% interval)	0.397	0.181	0.503

Table 6  
Moderator Analysis by Type of Users: Employees

$\beta$	Perceived usefulness-behavioral intention	Perceived ease of use-behavioral intention	Perceived ease of use-Perceived usefulness
Number of studies	10	6	10
Range of Sample Size	68-1088	68-494	68-1088
Total sample size	3339	1370	3413
Point Estimate of Effect Size	0.376	0.109	0.305
Z	5.582	1.309	3.189
<i>p</i> (Effect Size)	0.000	0.191	0.001
Heterogeneity test (Q)	134.026	42.589	270.427
<i>p</i> (Heterogeneity)	0.000	0.000	0.000
Lower Limit (95% interval)	0.251	-0.054	0.121
Upper Limit (95% interval)	0.489	0.266	0.468

#### Moderator Analysis by Culture

Culture was measured by CMSI and classified into two groups (the low versus the high CMSI groups). Table 7 and 8 present the moderator analysis of the low CMSI group and the high CMSI group, respectively. For the relationship between perceived usefulness and behavioral intention, the low CMIS group has an effect size greater than the high CMIS group. Therefore, for those the low CMSI group, if perceiving the usefulness of a particular technology, they are likely to adopt in the

technology faster than the high CMSI group. This is consistent with the findings of Straub et al. (1997) and Van Slyke, Lou, Belanger, & Sridhar (2010). Straub et al. (1997) employ CMSI to investigate e-mail adoption in three airlines among a low CMSI culture (American and Swiss) and a high CMSI culture (Japanese). They conclude that the Technology Acceptance Model hold for the USA and Switzerland, not for Japan. Moreover, Van Slyke et al. (2010) confirm that CMSI has a negative influence on intention to shop online. That is, people in low CMSI culture tend to adopt online shopping faster than those living in high CMSI culture. Scheepers & Wetzels (2007) conducts the meta-analysis to examine effect of culture (western and non-western) as moderator variable. Generally, the western countries have low CMSI scores. They find that the relationship between perceived usefulness and behavioral intention is moderated for the western culture group. Thus, the results of our study are consistent with the findings of Scheepers & Wetzels (2007).

Table 7  
*Moderator Analysis by Culture: Low CMSI*

B	Perceived usefulness-behavioral intention	Perceived ease of use-behavioral intention	Perceived ease of use-Perceived usefulness
Number of studies	21	16	18
Range of Sample Size	55-1004	68-1004	68-1004
Total sample size	6404	5513	5090
Point Estimate of Effect Size	0.399	0.158	0.376
Z	7.315	0.002	6.218
p (Effect Size)	0.000	3.128	0.000
Heterogeneity test (Q)	397.793	195.351	325.481
p (Heterogeneity)	0.000	0.000	0.000
Lower Limit (95% interval)	0.300	0.059	0.265
Upper Limit (95% interval)	0.490	0.253	0.478

Table 8  
*Moderator Analysis by Culture: High CMSI*

B	Perceived usefulness-behavioral intention	Perceived ease of use-behavioral intention	Perceived ease of use-Perceived usefulness
Number of studies	22	11	23
Range of Sample Size	130-1088	151-578	130-1088
Total sample size	7859	3455	8258
Point Estimate of Effect Size	0.266	0.119	0.359
Z	7.341	3.521	7.730
p (Effect Size)	0.000	0.000	0.000
Heterogeneity test (Q)	217.526	38.068	415.774
p (Heterogeneity)	0.000	0.000	0.000
Lower Limit (95% interval)	0.197	0.053	0.274
Upper Limit (95% interval)	0.332	0.184	0.440

## REVISED TECHNOLOGY ACCEPTANCE MODEL

Based on the above findings, a revised Technology Acceptance Model is proposed by including the influence of culture and the stage of adoption (see Figure 5).

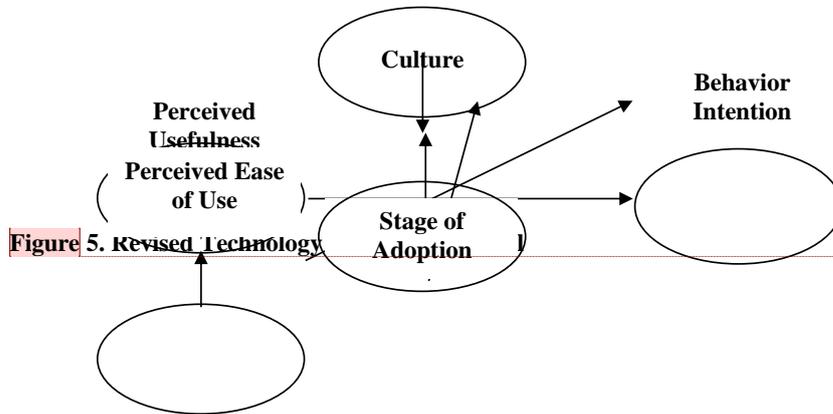


Figure 5. Revised Technology

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Không biết format

The Technology Acceptance Model explains behavioral intention to adopt new technology. Perceived usefulness, perceived ease of use, and behavioral intention are three main constructs. The results of meta-analysis revealed that the proportions of statistically significant paths between perceived ease of use and perceived usefulness (thirty-six from forty-one studies) and between perceived usefulness and behavioral intention (thirty-nine from forty-three studies) are greater than the path between perceived ease of use and behavioral intention (ten from twenty-seven). This concludes that perceived usefulness is the most important variable in predicting behavioral intention. In addition, behavioral intention is also determined by perceived ease of use through perceived usefulness. For example, Ham, Kim & Forsythe (2008) find a positive relationship between perceived usefulness and intention to use point of sales (POS) in restaurant is statistical significance. However, it is not statistically significant relationship between perceived ease of use and intention to use. POS is the equipment to enhance productivity in the restaurant and employees expect its good performance (e.g. speed, varieties of functions), and so usefulness plays a significant role to behavioral intention rather than ease of use. These relationship patterns are also found in those studies relevant to online library resource (Booker, Detlor, & Serenko, 2012), Automatic Management System (E-Prescriptions) in hospital (Escobar-Rodríguez, Monge-Lozano, & Romero-Alonso, 2012) and in E-Banking (Abbad, 2013; Tsai, Chien, & Tsai, 2014). Thus, the relationship between perceived usefulness and behavioral intention is proposed as follows.

Proposition 1: When technology is perceived to be difficult to use but overwhelming necessity to use, the adoption is high. The usefulness of technology is perceived more important than ease of use and so has a stronger direct effect on one's behavioral intention.

Employing students as subjects is controversial. However, this might not be relevant in the study of technology adoption. Our meta-analysis suggests that employing either students or consumers as subjects in a study will reach similar findings. That is, the relationships between perceived usefulness and behavioral intention, perceived ease of use and behavioral intention, and perceived ease of use and perceived usefulness are positive. This might be because students are familiar with using the internet, technology, and operating system. This is different from the findings of King & He (2006) who conclude that students should not be surrogate of general users. This difference may arise from data collection period. For our meta-analysis, the data was collected during 2011-2014 (4 years), while, King & He (2006) collected the data during 1989-2004 (15 years). A probable explanation is that new technologies are designed to be user-friendly allowing the general public to understand and adopt them easier. Hence, the following relationship is proposed:

Proposition 2: There is no difference across type of users (students and consumers) in determining the relationship among variables in Technology Acceptance Model. Consequently, students could be a surrogate of general consumers.

The impact of CMSI is significant, i.e., it alters the effect of perceived usefulness on behavioral intention as seen in the higher Q statistic than its cutoff (its *p-value* less than 0.001) and the  $F^2$  level nearly 100 percent. This suggests that CMSI should be included as a moderator. This is consistent with the finding of Ashraf, Thongpapanl, & Auh (2014) who conclude that perceived usefulness plays a more important role in determining intention to shop online among Canadian (CMSI=159 - low CMSI) than Pakistani (CMSI=261 - high CMSI). This leads to the proposition below.

Proposition 3: The relationship of perceived usefulness and behavioral intention is moderated by culture. Perceived usefulness has a stronger direct effect on behavioral intention for countries with a low CMSI level than those with a high CMSI level.

Most of countries with low CMSI scores seem to be residing in developed countries such as the USA, Canada, and the UK. In contrast, most of countries with high CMSI scores seem to be from emerging economies such as Pakistan, Malaysia, and Saudi Arabia. Developed countries and emerging countries differ in terms of stages of adoption. Countries with low CMSI levels are related to post-adoption while countries with high CMSI are association with early adoption stage. In early adoption stage, perceived ease of use is more important than perceived usefulness in predicting behavioral intention. When a particular technology has recently emerged, most consumers will avoid adopting it because they are concerned with its complexity. After more people have tested the new technology, reluctant users start to perceive its usefulness and are more willing to try. That is, the industry shifts from the early adoption stage to the post-adoption stage. In other words, in the post-adoption stage, perceived usefulness is more significant than perceived ease of use. For example, the textbook website is in the post-adoption stage among Americans. Americans read textbooks through a website because they perceive its usefulness rather than ease of use (Jonas & Norman, 2011). This shifting pattern is also found in the adoption of online library resource among Americans (Booker, Detlor, and Serenko, 2012) and fashion technology among Taiwanese people (Yang & Hsu, 2011). In addition, Ashraf, Thongpapanl, & Auh (2014) found that, in the online shopping context, perceived ease of use does not have an insignificant impact on intention to shop online among Canadians, but has a significant effect among Pakistani subjects. They explain that Canadians are in post-adoption stage while Pakistanis is in early adoption stage. Thus, this leads to the following propositions.

Proposition 4: The relationship between perceived usefulness and behavioral intention is moderated by the stage of adoption. Perceived usefulness has a stronger effect on behavioral intention than perceived ease of use under the post adoption stage. On the other hand, perceived ease of use has a stronger effect on behavioral intention than perceived usefulness in the early adoption stage.

## **6. Discussion and Directions of Future Research**

Our meta-analysis of forty-nine studies (forty-eight articles) with 14,000 samples confirms the findings of King & He (2006) and Schepers and Wetzels (2007) that the Technology Acceptance Model is applicable in the era of fast-moving technology. Perceived usefulness is the most important factors to determine behavioral intention. Moreover, the relationship between perceived usefulness-behavioral intention and perceived ease of use-perceived usefulness is stronger than that of perceived ease of use and behavioral intention. This implies that perceived usefulness is affected by perceived ease of use, and, subsequently, perceived usefulness influences intention to use.

The relationships between perceived usefulness and behavioral intention, perceived ease of use and behavioral intention, and perceived ease of use and perceived usefulness remain stable. Using students as a representative of consumers are stable across different groups. Our findings are different from the meta-analysis of King & He (2006) which find that students are not suitable to be a representative of consumers. As stated above, this may be because current technologies were designed to be more user-friendly leading to the general public as well as students to adopt new technologies faster than in the past.

Our review also expanded the cultural classification based on geographic area of Schepers & Wetzels (2007) by applying Computer-based Media Support Index (CMSI) to measure culture. The relationship between perceived usefulness and behavioral intention is different between the low and the high CMSI groups. This implies that perceived usefulness is a stronger predictor in determining behavioral intention among people in low CMSI country.

To advance our understanding of the technology adoption, more moderating variables should be investigated since they could influence the relationship of main constructs in the Technology Acceptance Model. These moderators are, for example technology type (online versus offline), voluntariness (mandatory usage versus one's discretion), characteristic of users (age, gender, and experience), and data collection methods (survey versus experimentation study).

### **MANAGERIAL IMPLICATION**

To increase the likelihood of adoption of new technology, businesses need to understand unique cultural aspects and the stage of adoption of their target customers. Our findings provide some insights in helping them in formulating a plan for technology adoption. When a new technology or system is developed, they should pay more attention to its "easy to operate" aspect. This will speed up the technology adoption since several groups as well as students can be targeted as initial users as well as influencers to assist others on its usefulness and usage. Moreover, for consumers living in countries with a low CMSI level or under post-adoption stage such as the UK, the USA, and Canada, perceived usefulness is the most important predictor of technology adoption. Under this environment, marketers should stress the new technology's superior usefulness and benefit over existing ones. However, for the country with a high CMSI level or under the early adoption stage such as Malaysia and Pakistan, perceived ease of use plays a key role in influencing technology adoption. People are concerned about the technology's complexity rather than its benefits. Therefore, when developing the technology to appeal to consumers at this stage, businesses should focus on ease of use to stimulate product trial. For example, system designers should simplify the system to reduce time and effort in learning and usage.

### **LIMITATIONS**

This study has two main limitations. Firstly, only academic journals listed in Business Source Complete (EBSCO Host Database) were selected for our meta-analysis review. Articles published in other sources such books, dissertations, and conference proceedings as well as those listed in other databases such as ABI/ INFORM, ScienceDirect, and ProQuest should be reviewed to achieve a more thorough review. Second, the period of the articles published should be expanded. We limited our review to cover only the period of 2011-2014 while King & He (2006) selects the articles published in 1989-2004 and Schepers & Wetzels (2007) in 1989-2005. Thus, the gap appears in those studies published in 2005-2010. By expanding the temporal coverage, more unique findings should emerge to enhance our understanding on the relevance of the Technology Acceptance Model in explaining the technology adoption of consumers.

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## **DELPHI-FAHP AND PROMETHEE: AN INTEGRATED APPROACH IN HEALTHCARE FACILITY LOCATION SELECTION**

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### **ABSTRACT**

Fuzzy AHP and PROMETHEE-GAIA are among the two most prominent MCDM tools used by the researchers in facility location selection. However both the methods have their weaknesses reported by the researchers. AHP suffers the problem of size and developing consensus where PROMETHEE can be improved with the hierarchical structure of AHP. This paper makes an attempt to embed Delphi to Fuzzy AHP and then integrate it with PROMETHEE-GAIA to develop a robust model in healthcare facility location selection. The purpose is to overcome the weaknesses of both the individual methods by this amalgamation. A case of thirteen alternative locations from six different subdivisions from India is considered to demonstrate the applicability of this integrated method.

Key words: Delphi, Fuzzy AHP, PROMETHEE, GAIA, healthcare, location selection

### **INTRODUCTION**

Facility location selection has always been one of the major multi criteria decision making problems that researchers talked about in last couple of decades. Because of its multicriteria nature this decision making attracted different tools including analytical hierarchy process (AHP) developed by Saaty (1980). A number of researchers used AHP or its fuzzy extension in facility location selection where they provided evidence on the efficacy of this MCDM tool (Shim, 1989; Jesuk, 2005; Cheng-Ru, 2007). Similarly the outranking method known as Preference Ranking Organization MeTHod for Enrichment Evaluations (PROMETHEE) developed by Brans and Vincke (1985), was also extensively used by researchers in various field of decision making including facility location selection (Behzadian et al., 2009; Walther et al., 2008; Frikha et al., 2011; Athawale et al., 2012).

However in spite of an extensive use, researchers identified some perennial problems with AHP and its fuzzy extensions. First the process of generating consensus among the expert opinions more or less relies on an aggregation method with a high chance of losing important information (Macharis et al., 2004). In fact researchers are of the opinion that generating consensus can improve accuracy in results and thus can be beneficial to the outcomes (Okoli and Pawlowski, 2004, Soltani et al., 2011). Second, most of the studies demonstrate the applicability of this MCDM tool only with a limited number of alternatives. With a set of 10 alternatives the numbers of pair wise comparisons become 45 and with 25 alternatives it reaches 300. Third is to limit the scale to a 9 point scale which cannot cope with the fact that an alternative can be multiple times better than the other (Macharis et al., 2004). Interestingly the first problem can be overcome by embedding Delphi technique with AHP. The second and the third problems can be addressed using the PROMETHEE method. In fact there can be any number of alternatives that can be compared using this outranking method without much difficulty and also it has no restriction on scale. However few studies also voiced for improving PROMETHEE by embedding AHP or its fuzzy extension (FAHP). The ability of AHP to decompose the decision problem and building hierarchy of criteria can improve the generation of criteria weights in PROMETHEE. Studies including Giannopoulos and Founti (2010), Venkatesan and Kumanan (2012) and also Bansal and Kumar (2013) demonstrated an efficacy in the applications of AHP-PROMETHEE hybrid approach in different fields of study.

Among all other facility location selection problems health care facility location selection using MCDM tools got importance since last decade. Not only physical access and other criteria affects the quality and operations of the medical services provided through the facility but also the success or the failure of such a facility depends largely on the location selected (Paul, 1997; Kuo et al., 1999). In last couple of decades a good number of researchers acknowledged the need to analyze this location selection decisions in health care sector and applied different MCDM tools to facilitate the decision making (Hanes and McKnight, 1984; Paul and Batta, 2008). A large amount of such decision making

was done with the application of AHP or its fuzzy extension (FAHP). Researchers like Wu et al (2007) used AHP to select location for the Taiwanese hospitals in obtaining competitive advantage. Vahidnia et al (2009) used FAHP and GIS to select location for hospitals in Tehran metropolitan area. In a similar approach Soltani and Marandi (2011) tried to address the hospital location selection in Shiraj metropolitan area, Iran by combining AHP and GIS.

Nevertheless the present study did not come across any prior work in health care facility location selection where the researchers used Delphi to generate consensus among expert opinions in an AHP or FAHP environment. The use of PROMETHEE in the domain is also not available. Though some researchers like Bansal and Kumar (2013) used AHP-PROMETHEE hybrid method in decision making but such a study is absent in health care facility location selection.

The aim of this paper is to study the selection of health care facility location using an integration of Delphi embedded FAHP and PROMETHEE approach. Six sub criteria under three main criteria are selected from literature to evaluate the alternative locations. To clearly understand importance and the conflicts between criteria, geometric analysis of interactive aid (GAIA) is also used. A case of thirteen alternative locations from six different sub divisions of the district of Burdwan, West Bengal, India is considered for illustration.

The paper is organized as follows: Detailed overview of the techniques such as FAHP, Delphi, PROMETHEE-GAIA with their applicability are given in section 2. In section 3 the methodology of the research is presented. Section 4 demonstrates the application of the integrated approach of Delphi-FAHP and PROMETHEE in health facility location selection in India. Section 5 analyses the results and finally conclusion, limitation and suggestions for future studies are given in section 6.

## **AN OVERVIEW OF FAHP, DELPHI AND PROMETHEE-GAIA APPROACHES**

### **Fuzzy AHP (FAHP)**

Since T. L. Saaty introduced AHP in 1980's a number of researchers used this MCDM tool in complex decision making situations with a good amount of success (Zahedi, 1986; Altay, 2008). However researchers also felt that this tool is not capable of handling subjectivity and vagueness inherent in human judgments. Zimmermann (1990) and then Chen and Mon (1994) recommended the inclusion of fuzzy set theory (Zadeh, 1965) in AHP to address this issue. Fuzzy AHP (FAHP) differs from AHP in terms of the linguistic scale and the computations done in generating weights and importance. The linguistic scale consisting of five triangular fuzzy numbers (TFN), proposed by Chen (2000) and further modified by Pan (2008) is used to capture the expert responses. Normalization of geometric mean (NGM) method is used to generate the fuzzy weights and further defuzzification is done using signed distance method (Yao and Wu, 2000) to obtain non-fuzzy or crisp importance.

### **Delphi Technique**

Delphi technique has evolved as an efficient and effective tool in qualitative decision making since last couple of decades. The technique is widely used mainly in structuring processes and generating consensus among responses (Okoli and Pawlowski, 2004; Azizollah, 2008). This technique asks for reliable responses on problems or conflicting situations from the experts in a panel. This tool helps the researchers in combining the reports or feedbacks of a group of experts into one consolidated statement (Wanda and Tena, 2004). The process starts with accumulating the expert responses and preparing a consolidated report. Though there is no restriction on the number of experts in such a panel but Okoli and Pawlowski (2004) recommended that 10-18 experts in such a panel may be adequate. In the next round the consolidated report is sent to the experts along with their respective responses of the previous round for modification or alteration, if any. After successive rounds the responses are expected to converge. To avoid any sort of influence the anonymity of the experts are maintained throughout the process.

### **PROMETHEE and GAIA**

PROMETHEE is an interactive approach widely used in the context of multicriteria decision making (MCDM) in different fields of study (Brans and Vincke, 1985; Hokkanen and Saleminen, 1997; Athawale and Chakraborty, 2010; Frikha et al., 2010; Rao and Patel, 2010; Athawale et al., 2012;

Jihen et al., 2012;). The backbone of PROMETHEE is the multicriteria table containing the criteria, their importance or weights, details of the actions or alternatives with respect to the criteria selected and the preference function. A preference function ( $P_j$ ) transforms the difference between scores obtained by two alternatives or actions with respect to a particular criterion into a number between 0 and 1. Six different functions are proposed by Brans and Vincke (1985) which can be used in different criteria as deemed applicable (Hokkanen and Salminen, 1997).

Another important aspect is the value function  $\phi(a)$  corresponding to an alternative 'a'. This is also termed as net flow of alternative 'a'. It is computed as the difference of  $\phi^+(a)$  and  $\phi^-(a)$  where  $\phi^+(a)$  and  $\phi^-(a)$  represents the strength and weakness of vis-à-vis the other alternatives. Where PROMETHEE I provides a partial ranking of the alternatives, a complete ranking with respect to the net flow  $\phi(a)$  can be obtained through PROMETHEE II.

GAIA is a multi-dimensional graphical representation which applies a principal component analysis on the multi-dimensional space with respect to individual criterion net flow. It is a visual descriptive analysis tool that helps in better understanding. Nemery et al. (2011) talked about the usefulness of this method in MCDM.

## **METHODOLOGY**

The methodology presented in this paper is divided into five sub sections. In the first section Selection of experts, Identification of criteria and sub criteria, Shortlisting of alternative locations are done. In the second section expert opinions are collected through questionnaire framed using the fuzzy AHP scale. Further Delphi method is used to develop consensus among expert opinions. In the third section criteria and sub criteria weights are generated using FAHP. Data corresponding to all the alternative locations are fitted into PROMETHEE to generate net flow of the alternatives and finally using the net flow the alternative locations are ranked.

## **APPLICATION**

### **Selection of Experts**

FAHP and PROMETHEE both being subjective decision making methods require consistent inputs. In case of FAHP inconsistent responses may fail consistency test and the entire data may be rejected (Saaty, 1980). This situation advocates for 'expert opinion' in criteria weight generation through FAHP. In the present study 20 experts are selected for capturing responses. The experts are medical doctors having more than fifteen years of experience in the field of hospital or health care administration & projects and are quite acquainted of the health conditions of the district of Burdwan, West Bengal, India. Five of them are senior medical practitioners having an average work experience of 36 years where as the other fifteen have in between 20 to 35 years. A questionnaire is provided to the experts and are requested to do pair wise comparisons among criteria (or sub criteria) using the fuzzy linguistic scale (Pan, 2008). Another questionnaire is also provided to capture information regarding the alternatives with respect to four criteria using 9 point likert type scale ranging between very bad to very good.

### **Identification of criteria and sub criteria**

Location selection criteria for health care facility are found to vary across different research works in different country however in almost every piece of work researchers recommended multi criteria evaluation of potential locations. Some of them talked about distance from arterial routes, travel time, environmental issues, land cost and population density as the set of important criteria (Vahidnia et al., 2009) where others opinioned for access to roads network, distance to other medical centers, population density, environment and size of the land (Soltani et al., 2011). Wu et al. (2007) considered population size, age, density, governmental policies, land, labour and capital where Schuurman et al. (2006) considered socio demographics of the service area, proximity to future expansion, space and population density while defining the hospital catchment through travel time. Based on the prominence and repetitions of the criteria in the available literature and on considering the valuable judgment of experts, this study considers three major criteria and six sub criteria in the evaluation. The criteria and sub criteria are summarized in *Table 1*.

Table 1: Criteria and sub criteria

Major Criteria	Sub Criteria
Cost (CST)  (Soltani et al., 2011; Vahidnia et al, 2009; Wu et al, 2007)	Cost of land (COL)
	Cost of construction (COC)
Population characteristics (PC)  (Soltani et al., 2011; Schuurman et al, 2006; Vahidnia et al, 2009; Wu et al, 2007)	Population density (PD)
	Economic condition (EC)
Location (L)	Access to road network (ARN)
(Vahidnia et al, 2009; Soltani et al., 2011; Estill, 2006)	Environment (ENV)

#### Identification of the alternative locations for the study

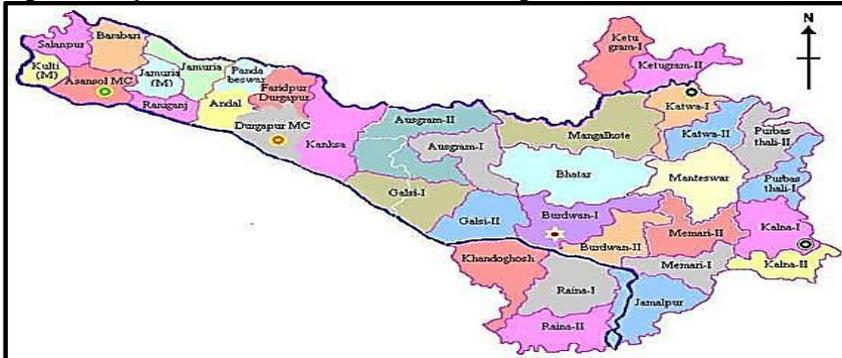
The region of study consists of thirteen blocks within five sub divisions or clusters in the district of Burdwan, West Bengal, India. An area covering more than 2755 square kilometers and a total of more than two millions of populations without a hospital. From the medical facility and population of these sub divisions of the district of Burdwan, West Bengal one can witness a significant lacuna in terms of the availability of health care facilities. Table 2 provides us the picture clearly. The number of hospital beds per 10000 populations is even poorer than the nation's average of 9. From Figure 1 the locations of these thirteen blocks can be identified.

Table 2: Health and population detail of the alternative locations

Cluster/ Sub division	Blocks	Area in KM <sup>2</sup>	Population			Density (Persons per KM <sup>2</sup> )	No. of hospital	Doctors
			Male	Female	Total			
C1	Ausgram-I	164.5	54623	52190	106813	649	0	8
	Galsi-II	277.9	68641	65310	133951	482	0	6
C2	Jamalpur	267.88	123728	119746	243474	909	0	8
	Raina-I	266.44	83633	79288	162921	611	0	4
	Khandaghosh	256.13	87671	82639	170310	665	0	6
C3	Faridpur Durgapur	144.6	59253	49366	108619	751	0	4
	Pandabeswar	97.89	79992	66453	146445	1496	0	3
	Kanksa	270.78	78669	72586	151255	559	0	7
C4	Purbasthali-II	188.18	97024	91125	188149	1000	0	7
	Kalna-I	161.34	97903	92784	190687	1182	0	6
	Monteshwar	305.4	109544	103718	213262	698	0	6
C5	Ketugram-I	189.86	74513	71500	146013	769	0	5
	Katwa-II	164.45	61696	58618	120314	732	0	5
Total:		2755.35	1076890	1005323	2082213		0	75

Source: medical facility and population, bardhman.gov.in

Figure 1: Map of the district of Burdwan, West Bengal, India



Source: NREGS, Bardhaman district<sup>24</sup>

### Collecting expert responses and developing consensus using Delphi

The responses were collected to generate criteria weights and also to assess the alternative locations with respect to some criteria for which data is not available. Six questions are administered to compare the criteria and sub criteria using the fuzzy pair wise comparison scale proposed by Pan (2008). Another four questions were administered to assess all the thirteen alternatives with respect to four sub criteria using a 9 point likert type scale. After the data has been collected a summary sheet is prepared and sent to the experts to have a relook at their responses for possible alteration. Table 3, 4 and 5 respectively demonstrate the successive rounds of Delphi and the associated convergence. The convergence process was terminated after achieving eighty or more percentage of convergence to a point in the scale.

Table 3: Responses after first round of Delphi

Main criteria comparisons						
	Extremely un imp	Un imp	Equally imp	Imp	Extremely imp	
CST			15	5		PC
CST			7	12	1	L
PC			9	11		L
sub criteria comparison under cost						
COL			11	9		COC
sub criteria comparison under population characteristics						
PD			3	8	9	EC
sub criteria comparison under location						
ARN			3	12	5	ENV

Table 4: Responses after second round of Delphi

Main criteria comparisons						
	Extremely un imp	Un imp	Equally imp	Imp	Extremely imp	
CST			17	3		PC
CST			5	15	1	L
PC			4	16		L
sub criteria comparison under cost						
COL			6	14		COC

<sup>24</sup> NREGS, Burdwan district (<http://nregsburdwan.com>)

sub criteria comparison under population characteristics						
PD			1	5	14	EC
sub criteria comparison under location						
ARN			3	15	2	ENV

Table 5: Responses after third round of Delphi

Main criteria comparisons						
	Extremely un imp	Un imp	Equally imp	Imp	Extremely imp	
CST			19	1		PC
CST			3	16	1	L
PC			2	18		L
sub criteria comparison under cost						
COL			3	17		COC
sub criteria comparison under population characteristics						
PD			1	1	18	EC
sub criteria comparison under location						
ARN			1	17	2	ENV

**Generation of criteria weights and scores for the alternatives**

After the process of convergence by Delphi technique, the data is processed using the FAHP to generate criteria weights. Each of the pair wise comparison table is tested for consistency before considering them as inputs. These criteria weights are used to evaluate the alternatives through PROMETHEE multicriteria table. Table 6 provides the detail of the multicriteria table used to evaluate the alternatives by visual PROMETHEE software, version 1.4. GAIA is further used to visually comprehend the conflicts among the alternatives with respect to each criterion. The quantitative detail of the alternatives corresponding to population density and economic condition are captured from Table 2.

Table 6: Multicriteria table of PROMETHEE

	Cost of land	Cost of construction	Population density	Economic condition	Access to road network	Environment
Unit/ Scale	9-point	9-point	no. of people / sq. km.	livelihood index(1000)	9-point	9-point
Preferences						
Min/Max	Min	min	Max	Min	max	max
Weight	0.26	0.14	0.32	0.08	0.13	0.07
Preference Function	Linear	Linear	Linear	Linear	Linear	Linear
Thresholds	absolute	absolute	Absolute	Absolute	absolute	absolute
Statistics						
Minimum	3	4	482	444	1	3
Maximum	7	7	1496	682	9	7
Average	5	5	808	506	6	5
Standard Dev.	1	1	268	61	2	1

## RESULTS AND DISCUSSIONS

The pair wise comparison using FAHP results in the determination of weights (both fuzzy and crisp) for the criteria and sub criteria. See Table 7. Among the criteria, cost and population characteristics have evolved as the most important criteria sharing equivalent importance.

Table 7: Criteria weights

Criteria	Weight of main criteria			Defuzzified weight
	(l	m	u)	
Cost (CST)	0.420	0.392	0.380	0.396
Population Characteristics (PC)	0.420	0.392	0.380	0.396
Location (L)	0.160	0.216	0.241	0.208

From the weights of the sub criteria in Table 8 one can witness that population density emerges as the most important sub criteria with 31.6 % weight followed by cost of land with 25.5%.

Table 8: Sub criteria weights

Sub criteria	L	M	U	Weight within criteria	Global weight
COL	0.710	0.634	0.600	0.645	0.2552
COC	0.290	0.366	0.400	0.355	0.1407
PD	1.000	0.750	0.691	0.798	0.3158
EC	0.000	0.250	0.309	0.202	0.0800
ARN	0.710	0.634	0.600	0.645	0.1341
ENV	0.290	0.366	0.400	0.355	0.0740

The visual PROMETHEE software provides the partial ranking and the complete ranking of the alternatives using PROMETHEE I and PROMETHEE II. The indifference and preference thresholds for the criteria can be observed from Table 9.

Table 9: Indifference and preference thresholds of the criteria

Sub Criteria	Indifference threshold (q)	Preference threshold (p)
Cost of land	1	2
Cost of construction	1	2
Population density	254	556
Economic condition	63	126
Access to road network	1	2
Environment	1	2

Table 10 demonstrates the rankings of the alternatives with respect to net dominance flow  $\phi(a)$ .

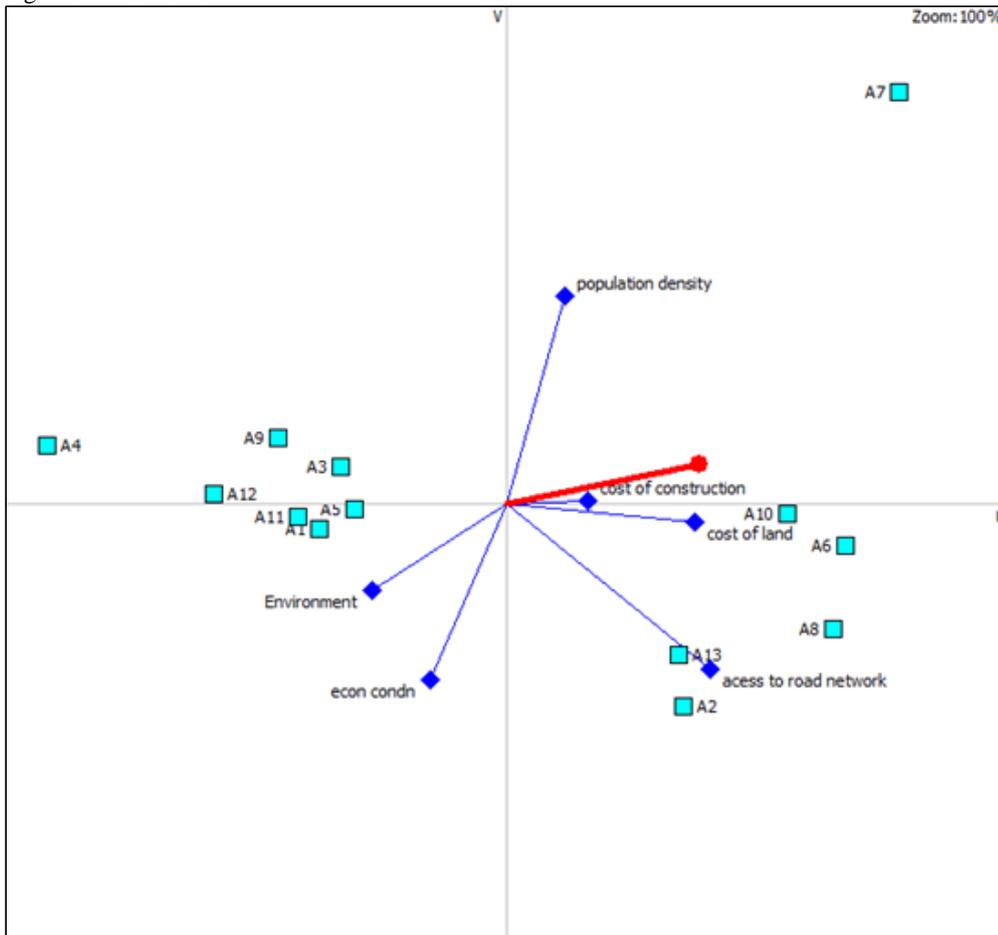
Table 10: Ranking of alternatives with respect to net flow

Rank	Alternatives	$\phi$	$\phi^+$	$\phi^-$
1	Kalna-I	0.4452	0.4572	0.0119
2	Pandabeswar	0.3565	0.5412	0.1847
3	Kanksa	0.1700	0.2919	0.1219
4	Faridpur Durgapur	0.1446	0.2564	0.1118
5	Katwa-II	0.1393	0.1900	0.0508
6	Galsi-I	0.1023	0.2033	0.1011
7	Jamalpur	-0.0824	0.0978	0.1802

8	Purbasthali-II	-0.1267	0.1126	0.2393
9	Ausgram-I	-0.1318	0.0800	0.2118
10	Khandaghosh	-0.1751	0.0518	0.2269
11	Monteshwar	-0.1818	0.0523	0.2341
12	Ketugram-I	-0.277	0.0452	0.3222
13	Raina-I	-0.3832	0.0524	0.4356

From the GAIA plane in Figure 2 one can visualize the conflicts among criteria very clearly. Here the quality of information provided by the two dimensional GAIA plane is 89.1%.

Figure 2: GAIA Plane



From figure 2 it is easy to identify that the alternative Pandabeswar (A7) is very strong in terms of population density whereas Galsi-I (A2), Katwa II (A13) and to some extent Kanksa (A8) are strong competitors in terms of access to road network. In the cost dimension Kalna I (A10) and Faridpur-Durgapur (A6) are much stronger than the other competitors. A group of locations including Monteshwar (A11), Jamalpur (A3), Khandaghosh (A5), Purbasthali II (A9), Aushgram I (A1) and Ketugram (A11) are equivalently positioned with respect to environment, however no location can be found strong enough with respect to economic conditions.

The sensitivity analysis shows that the alternative Pandabeswar, though in second position, cannot be raised to the first position by changing the weights of the sub criteria cost of land, economic conditions, access to road network and environment. However by changing the weight of cost of construction from 14% to 36% or population density from 36% to 46% may revise the ranks of Kalna I and Pandabeswar. On critically analyzing the FAHP hierarchy one can realize that raising either the weight of cost of construction to 36% or population density to 46% are not feasible as they both asks for assigning more than 100% weightage on their respective parent criteria.

## CONCLUSION

This problem demonstrates an application of Delphi embedded FAHP and PROMETHEE - GAIA approach in generating criteria weights and in evaluating potential health facility locations in the district of Burdwan, West Bengal, India. The idea was to study how the strong characters of Delphi embedded FAHP and PROMETHEE GAIA can be integrated successfully to evaluate potential health facility locations. This integration helps us develop consensus among expert opinions leading to better accuracy in results (Soltani et al., 2011). It also helps us understand the similarities and conflicts among different criteria in the evaluation of potential locations. The GAIA plane visually portrays the similarity of strengths of different alternative locations with respect to different criteria. Sensitivity analysis performed on the weights of the sub criteria shows that even after a reasonable alteration of sub criteria weights there is hardly any change in the first two positions of the alternative rank list. This analysis certifies robustness of this integrated MCDM model.

This model can be used in similar real world applications in any field of study. In fact extension of this work can be done by segmenting the locations with respect to sub divisions and capturing the constraints existing within those sub divisions. However there is a small glitch as well. The process of developing consensus among experts using Delphi may take a lot of iterations to converge. In worst case it may also lead to divergence. The personal traits of the experts may also shape the process of convergence.

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## **THE EFFICIENCY OF WINNING BY SCORE IN TEAM SPORT: A CASE OF NFL TEAMS IN 2014 SEASON**

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### **ABSTRACT**

The modeling of the Production-Possibility Frontier (PPF) and the estimation of Technical Efficiency (TE) are applicable and benefit to stakeholder in a variety of industries including sport business. As a result, objectives of this research are 1) to find the appropriate production frontier model, 2) to analyze the influence of each factor, and 3) to estimate the efficiency of each team. Among 3 different shape of production frontier, the linear form provided the best fit to the percentage of wins of teams in NFL 2014 season. The most significant variables suggest the important of defensive performance. The production frontier indicated that Seattle Seahawks possess the potential to win the most games. The technical efficiency, however, awarded Arizona Cardinal the most efficiency team.

#### **Keywords**

National Football League, Production Possibility Frontier, Technical Efficiency.

### **INTRODUCTION**

The modeling of the Production-Possibility Frontier (PPF) and the estimation of Technical Efficiency (TE) are well known in the managerial economic. The PPF are normally drawn as bulging upwards (“convex”) from the origin. However, according to its Marginal Rate of Transformation (MRT) it can also be represented differently as linear, with constant returns to scale (CRS), or even bulging downward.

Many researchers used this methodology to estimate the efficiency of production in many countries such as China (Xu & Jeffrey, 1998), India (Bhattacharyya, Lovell, & Sahay, 1997), Indonesia (Pitt & Lee, 1981), and United States (Kumbhakar, Gosh, & McGuckin, 1991; Zak, Huang, & Seigfried, 1979).

The concept is also applicable to a variety of industries (Richmond, 1974), ranged from agriculture (Kumbhakar et al., 1991), to banking (Bhattacharyya et al., 1997), to sport (Zak et al., 1979), and textile (Pitt & Lee, 1981)

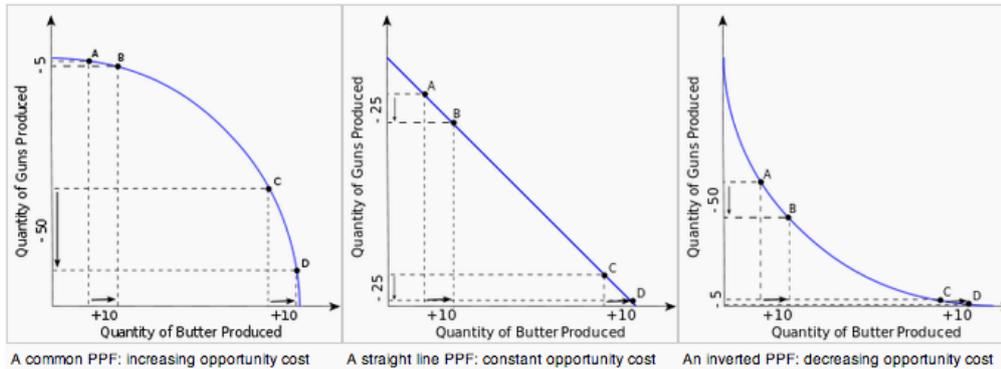
Over the past few decades, academic studies also use PPF to estimated technical efficiency over a variety of professional team sports business (Haugen, 2006; Scully, 1994) including American Football (Davis & End, 2010), Basketball (Zak et al., 1979; Hofler & Payne, 1997; Hofler & Payne, 2006), Hockey (Kahane, 2005), Rugby (Carmichael & Thomas, 1995), Soccer (Haas, 2003, Garcia-Sanchez, 2007).

These Production Frontier modeling and Technical Efficiency estimation have been proven to not only help the academic sector in explaining the phenomenon but also help coaches in recommending an appropriate training session for a better result and help investors in estimating the efficiency of their team.

As a result, objectives of this research are 1) to find the appropriate production frontier model, 2) to analyze the influence of each factor, and 3) to estimate the efficiency of each team.

## LITERATURE REVIEW

The PPF usually shows the various combinations of amounts of resources used to produce a certain amount of products or services. (e.g., number of facilities vs. amount of staffs)



**Figure 1:** Different Shapes of PPF

Source: Gunawan (2012)

The studies of bulging downward frontier production function can be traced back to the test against statistical evidence by Cobb-Douglas during 1927-1947. Many studies estimate this inverted form by using the multiplicative form. (e.g., Richmond, 1974; Zak et al., 1979; Scully, 1994; Hofler & Payne, 1997; Xu & Jeffrey, 1998; Haugen, 2006; and Hofler & Payne, 2006).

The Ordinary Least Squares Estimation (OLS) was used for the linear shape. (Charmichael & Thomas, 1995; and Davis & End, 2010)

Many researchers used Data Envelop Analysis (DEA) to estimate this convex form of PPF such as Fazel & D'itri (1996), Haas (2003) and Garcia-Sánchez (2007).

The independent variables can be categorized into 3 groups, managerial efficiency, point efficiency and technical efficiency.

Dawson & Dobson (2002) used player characteristics such as league appearances (LEAGAPP), number of clubs played (CLUBSP), international appearances (CAPS), ever play with current club (PLAYCLUB), and ever play in position (POSITION); managerial characteristics such as total managing months before team joining (MMBTJ), total managing months at current club (MMCC), ever been a coaching team (CHASCLUB), also play for club (PLAYMAN) and had a previous managerial appointment at current club (PREVSPEL); and generic terms such as Manager's age (MANAGE), is Scottish nationality (SCOTTISH), is overseas nationality (OVERSEAS), and is in Premier League (PREMIER); to predict the managerial inefficiency effects.

Hass (2003) used team total wages and salaries (exclude coach), coach salary, home town population, points, spectators and revenue.

Chamichael & Thomas (1995) based on match performance (points scored for and against), and performance influencing factors (fitness of player, their experience, inherent ability, team organization, coaching skills and other factor).

Hofler & Payne (1997) used technical statistic such as percentage of field goal (%FG), percentage of free throw (%FT), percentage of offensive rebound (%OR), percentage of defensive rebound (%DR), percentage of assist (%A), and percentage of steal (%S). Another two technical statistics, e.g., difference of block shots ( $\Delta$ BS) and percentage of turnover (%TO) were included in their latter work. (Hofler & Payne, 2006)

There are two reason that this study use score efficiency variables. First, Chamichael & Thomas (1995) work is on rugby which is the closest sport to gridiron. Second, the score information is most available in public, even in the moment of game.

## MODEL

Although there exists studies in American Football (Haugen, 2006), their focus was on the effect of capital. As a result, this research would base on point factors from Carmichael & Thomas (1995) as rugby is the most similar sport.

Points are awarded for scoring a Safty (2 points), Field Goal (3 points), and Touch Down (6 points) followed by either Extra Point (1 points) or Conversion (2 points)

$$\% \text{ Wins (W)} = S \text{ (PF)} \quad (1)$$

$$\% \text{ Wins (W)} = S \text{ (PA)} \quad (2)$$

$$\% \text{ Wins (W)} = S \text{ (PF-PA)} \quad (3)$$

$$\% \text{ Wins (W)} = S \text{ (PF, PA)} \quad (4)$$

$$\text{PF} = \text{PF (TDF, 2PMF, XPMF, FGMF, SftyF)} \quad (5)$$

$$\text{PA} = \text{PA (TDA, 2PMA, XPMA, FGMA, SftyA)} \quad (6)$$

$$\% \text{ Wins (W)} = S \text{ (TDF, 2PMF, XPMF, FGMF, SftyF, TDA, 2PMA, XPMA, FGMA, SftyA)} \quad (7)$$

All these functions would be estimated in its linear form using OLS.

$$S = \sum_{i=1}^{10} b_i x_i + b_0 \quad (8)$$

Unfortunately, some variables contain zero value, i.e., 2PMF, 2PMA, SftyF and SftyA, so it would not be included in the multiplicative form.

$$S = e^{b_0} \prod_{i=1}^{10} x_i^{b_i} \quad (9)$$

which turn into the following form.

$$\ln S = \sum_{i=1}^{10} b_i \ln x_i + b_0 \quad (10)$$

For a common convex form, the production function would be estimated in the following form.

$$S = \sum_{i=1}^{10} b_i x_i^2 + b_0 \quad (11)$$

All these 3 regressions would be drawn to explain the winning percentage. All point for, i.e., TDF, 2PMF, XPMF, FGMF, and SftyF are expected to have positive relations while all point against, i.e. TDA, 2PMA, XPMA, FGMA, and SftyA are expected to have negative relations.

## RESEARCH METHODOLOGY

All game data were retrieved from Pro-Football-Reference.com and manipulated by Microsoft Excel 2007.

Output is measured by the percentage of games won during the season relative to the total games without ties.

Three regressions would be drawn to explain the winning percentage. F-ratio would be used to determine whether the individual model is acceptable or not and  $R^2$  would be used to determine which production frontier is the best fit. Unlike many researches that use DEA to estimate the convex form of the production function, this study used OLS to estimate the smooth curve.

Each factor would be compared for the most influenced and be analyzed to identify which training session to be focused.

The technical efficiency of each team would be calculated and compared to determine their potential to win and their efficiency to achieve the result. Note that the efficiency measure is calculated as the difference between the true and estimated output in terms of percentage of games won as a percentage of projected potential, i.e.,

$$\text{efficiency} = \frac{\text{actual} - \text{potential}}{\text{potential}} * 100$$

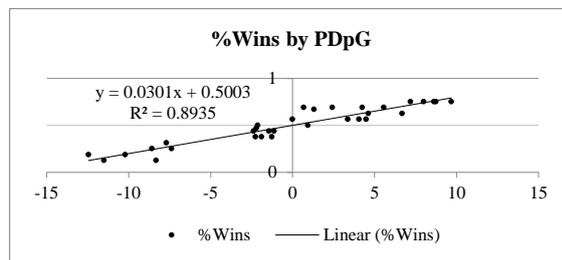
## RESULT AND DISCUSSION

The first 3 regressions, (1)-(3), were compared in the Table 1.

**Table 1** Regression of Function (1)-(3)

	Constant	Coefficient	R <sup>2</sup>
(1) PFpG	-0.2953	0.0352	0.6187
(2) PApG	1.4773	-0.0433	0.5244
(3) PDpG	0.5003	0.0301	0.8935

As the R<sup>2</sup> of PDpG regression has the highest R<sup>2</sup>, PDpG is a better factor to predict the result than only either PF or PA. Next, the scatter plot between win percentage (Y) and Point Different per Game (X) is shown in following graph.



**Figure 3:** Scatter Plot between % Wins and PDpG

One interesting interpretation here is that a team can guarantee the win if the point different is higher than 16.6013 (0.4997/0.0301).

Next hypothesis is whether 2 factors are more accurate in prediction. The corresponding regression is derived with the R<sup>2</sup> of 0.8959; that is, 89.59% of the variation in the winning percentage can be described by these 2 variables.

$$\% \text{ Wins} = 0.5979 + 0.0284\text{PF} - 0.0327\text{PA} \quad (4)$$

As R<sup>2</sup> of 2 factors regression is slightly higher than that of PDpG regression, the 2 factors regression is slightly more reliable. In addition, the regression shows that the coefficient of PA is higher than that of PF; that is, the team with stronger defense has more chance to win than the team with better offense.

In the other words, the team should concentrate more on defend the PA rather than trying to increase their PF offensively. This situation might be explained by the loss of moral when the team loss a score.

Now the regression is generated using all factors, including all types of scoring for and scoring against.

**Table 2** Regression of 3 Production Frontier Functions

	Convex		Inverted		Linear		
F-Value	1.033		2.184		35.336		
R <sup>2</sup>	0.330		0.344		0.944		
	Beta	p-Value	Beta	p-Value	Beta	p-Value	Rank
Constant	0.1369	0.6354	-1.5285	0.0853	0.8149	0.0002	-
TDF	0.1240	0.1532	4.6392	0.0123	0.2107	0.1560	
2PMF	-0.5191	0.8126			0.2203	0.2734	
XPMF	-0.1058	0.2398	-3.6199	0.0348	-0.0196	0.8891	
FGMF	-0.0027	0.9527	0.0172	0.9732	0.0501	0.2700	
SftyF	-3.7094	0.4220			0.4171	0.0757	4
TDA	-0.0304	0.6555	0.2015	0.9317	-0.3077	0.0161	2
2PMA	5.1348	0.4810			-0.2003	0.4413	
XPMA	0.0108	0.8821	-0.7648	0.7425	0.0887	0.4802	
FGMA	0.0379	0.3932	0.1016	0.8354	-0.1942	0.0002	1
SftyA	0.3751	0.9392			-0.5187	0.0217	3

With the critical F-value at 95% confidential level,  $F_{0.05,10,21} = 2.32$ , the convex and inverted model contained some zero beta so the model should not be used. In the other words, the linear form estimation, with the 35.336, value of F, and 0.000 p-Value, is considerably the most reliable among those of multiplicative and convex form.

In addition, R<sup>2</sup>, which represents the percentage of explainable error, of the linear form is, 94.39%, the highest one. As a result the linear form will be used for further discussion.

#### EXAMINING EACH VARIABLE REVEALS A FEW SURPRISES.

There is only one variable, i.e., FGMA, significant at  $\alpha = 0.01$ . It means that the team who can defense the opponent from the field goal made will be guaranteed for a big chance to win. In the real game, if a team can defense the opponent from the field goal made, it means that the team can also defense the opponent from the touchdown.

The second important variable is TDA, which is significant at  $\alpha = 0.02$ . If a team fails to stop the opponent at the field goal range, there is a big chance to lose 6 point from opponent touchdown.

The third significant factor is SftyA, which is the loss of scores by opponent defense making a tackle in the ball carrier's end zone. The offensive line should be strong enough to hold the time for their quarterback.

Even though the next variable, SftyF, is not significant at  $\alpha = 0.05$ , it is still interesting to mention about.

It's appeared that 3 variables out of top 4 significant variables represent the performance of defense team. This also agreed with the regression (4) above that a team should concentrate more on the defense.

According to the distance, the strongest defensive team would have more chance than the weaker one to achieve the score from Sfty, to FGM, and TDM. However the score from Sfty, FGM and TDM are reversed. This make the FGM become the most significant one.

On the sign of variables, the coefficients of both XPMF and XPMA indicate the reverse result. The interpretation should not encourage the team to fail the Extra Point play, instead, it suggests that the team should put more attempts in handling 2-Point Conversion because it is not only the mutually exclusive event of Extra Point but also has a stronger relationship, indicated by R<sup>2</sup>, and more impact, interpret from coefficient magnitude.

The efficiency measure is calculated as the difference between the true and estimated output in terms of percentage of games won as a percentage of true output, Carmichael & Thomas (1995) and shown in Table 3.

**Table 3** Efficiency Rank of NFL Teams in 2014

Teams	Actual % Win	Rk	Prj. % Win	Rk	Est. Efficiency	Rk
Arizona Cardinals	0.6875		0.5802	13	18.4869%	2
Atlanta Falcons	0.3750		0.3329	26	12.6621%	5
Baltimore Ravens	0.6250		0.6891	7	-9.2977%	28
Buffalo Bills	0.5625		0.5671	16	-0.8116%	15
Carolina Panthers	0.4667		0.4827	19	-3.3234%	22
Chicago Bears	0.3125		0.3365	25	-7.1200%	25
Cincinnati Bengals	0.6667		0.5844	12	14.0732%	4
Cleveland Browns	0.4375		0.4482	23	-2.3803%	19
Dallas Cowboys	0.7500	1	0.7052	5	6.3520%	8
Denver Broncos	0.7500	1	0.7638	2	-1.8098%	17
Detroit Lions	0.6875		0.6298	10	9.1657%	6
Green Bay Packers	0.7500	1	0.7094	4	5.7246%	9
Houston Texans	0.5625		0.6348	9	-11.3859%	29
Indianapolis Colts	0.6875		0.7015	6	-1.9912%	18
Jacksonville Jaguars	0.1875		0.1878	29	-0.1590%	14
Kansas City Chiefs	0.5625		0.5787	14	-2.8024%	20
Miami Dolphins	0.5000		0.5685	15	-12.0493%	30
Minnesota Vikings	0.4375		0.4774	21	-8.3516%	26
New England Patriots	0.7500	1	0.7155	3	4.8232%	11
New Orleans Saints	0.4375		0.4545	22	-3.7415%	23
New York Giants	0.3750		0.4130	24	-9.2060%	27
New York Jets	0.2500		0.2619	27	-4.5452%	24
Oakland Raiders	0.1875		0.1169	31	60.3980%	1
Philadelphia Eagles	0.6250		0.6250	11	-0.0012%	13
Pittsburgh Steelers	0.6875		0.6544	8	5.0658%	10
San Diego Chargers	0.5625		0.5166	15	8.8836%	7
San Francisco 49ers	0.5000		0.4971	18	0.5736%	12
Seattle Seahawks	0.7500	1	0.7737	1	-3.0601%	21
St. Louis Rams	0.3750		0.4798	20	-21.8484%	31
Tampa Bay Buccaneers	0.1250		0.1612	30	-22.4454%	32
Tennessee Titans	0.1250		0.1083	32	15.4375%	3
Washington Redskins	0.2500		0.2526	28	-1.0241%	16

Out of 32, there were 5 teams, i.e., Dallas Cowboys, Denver Broncos, Green Bay Packers, New England Patriots, and Seattle Seahawks, with the top actual %Wins of 0.750. These teams are also in the top 5 of the projected %Wins. This confirmed the performance of linear form.

Examining each team's rankings reveals some expected results and a few surprises. The Patriots, the NFL champion in 2014 season, are the third in the percentage of actual wins but the eleventh in the percentage of potential wins. This suggests that they are a talented team and still have more potential to be revealed.

The listing of frontier wins clarifies the distinctive between winning potential and efficiency in using that potential. For instance, Dallas is fifth in potential wins and eighth in efficiency while Green Bay is fourth in potential wins and ninth in efficiency. This potent combination translated into more games winning.

There are also some interesting differences such as Oakland, the highest efficiency rating, and Seattle, the talent to potentially win the most games. The Seattle Seahawk ranked first in the number of frontier wins but twenty-first in efficiency rating. This means that they were very poor at even approaching winning the number of games they should have won (i.e. they were 'underachievers.'). On the other hand, Oakland ranked second last in the number of frontier wins but first in efficiency. This suggests that the Raiders were excellent at playing up to a more modest potential level.

Baltimore and Houston, the two latest expansion teams, are in the lowest quartile of the efficiency rankings, i.e., 28th and 29th. However, both of them stand near the top of the potential quartile, i.e. 7th and 9th. This means they have a high potential player in their team, however, they were lack of the ability to convert all those effort into a winning.

## CONCLUSION

This paper investigated how closely teams in NFL play up to their potential using 3 different regressions. Among 3 different shape of production frontier, the linear form provided the best fit to the percentage of wins. The most significant variables suggest the important of defensive performance. The production frontier indicated that Seattle Seahawks possess the potential to win the most games. The technical efficiency, however, awarded Arizona Cardinal the most efficiency team.

Studies of professional team sport performance from sporting events are also available in various levels of competitions: ranged from Olympic level (Pojskić, Separović, & Užičanin, 2009; Koh et al., 2011) to national level (Hansen & Gauthier, 1989) to division level (DeSchriver & Jensen 2002; Shackelford & Greenwell, 2005)

Many studies have different focus such as factors affecting attendance (Marcum & Greenstein, 1985; Hansen & Gauthier, 1989), frontier production and efficiency (Zak et al., 1979), and discriminant analysis (Koh et al., 2011; Peinado et al., 2011). Coaches and practitioners rely on these statistics to prepare the training process of players and teams.

Quantitative analysis in the sport game become a fundamental process in the explanation of phenomena in a variety of professional sports business (Hansen & Gauthier, 1989) including Baseball (Marcum & Greenstein, 1985), Basketball (Zak, Huang, & Seigfried, 1979; Hofler & Payne, 1997; and Koh, John, & Mallett, 2011), Cycling (Peinado et al., 2011), Hockey (Kahane, 2005), Rugby (Carmichael & Thomas, 1995), Running (Techakittiroj, 2013), Soccer (Visetvithsakul & Techakittiroj, 2015), and Volleyball (DeSchriver & Jensen 2002).

As the popularity of sport business is continuously increased, it's an opportunity for researchers to apply various quantitative analyses to other different sports at any level of competition.

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## **DOES PERCEIVED TRAVEL RISK INFLUENCE TOURIST'S REVISIT INTENTION? A CASE OF TORRENTIAL RAINFALL IN KEDARNATH, UTTARAKHAND, INDIA**

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### **ABSTRACT**

Despite the significance of perceived travel risk, relatively a few studies address how perceived travel risks influence the revisit intentions of tourists. The present study draws new insights by investigating the effects of perceived travel risks on revisiting intentions of the 374 tourists visiting Uttarakhand, India during July 2013 to September 2013 just after Kedarnath incident. Data were gathered through a survey instrument with the aid of some researchers. As a consequence of the subject field, various risk dimensions seriously affecting revisit intentions of tourists were identified and described in this composition. Several managerial implications concerning the management of risk perceptions are discussed. The article ends with the conclusion and future research directions.

Keywords: Perceived Risks, Revisit Intentions, Tourism Industry.

### **INTRODUCTION**

Kedarnath is one of the Char Dham – Badrinath, Kedarnath, Gangotri and Yamunotri and ancient and famous pilgrims place situated in Uttarakhand, India. Uttarakhand was basically organized by bringing together a number of districts from the northwestern division of Uttar Pradesh and a part of the Himalayan Mountain Range. The epithet of the land was formally changed from Uttaranchal to Uttarakhand in 2007. It is one of the beautiful locations in the snow cover area of the Himalaya. It is situated at the height of 3,583 m (approximately) from the ocean level in the Mandakini valley of District Rudrapur in Uttarakhand state of India. All these Char Dham are situated in different locations with the most critical weather condition. Due to this, it is impossible to move to these Holy places at any time in a year. Therefore, only from May to October it is safe to visit these places. The 'Char Dham Yatra' is considered as the backbone of the economy of Uttarakhand state where, every year, around 23 to 24 lakh pilgrims arrive in the state. Due to this, the race between tourism industries, population increase, several hydroelectric projects are on the fast track in Uttarakhand state.

In recent years, ascribable to the great industrialization in Uttarakhand state mainly in plain areas like Haridwar and Dehradun, many villagers and urban residents have gone to exist near the industries, temples and other attractive spots in different tourist destination. They have also started commercializing these industrial and holy places by building hotels, eateries, markets, shops, etc. It is clear that there is an enormous increase in infrastructure during the last decade and proportionally the number of pilgrimages has been increased to a larger extent in Uttarakhand. All the same, many regions in Uttarakhand are seismically and ecologically very sensitive and fragile, even a minute change (anthropogenic or natural) can produce a dangerous disaster as just happened in the final year in Kedarnath valley. The fragile nature of the oldest crystalline basement of the Himalayan is very sensitive in case of landslides and any disaster. Basically the frequency and magnitude of landslides depend on the underlying structures, physiographies setting, quality and condition of vegetation and anthropogenic pressure of the positioning.

Like other service sectors, the state tourism industry is also either directly or indirectly influenced by the internal as well as external developments in the state. Any case of development results both opportunities as well as threats in relation to tourist attractions. A successful tourism industry takes

advantages of these opportunities by taking advance precautions. Gray and Wilson (2009) also reported that a batch of international travelers makes an economic contribution to the different goals they have inflicted. In that respect are different other factors affecting travel behavior in addition to economic and commercial components. The social and environmental factors also affect travel behaviors.

According to Taylor (1974), the particular choice made by any consumer out of all the available options becomes an important issue. Since the results of this choice impact on the future, consumers perceive the future as hazy, which brings a certain level of risk. If someone pushed to make choices without knowing the consequence of their selection may experience anxiety. The extent to which tourists overcome this anxiety, and the associated risk, is associated to the individual will. In recent research, it has been widely explored that risky behavior is a central component to investigate international travel, and risk is treated as a crucial concern in relation to international travel in general (Kozak, Crotts, & Law, 2007; Lepp & Gibson, 2003; Qi, Gibson, & Zhang, 2009; Reisinger & Mavondo, 2005; Sönmez, 1998; Sönmez & Graefe, 1998a, 1998b; Yavaş, 1987). Due to perceived travel risks and hazards, a substantial number of visitors were found to be likely to invalidate their travel plans to an assortment of destinations in recent years (Kozak et al., 2007; Sönmez & Graefe, 1998b). However, Wang, Law, Hung, and Guillet (2014) suggested that perceived risk can be decreased by building customer trust. The outcomes of this survey will furnish additional information about tourists' behavior. This will certainly help the tourism industry in creating specific marketing decisions. In rural areas where there is economic dependence on tourism, the outcomes of this work could make a valuable donation to their decision-making procedures. Specifically, the purposes of this study were to identify the perceived travel risks of tourists visiting Uttarakhand after Kedarnath incident, which is a popular tourist destination in India, and to determine how this risk is likely to affect their intention to revisit this destination.

## REVIEW OF LITERATURE

### Perceived travel risk in tourism industry

Risk has been widely explored into intentional tourism and various related research fields; for instance, risk perceptions at different destinations (Carter, 1998; Fuchs & Reichel, 2006; Kozak et al., 2007; Simpson & Siguaw, 2008), risk perception in tourist characteristics and typology (Dolnicar, 2005; Gray & Wilson, 2009; Lepp & Gibson, 2003; Reichel, Fuchs, & Uriely, 2007; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992), risk perception and security (Fischhoff, Bruin, Perrin, & Downs, 2004; Floyd, Gibson, Gray, & Thapa, 2003; Gut & Jarrell, 2007; Rittichainuwat and Chakraborty, 2009; Tarlow, 2011), demographic and cultural differences in risk perception (Fuchs & Reichel, 2004; Mitchell & Vassos, 1998; Özer & Gülpınar, 2005; Simpson & Siguaw, 2008), efforts to decrease the perceived risk (Fuchs & Reichel, 2004; Mitchell & Vassos, 1998; Quintal, Lee, & Soutar, 2009; Sönmez & Graefe, 1998a), the effect of past experiences on risk perception (Kozak et al., 2007; Lepp & Gibson, 2003; Qi et al., 2009; Sönmez & Graefe, 1998a, 1998b), and the effect of risk on purchasing and repurchase intention (An, Lee, & Noh, 2010; Korstanje, 2009; Law, 2006; Qi et al., 2009; Rittichainuwat, Qu, & Leong, 2003; Sönmez & Graefe, 1998a, 1998b).

The perceptions relating to safety and security are key determinants of tourists' decision making process to decide their destinations (Gut & Jarrell, 2007; Rittichainuwat & Chakraborty, 2009). On one side, it is widely explored that why people prefer a few destinations, but it is still not clear that why people avoid visiting some of the locations. Nonetheless, the impact of perceived negative factors is generally understood relative to travel and tourism choices (Gray & Wilson, 2009). This understanding has been reinforced in recent years with the reaction to the perceived risks associated with political unrest, health threats, crime, violence, war, natural disasters, and terror as important risk factors for a destination (Kozak et al., 2007; Lepp & Gibson, 2003; Qi et al., 2009; Tarlow, 2011).

The literature on risk in tourism is fairly extensive and may be divided into several research streams (Simpson & Siguaw, 2008). In the travel and tourism literature, some research channels have focused on risk perceptions on specific travel destinations (Fuchs & Reichel, 2006); at specific tourism events, such as the Olympic Games (Qi et al., 2009); and after acts that violate personal security, such as terrorism or war (Floyd et al., 2003; Simpson & Siguaw, 2008). Researchers have also studied the

impact of crime and personal security of travel, travel intentions, and travel satisfaction (Dolnicar, 2005; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992; Sönmez & Graefe, 1998a).

### **Revisit intentions of tourists**

The concept of revisit intention has been widely explored in the recent times (Chew & Jahari, 2014; Çetinsöz & Ege, 2013; Petrick, 2011). The bulk of studies seeks to realize why a destination is seen more than once. Gitelson and Crompton (1984) examined the socioeconomic differences between repeat and non-repeat tourists. It is one of the economic benefits of tourism that make the revisit intention significant to researchers as well as to the industry (Opperman, 1997). Repeat tourists play a crucial role to provide a stable source of income, more so than the role they play in the diffusion of information to potential visitors. They are comparatively more loyal and not even over sensitive to competitive destinations or pricing strategies. In fact, previous behavior will eventually touch on future purchasing trends and designs. According to Wang (2004), they represent more than half the sum of all the tourists visiting a particular destination. The concept of repeat tourists is significant, especially for maturing destinations, and their continuance is an ingredient for a competitive phenomenon (Alegre & Cladera, 2006; Huang & Hsu, 2009).

Some perceived risk factors do not affect intentions to revisit some destinations. For example, Rittichainuwat (2006) found that tourists returned to a tsunami-hit region because of the personal relationships previously formed with the area. Similar research suggests that as contact with and experience of a destination increase, risk perception levels decrease, leading to a more positive attitude towards international tourism (Rittichainuwat & Chakraborty, 2009; Sönmez & Graefe, 1998a).

## **HYPOTHESIS AND CONCEPTUAL MODEL DEVELOPMENT**

### **Hypothesis development**

Tsaur, Tseng, and Wang (1997) define physical risk, “referring to the possibility that an individual’s health is at risk, injury and sickness because of conditions such as law and order, weather and hygiene problems” Thereafter, Sonmez and Graefe (1998) describe physical risk as physical danger or injury. Boksberger, Bieger, and Laesser (2007) examine the Physical risk as a probability that is because of service failure and result in injury or harm to the passengers. Physical risk comprised natural disasters, political turmoil, crime, automobile accidents, terrorism, transmissible disease and food safety (Fuchs & Reichel, 2006b; Maser & Weiermair, 1998; Mitchell & Vassos, 1998). Physical risk indirectly affects the relation between past visit and own experience (Sharifpour, Walters, & Ritchie, 2014). Chew and Jahari (2014), the survey assessed the mediating function of destination image between perceived travel risks and revisit intention of repeat tourists to a risky destination. They found that Perceived physical risk not significantly affecting the destination image rather, directly influenced revisit intention.

H1: Perceived physical risk affects the revisit intention of tourists.

Sonmez and Graefe (1998) describe satisfaction risk as not being satisfied with travel experience. Spending holidays at a place that find satisfactory, the traveler will revisit the same spot without being loyal but due to the habitual decision-making and on the root words of experience (Crotts, 1999). Oppermann (1998) mentioned, “A very highly satisfied tourist might still not come back because of a desire always to see new places. In contrast, a somewhat dissatisfied tourist might return because it is perceived to be less risky to go to a place with known deficiencies rather than visit a new destination that might be even worse”. Highly satisfied Visitors lead to higher revisit intentions (Um, Chon, & Ro, 2006). Atonement with the value, attractiveness, and quality offered by a destination positively affected revisit intention (Quintal & Polczynski, 2010). Geva and Goldman (1991) demonstrate the relationship between tourist’s satisfaction in guided tours and their revisit intentions. They found minimal correlations between two and suggest in spite of satisfied tourists with tour guides it is dubious that it will induce a positive influence on repeat purchase intentions. Rittichainuwat, Qu, & Leong, 2003 study depicts that satisfaction dimension along with other travel determinants do not have influence on revisiting intention.

H2: Perceived satisfaction risk affects the revisit intention of tourists.

Sonmez and Graefe (1998) describe time risk, as travel experience with waste of time. For a pleasure travel, the common travel inhibitors are psychological, satisfaction, financial and time risks (Roehl & Fesenmaier, 1992). Cook and McCleary (1983) study also suggested that time, physical spaces and money are vital travel inhibitors used to assess destinations. Degree of risk perception directly affected destination choice. The higher the destination perceived risk, the more the chances to avoid visiting a destination (Sonmez & Graefe, 1998). Rittichainuwat et al., (2003) indicated that apart from satisfaction various other components, such as the lack of novelty, money and time might discourage travelers for the same destinations revisiting.

H3: Perceived time risk affects the revisit intention of tourists.

Sonmez and Graefe (1998) describe social risk as the risk of disapproval from others of the destination choice and psychological risk as disappointment with the travel experience. Boksberger, Bieger, and Laesser (2007), examined psychological risk is the loss of self-esteem resulting from the experience and contribute to the endangerment of a negative effect on self-perception among passengers. Whereas, Socio psychological risk included in compatible trip with family and friends reaction to the trip, the individual's personality and self-image, experiencing adjustment difficulties in culture and communication, and unpleasant experience due to attitude of tourists (Dolnicar, 2005; Fuchs & Reichel 2006b). Chew & Jahari (2014), the survey found that perceived socio-psychological risk affect both cognitive and affective destination images, which in turn influence revisit intention.

H4: Perceived socio-psychological risk affects the revisit intention of tourists.

Fuchs and Reichel (2011) describe performance risk as "the risk identified with the possibility that the product will not operate as expected, or will fail". Performance risk includes problems like breakdown in transports, inappropriate company and bad weather (Fuchs & Reichel, 2006b; Reisinger & Mavondo, 2006). An et al. (2010) determined the risks of natural disaster, physical risk, political risk, and performance risk. After regression analysis, it was found that the risks related to natural disasters, politics, and performance affect whether tourists will revisit. Cunningham (1967) also found the performance risk as important risk groups.

H5: Perceived performance risk affects the revisit intention of tourists.

## **METHOD**

Our study was conducted between July and December 2013 using a primary data collection technique. For data collection, we adopted various scale items to develop a research instrument that includes the following four important sections. The initial section was consisted of a series of inquiries relating to purchasing attitudes of tourists visiting Uttarakhand state. The next section was consisted of 29-scale items in order to measure perceived travel risks of tourists. These scale items were derived from a systematic and broad review of literature on risk in diverse contexts (An et al., 2010; Dolnicar, 2005; Fuchs & Reichel, 2004, 2006; Han, 2005; Lepp & Gibson, 2003; Özer & Gürpınar, 2005; Reisinger & Mavondo, 2005; Rittichainuwat & Chakraborty, 2009; Roehl & Fesenmaier, 1992; Simpson & Siguaw, 2008; Sönmez, 1998; Sönmez & Graefe, 1998a, 1998b; Tsaour et al., 1997). The third part was emphasized on measuring the tourists' intention to revisit Uttarakhand. On the basis of a few past studies the data collection instrument was carefully designed. The items were measured at 5-point Likert scale with end points 1 (certainly disagree) to 5 (certainly agree). This third part also included different means for tourists to describe their activities to reduce different risks (Conner & Sparks, 1996; Lam & Hsu, 2004; Hui, Wan, & Ho, 2007; Kozak, 2001). In the final segment, the demographic characteristics of the tourists visiting Uttarakhand were asked.

The study tool was designed and set up in one common language (English) and one regional language (Hindi) based on the discussion with commercial and local people of that area. It was believed that a

majority of incoming tourists were from English speaking nations. For national tourists, it was likewise considered that they were aware about either Hindi or English language. A pilot study was also performed to assess the internal consistency and validity of scale items and constructs. For this, 52 tourists were selected randomly in the inaugural stage of data collection during the last week of July 2013. The terminal and second stage of data collection consisted of giving out 600 questionnaires, out of which 423 were returned back to us representing a high response rate of 70.5%. Out of the total (423) returned questionnaires; an initial screening was done, which resulting 374 usable responses with an exclusion of 49 questionnaires due to the missing and other errors. The concluding bit of reactions can be taken as quite well in accordance with similar studies (Sekaran, 2000).

To ensure higher internal consistency with appropriate responses, the minimum age of respondents was set at 18 years old. Although, a few might be included due to fake data as we did not verify their date of birth. The study was taken in various areas of Uttarakhand. In addition to direct approach to tourists on their last day of stay in hotels, the questionnaires were also distributed to tourists with the service of a few leading travel authorities. The survey was taken by their employees during the comeback trip of tourists. During their journey, tourists have enough time to respond. Thus, it was conceived as an important mode of getting answers.

As we know the basic conditions of a parametric test assume that data should be normally distributed (i.e., discrete or propositional), and that the variance within the group must be equal (Kalaycı, 2008). In the present study, the primary data were collected with the help of a discrete scale. It follows the normal distribution as the kurtosis and deformity values of the data ranged between +1 and -1. We also found variance equality within the group as the variance factors were equal. Thus, parametric tests could be applied to our data for present study.

## **FINDINGS AND DISCUSSION**

The data were analyzed through an SPSS 20.0 which is a software package exclusively developed for the researches of social sciences. To ensure the reliability, the internal consistency of perceived travel risk was measured by cronbach alpha of 0.87 which was quite acceptable than the threshold value of 0.70 (Nunnally, 1978). Reliability analysis of tourists' intention to revisit produced a cronbach alpha value of 0.89. To pass at more significant results, the exploratory factor analyses (EFA) were likewise used to remove expressions with low factor loadings or the ones that give multiple loadings of factors at the same time.

**Table 2:** Results of Exploratory factor analysis

Items and Factor Labels	Loadings	Eigen Value	Variance Explained	Cronbach alpha	Mean Values	F	P
<b>Factor 1: Physical risk</b>		9.132	38.651	0.8317	2.682	8.176	0.000
Fear of natural disaster	0.798						
Negative weather conditions	0.767						
Negative attitudes of local people	0.723						
Affected by infectious diseases	0.701						
Loss of baggage and other belongings	0.668						
Experiencing/encountering pick pocketing and robbery	0.643						
Witnessing/experiencing violent riots	0.607						
Sexual harassment	0.574						
Affected by traffic accidents	0.567						
Affected by cultural conflicts	0.513						
<b>Factor 2: Satisfaction risk</b>		2.018	8.541	0.8731	1.983	5.731	0.001
Unsafe nightlife	0.718						
Poor hygiene and environmental conditions	0.711						
Unexpected expenses	0.679						
Urban pollution	0.623						
More expensive compared with the other places	0.594						
Feeling uncomfortable about food safety	0.528						
Fluctuated INR value	0.503						
<b>Factor 3: Time risk</b>		1.437	6.082	0.8132	1.568	7.982	0.000
Wasting general time	0.734						
Wasting vacation time	0.678						
Feeling disappointment after vacation	0.613						
<b>Factor 4: Socio-psychological risk</b>		1.315	5.565	0.8471	2.363	4.789	0.002
Worrying about the security of the family during the vacation	0.798						
Unfulfilled expectations during the vacation	0.716						
Insufficient urban transportation	0.667						
<b>Factor 5: Performance risk</b>		1.013	4.287	0.7891	2.124	19.956	0.003
Language problems	0.786						
Experiencing faults in tour organization	0.693						
<b>Total Variance Explained</b>	(63.128%)						

The overall reliability value of the scale of the perceived travel risk section was determined as 0.8702. This value again occurred above the threshold value of 0.70; thus the scale could be used as reliable scale in the present research (Nunnally, 1978). The mean value of perceived travel risk construct was 2.14. To measure the tourists' risk perception, we have total 29 items in our scale. As an output of EFA, the result of the Bartlett test showed a value 5591.38 with significant value of  $p$  (0.000). The calculated value in Kaiser–Meyer–Olkin (KMO) method of sampling adequacy was 0.714 more than the threshold value (0.60) indicating that the data were appropriate for EFA (Hair et al., 2006). The principal components analysis (PCA) with Varimax rotation method was used to determine the factor structure in order to have significant interpretable factors. Eigen values equal or more than 1 and factor loading higher than 0.50 were taken into thoughtfulness.

In Table 2, Factor 1 'Physical Risk' comprised 10 scale items (alpha value 0.83,  $p = 0.000$ ) and explained 38.65% of the total variance. The Eigenvalue of this factor was 9.132 and the mean value was 2.682. Factor 2 'Satisfaction Risk' which comprised 7 items (alpha value 0.87,  $p = 0.001$ ) explained 8.54 of the total variance and have Eigen value 2.02 with a mean value of 1.983. The next third factor 'Time Risk' (alpha value 0.81,  $p = 0.000$ ) comprising of 3 scale items explained 6.08% of the total variance. It has an Eigen value of 1.437 and mean value of 1.568. Next Factor 4 'Socio-psychological Risk' (alpha value 0.84,  $p = 0.002$ ) was comprised of three items again and explained 5.565 of total variance, being 1.315 the Eigen value and 2.363 the mean value. At the end, the last factor 'Performance Risk' (alpha value 0.78,  $p = 0.003$ ) explained 4.287 of the total variance. It has an Eigen value of 1.013 and mean value of 2.124. The overall reliability of the data related to the dependent variable as intention to revisit for Uttarakhand was 0.83. As reported in Table 3, the overall mean value of revisit intention was 3.38. It indicates that visitors experience an inclination to revisit Uttarakhand, but their intentions are still not clear and questionable.

**Table 3:** Tourist's Revisit intention

Dependent variable	N	Mean value	Std. deviation	Cronbach alpha
Tourists' revisit intention	374	3.38	0.93	.8301
The probability of revisiting Uttarakhand		3.24	0.97	
It is worthwhile to revisit Uttarakhand		3.28	1.03	
I will recommend Uttarakhand to my friends		3.34	1.17	
Uttarakhand is safe to revisit again.		3.42	1.11	

**Table 4:** Multiple correlation analysis

Constructs	X	SD	1	2	3	4	5	6
Revisit intention	3.38	0.99	1					
Physical risk	2.68	1.20	-0.513**	1				
Satisfaction risk	1.98	1.10	-0.423**	0.323**	1			
Socio-psychological risk	1.56	0.86	-0.316**	0.376**	0.501**	1		
Time risk	2.36	0.96	-0.619**	0.598**	0.579**	0.518**	1	
Performance risk	2.12	1.02	-0.517**	0.573**	0.221**	0.213**	0.198**	1

\*\* Correlations are significant at 0.01 significance level.

In Table 4, the correlation coefficients between the risk variables included in the present study were reported. In this table, a negative significant relationship was reported between revisit intention and perceived travel risk dimensions. It testifies that if the degree of risk dimensions decreases, the tourists' revisit intention increases. As reported in Table 4, there were moderate and negative correlation between the revisit intention and different risk dimensions as indicated under.

In addition, moderate and low levels of correlation were found among the different dimensions of risk. The moderate correlation level of the physical risk to the time risk dimension is at 0.598, 0.573,

with the performance risk, and 0.376 with the social-psychological risk. On the other hand, a low correlation level of 0.323 was associated with the satisfaction risk.

In addition, the satisfaction risk has a moderate positive correlation with the other risk dimensions like with time risk of 0.579 and with the socio-psychological risk of 0.501, and a low correlation with the performance risk of 0.221. Similarly, socio-psychological risk has a moderate positive correlation with the time risk of 0.518 and a low level of correlation with the performance risk of 0.213. A low level (0.198) of positive significant correlation was found between the time and performance dimensions of risk. Thus, we can conclude that different risk dimensions affect each other at different and low or moderate levels.

**Table 5:** Effect of perceived travel risks on tourists' revisit intention

	Standard $\beta$	R <sup>2</sup>	Adjusted R <sup>2</sup>	F- test	p - Value	t - Value	P - Value
Revisit intention		0.383	0.379	56.179	0.000		
Physical risk	- 0.31					- 8.761	<b>0.000*</b>
Satisfaction risk	- 0.19					- 4.832	<b>0.000*</b>
Socio-psychological risk	- 0.07					- 3.192	0.089
Time risk	- 0.27					- 6.179	<b>0.001*</b>
Performance risk	0.43					1.092	0.379

\*Significant at 0.05 significance level.

Table 5 presented the effects, as exhibited in model built-in the revisit intention as dependent variable and five risk dimensions (i.e., physical risk, satisfaction risk, socio-psychological risk, time risk, and execution risk (F = 51.540, p = 0.000) included as independent variables in the present work. The perceived travel risk dimension factor accounts for 38.3% of the change in the dependent variable i.e., revisit intention.

According to standard  $\beta$  coefficient reported in Table 5, we can rank all the risk factors based on their effectiveness as “perceived physical risk” ( $\beta = - 0.31$ ), “perceived time risk” ( $\beta = - 0.27$ ), and “perceived satisfaction risk” ( $\beta = - 0.19$ ). In our research, all these three i.e., physical, time and satisfaction risks significantly affect the tourists' intention to revisit Uttarakhand at 0.05 significance level while the socio-psychological and performance risk did not affect at all. A few other studies (e.g. Crompton, 1992; Kozak et al., 2007) also mentioned that a majority of the tourists change their tours due to the perceived risk. In addition, Sönmez and Graefe (1998a, 1998b) reported that both past travel experiences and perceived travel risk significantly affect future travel behavior of tourists. Figure 2 depicts the impact of various risk dimensions on revisit intention of tourists.

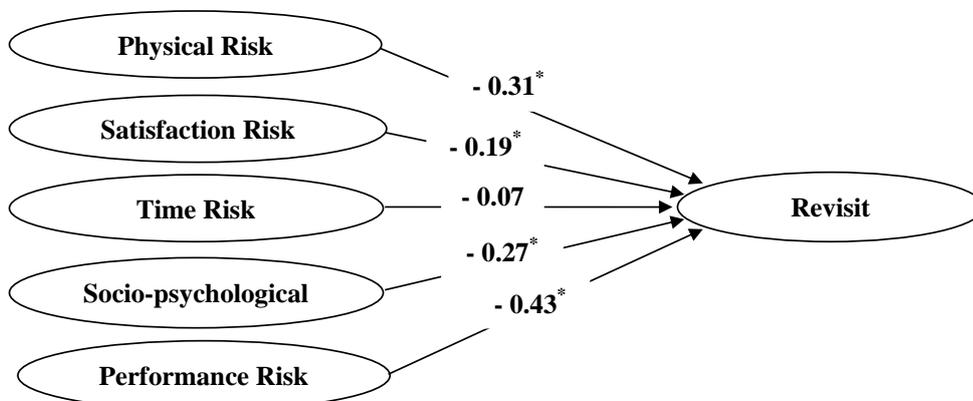


Figure 2: Model with standardized coefficient ( $\beta$ )

## GENERAL DISCUSSION AND IMPLICATIONS

In the present research, the perceived travel risks of tourists visiting Uttarakhand, India after the Kedarnath incident was carefully analyzed and their revisit intentions were measured. The various dimensions of perceived travel risk (i.e., physical risk, satisfaction risk, socio-psychological risk, time risk, and performance risk) were determined by exploratory factor analysis. Although these factors have been extensively explored and analyzed by many researchers (e.g., Fuchs & Reichel, 2004; Roehl & Fesenmaier, 1992), financial risk was included under the satisfaction risk because of the close association of financial risk with satisfaction risk. Moreover, the political risk dimension was also not admitted in the present study because of low factor loadings during factor analyses. Cunningham (1967) also found the performance and socio-psychological risks as important risk groups because most of the risk dimensions have been perceived together. At last, tourists' revisit intention was added as a dependent factor to analyze the impact of perceived travel risks on their revisit intentions.

Our study showed that physical, time, and satisfaction risks affect most the tourists' intention to revisit Uttarakhand especially after the Kedar Nath incident. Last year, during Kedarnath incident, thousands of people were reported as missing or dead. Many of them were rescued only later on a long period of time. Therefore, physical and time risk factors were found most influencing. Beside this, the other two risk dimensions, i.e. socio-psychological risk and performance risk did not significantly affect their revisit intention. This concludes that physical, time, and satisfaction risk dimensions must be given more attention by planners and developers of state tourism industry in Uttarakhand. An et al. (2010) mentioned that perceived risk factors significantly affect repurchasing intention. Similarly, Sönmez and Graefe (1998a) also brought up that perceived risks associated with tourist destinations affect purchasing decisions (e.g. Cancellations or reservations). A few other studies also stated that purchasing or repurchasing may not be desired for destinations with high-risk perceptions (Crompton, 1992; Rittichainuwat et al., 2003).

The findings of study support past studies showing significant correlation between perceived travel risks and tourists' revisit intention (An et al., 2010; Crompton, 1992; Floyd et al., 2003; Reisinger & Mavondo, 2005; Rittichainuwat & Chakraborty, 2009; Rittichainuwat et al., 2003; Sönmez & Graefe, 1998a, 1998b). Therefore tourism authorities must emphasize on finding ways to reduce perceived travel risks of tourists to promote their revisit intentions. They need to identify the various risk factors influencing tourists (Lepp & Gibson, 2003). In addition, any famous tourist destination is also required to take a few important precautions to defend against or reduce the future risks. Past events like terrorist attacks (America's September 11 attack, the attack on India's Mumbai November 26, etc.), natural disasters (tsunamis, earthquakes, and so forth), political unrest (China's Tiananmen Square, Greece's austerity riots, and so forth) may seriously threaten tourist destinations. Since

tourism sector is one of the structurally sensitive sectors to negative external incidents, tourism industries are needed to take safeguards against unexpected events in terms of internal and regional marketing dimensions.

The outcomes and findings of our field will lead to the smoothing and accelerating of this operation by minimizing the uncertainty that is known by tourists during their purchasing. It will likewise lead to the appropriate promotion strategies to the tourists' risk concerns. Agreeing to the concern/uncertainty theory of Gudykunst and Hammer (1988), when people experience uncertainty, they arrive at their determinations under the influence of fear and they feel trouble in adjusting themselves to a novel environment. When the uncertainty is kept under control, people adapt themselves more easily (Reisinger & Mavondo, 2005). To attract international travelers to a certain destination, possible risk factors that may arise could be better defined. Hence, marketers and suppliers could encourage tourists to get to places of tourist attraction by reducing the levels of perceivable risk factors (Reisinger & Mavondo, 2005).

## **CONCLUSION AND FUTURE RESEARCH DIRECTIONS**

As per the report of the World Tourism Organization (UNWTO, 2011), the number of tourists contributing to the international tourism has reached around 935 million, with an increase of seven percent in 2009. The UNWTO also estimated that this act of international tourists will arrive at approximately 1.6 billion by 2020. To be able to get by this flourishing demand in the tourism and travel industry, it has become necessary to realize the effects of the various risk elements connected with the relevant destinations. The various potential risk factors influencing tourists' revisit intentions should be distinctly specified. With this, the tourism industry minimizes the level of perceived travel risks and related barriers to visiting tourist destinations (Reisinger & Mavondo, 2005). While reviewing the literature on perceived travel risks in the tourism industry, perceived risk studies, mostly either fall into one category or in the second category.

The initial category is pre-purchase, in which the perceived risks associated with attractions are considered by customers before making the purchase (Qi et al., 2009). The next category considers the impacts of the tourists' past experiences on the repurchasing intention (Fuchs & Reichel, 2006; Mitchell & Vassos, 1998; Reisinger & Mavondo, 2005). Further studies must focus on other aspects like comparing tourists' pre- and post-visit experience, comparison of visitors' experience of similar destinations, and so on. In our study, all five risk dimensions included have explained more than half of the total variance (63% approx); other key variables can also be considered in further studies to explain the remaining variance.

This study is unique in that it analyzes the perceived travel risks faced by tourists on a visit to Uttarakhand after a natural hazardous happened in Kedarnath valley. This type of study of perceived travel risk associated with destinations was applied for the first time to this destination in Uttarakhand, India. For further research, we recommend that tourists' perceived travel risk must be analyzed with large sample size and results could also be compared with previous findings. Yet the past literature includes a sufficient number of studies examining the relationship between perceived risk and behavioral purposes, studies emphasizing the perceived travel risk in developing states like India and in specific destinations like Uttarakhand and even after such a big natural hazardous of Kedarnath valley are either non-existent or quite rare. Referable to the lack of past studies on destinations in India such as those placed on the hill, apart from Uttarakhand, an opportunity lies to add to the body of knowledge in this field. For instance, in different tourist hilly destinations / stations of India like Shimla, Ooty, Darjeeling and Gangtok, Mussoorie, etc.

Similar research may also be extended to analyze the perceived risk of domestic and foreign tourists. The past literature shows perceived risks in the tourism industry have been explored primarily for only risk-averse tourists, risk-seeker tourists should also be taken in future studies, and corresponding "high-risk" tourism destinations identified and assessed for possible impact on the future, yet to be understood tourism trends. There are several types of risks that may be by tourists before purchasing or consuming a tourism product/service. Here, marketers of tourism industry must concentrate on the perceived travel risks of tourists through scientific studies in order to consider necessary actions to keep the transmission of perceived risks to tourists. In Addition, there are various destinations (e.g., Kashmir in India) of tourist attraction where security issues have become increasingly important. All

these destinations can easily be affected by this situation. In the tourism industry, products rely on service providers; therefore there are several marketing shortcomings and differences (like durability, standardization issues, and the not to be abandoned characteristic) than other service industries. The traditional studies on perceived risks in marketing and related fields focused only on industrial products, but now there should be an increase in the number of studies relating to the service industry.

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## **AN INVESTIGATION OF THE THAI MEDICAL TOURISM VALUE CHAIN: ITS STAKEHOLDERS AND THE USE OF IT**

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### **ABSTRACT**

Medical tourism is an emerging sector of which little is known. This research sets to investigate the industry. It attempts to 1) identify key stakeholders in the Thai medical tourism industry value chain and 2) pinpoint key activities, data, and information necessary for efficient collaboration and networking within the medical tourism industry value chain. In-depth interviews and focus group will be conducted with stakeholders in the industry to gain thorough understandings and insights into the industry. By having a clearer picture of the Thai medical tourism value chain, this research helps identify value-added and non value-added activities and provide strategies which help streamline the industry, particularly on collaboration and networking among the key stakeholders in the industry.

### **INTRODUCTION**

Medical tourism refers to a vacation that involves traveling across international borders to obtain a broad range of medical services. It usually includes leisure, fun, and relaxation activities, as well as wellness and health-care service (Heung et al. 2010). Thailand generated US\$ 1.1 billion from medical tourism industry in 2006, and by 2012 Medical tourism in Thailand, Malaysia, Singapore, and India alone is predicted to generate more than US\$4.4 billion per year. The figures self reflect the importance of the industry to the countries' economy.

In its latest National Development Plan (2012 – 2016), Thailand has planned to become medical hub of Asia and also to promote the economy of medical tourism cluster. This is in line with the ASEAN tourism strategic plan (2011 – 2015) which highlights medical tourism as one of the important tourism products of the region.

Therefore, the background of this research is based on two fundamentals: 1) Medical tourism is an important product which is included in the country's 11<sup>th</sup> national development plan (2012 – 2016) as well as ASEAN tourism strategic plan, and 2) The free flows of services and capitals endorsed by the AEC will both positively and negatively affect the medical tourism industry in Thailand.

Based on this ground, it is critical that Thai medical tourism stakeholders are prepared for inevitable changes and threats which are consequences of implementation of several ASEAN agreements. Thai medical tourism enterprises need to know how they can be prepared and become more competitive among other ASEAN countries, especially Singapore, Malaysia, and Philippines, which also focus on the growth of medical tourism industry. Additionally, readily-available and reliable infrastructure, particularly Information Technologies (ITs), is of essential to the growth of the medical tourism industries, as ITs are fundamental to both tourism and healthcare industries. It has been acknowledged that ITs will continue to be the driver in all aspects of nation building in the next few decades (ICT Masterplan 2015).

Nevertheless, medical tourism is a newly emerging sector of which little is known (Connell, 2006). The little academic research that exists primarily focused on specific areas such as the economic, medical, or marketing aspects of the medical tourism industry and considers them from either the supply or demand perspective (i.e., Bookman & Bookman, 2007; Connell, 2006; Smith & Forgiione, 2007). Thus, there is a clear need for further study of this important sector and for the development of a more comprehensive framework for its investigation (Heung et al. 2010).

Therefore, the main purpose of this research is to investigate the value chain of the medical tourism industry in Thailand to see who the key stakeholders are and how data and information flow within the industry value chain. This is in order to identify strength and weak links/components of the industry value chain. Given the main purpose, the research question is set as follows: "Who are the key stakeholders in the Thai Medical tourism industry value chain and how are they related to one another in terms of collaboration and networking?"

To answer the research question, the researcher tackles the problems by:

- 1) identifying overall characteristics of the Thai medical tourism industry and its value chain,
- 2) identifying the key stakeholders of the Thai medical tourism industry, and
- 3) identifying key activities, data, and information requires by and exchanges among the key stakeholders in order to drive their value chain, and

The three key research steps are based on the suggestion by Heung et al. (2010) that to realize the full potential of the medical tourism sector requires an understanding of strategic planning and coordination among such key players.

## LITERATURE REVIEW

### The medical tourism industry and its importance

Medical tourism refers to a vacation that involves traveling across international borders to obtain a broad range of medical services. It usually includes leisure, fun, and relaxation activities, as well as wellness and health-care service (Heung et al. 2010). Additionally, Johnston et al. (2010) emphasize the intent of accessing medical care at the destination. TRAM (2006) defines components of medical and healthcare tourism products/services as shown in Figure 1.

Medical tourism industry has recently and rapidly boomed; increasing numbers of countries have enthusiastically marketed themselves as MT destinations (Connell 2012). The industry contributes significantly to the world's economy. Investing in the medical industry helps increase gross domestic product (GDP), improve services, generate foreign exchange, create a more favorable balance of trade, and boost tourism (Ramirez de Arellano, 2007). It is estimated that the industry generates around US\$60 billion annually (Heung et al. 2010). McKinsey & Company estimates this total will rise to \$100 billion by 2012.

Driven by high health-care costs and long waiting periods in USA and several European countries, medical tourists seek care in Asia and Latin America (Hopkins et al. 2010). These tourists are not surprisingly rich and able to afford for alternatives that cater to their needs (Connell, 2006).

Although there are several countries in South America emerged as new medical tourism destinations, Asia remains the main medical tourism destination. India, Thailand, Singapore, and Malaysia are among the top medical tourism destinations in Asia (Connell 2007). Medical tourism in Malaysia, Thailand, Singapore, and India alone is predicted to generate more than US\$4.4 billion per year by 2012 (Singh, 2008).

### Stakeholders in the medical tourism industry

According to Heung et al. (2010), key players in the medical tourism industry include hospitals, medical travel agencies, hotels, and the medical tourists. The authors point out that strategic planning and coordination among these key players will unleash the full potential of the industry.

Several researchers (e.g. Sobo et al. 2011; Solomon 2011) highlight the importance of medical travel agencies in boosting or facilitating the growth of the medical tourism industry. These agents are like specialized travel agents who affiliate with hospitals, hotels and airlines to provide medical tourism packages (Connells, 2012). The medical travel agencies or medical tourism facilitators perform a variety of trip coordination responsibilities on behalf of medical travelers. This type of intermediary has become a new phenomenon as there is a clear need for more reliable information and more reliable service than general leisure trips (Cormany and Baloglu 2011).

Another key player is hospital accreditation organizations. As mentioned earlier, reliable, high-quality medical services are important and can strongly affect medical travelers' decision.

From the literature review, a conceptual model of medical tourism sector drawn by Harryono et al. (2006) appears to cover more details than others (See Figure 2). The authors include service providers and stakeholders who play a supporting role for the industry such as medical research institutions and educational institutions.

Specific to the context of Thai medical tourism, the Thailand Medical Tourism Cluster organization ([www.thailandmedicaltourismcluster.org](http://www.thailandmedicaltourismcluster.org)) has defined a scope of the Thai medical tourism sector as shown in Figure 3. According to the organization, there are 7 key stakeholders in the medical tourism industry, including hospitals, specialty clinics, hotels, tour agents, nurses, ambulance

service providers, and interpreters. However, it is not clear whether how these stakeholders cooperate, exchange information, and add value to the industry. Therefore, this research sets to investigate these issues, particularly in the context of Thailand.

### **Information Technologies in Medical tourism industry**

According to Connell and Young (2007) any social processes involving healthcare delivery would involve access to, or demand for, information; this means there are a number of activities that Information Technologies (ITs) can be used to facilitate the information flow along the health care delivery process. In the context of tourism, many researchers (e.g. Sheldon, 1993; Buhalis and Licata, 2002) unanimously agree that tourism relies heavily on the supply and exchange of information throughout its value chain. Therefore, it is reasonable to claim that ITs play an important role in medical tourism industry too.

In the context of tourism industry, the adoption of information technologies such as CRS, GDS, Websites, and Information exchange standards have been well studied. Similarly in the context of healthcare, the adoption of Computerized Physicians Order Entry (CPOE), Electronic health Record (EHR), Customer Relationship Management System (CRMS), and many other relevant technologies has been widely discussed (e.g. Adler-Milstein and Bates, 2010; Hung et al. 2010; Abraham et al. 2011; Iluch, 2011)

In the context of medical tourism industry however, little was found studying IT adoption and use which is specific for this sector. Prior research focused only on medical travelers' use of ITs to find out relevant information or how information on the Internet affect medical travelers' perception/ decision-making on particular medical services. For example, Patterson (2007) found the internet as an important source of information which is second only to friends. Similarly, Lee, Sourtar and Daly (2007) found that US tourists rely heavily on the Internet for travel planning.

Scaglione et al (2009) also highlight that the Internet is an important link between customers and medical tourism providers. The Internet facilitates information exchange, business transactions, and relationship management. In turn it allows medical tourism providers to reduce cost of their distribution process, improve marketing and market access, and increase revenues.

Chou and Chou (2002) focus on a healthcare information portal and pointed out that such a portal allows a healthcare provider to increase its competitiveness by accelerating the flow of medical information. Besides, a healthcare information portal can improve communications among healthcare providers, business partners, payers, physicians, and patients; reduce diagnosis time; improve healthcare quality; and enhance patient's service and satisfaction through online service.

In summary, it can be seen that existing research focused only on the customer side. Therefore, this study attempts to add to the void by including the investigation of IT adoption in linking stakeholders in the value chain together. This is supported by Eichhorn et al. (2008) findings that medical tourism providers must understand multiple, differential information needs of the society and attempt to develop specific communication sources that fulfill the needs.

### **RESEARCH METHOD**

Given the research question and objectives, this research is exploratory in nature. Therefore, in-depth interview is deemed appropriate methods to obtain primary data. Heung et al. (2010) pointed out that in- depth interviews with key players such as medical tourists, hospitals, hotels, medical travel agencies, and government staff would provide first-hand information on the latest developments in the medical tourism arena. Besides, in-depth interview allow exploration and description of a developing phenomenon in context, focusing on significant insights.

#### **Data collection steps were as follows:**

- 1) Conduct a thorough literature review on medical tourism supply chain and IT infrastructure of the industry and similar industries (service sectors)
- 2) Conduct interviews with experts in tourism and health care industries. From this first round of interviews, the researcher expects to obtain data about current practices of medical tourism enterprises, whether or not they are collaborating with other medical tourism enterprises, if yes, how.

- 3) Study the current use of IT by the key stakeholders (identified in stage 2, at least one enterprise per one category) in the industry by requesting an access into medical tourism enterprises and investigating their uses in a real setting.
- 4) Conduct interviews with the key stakeholders (where the researcher gains access since stage 3) in the medical tourism industry to obtain data, such as what are their key activities in managing supply chain, and what are data and information required by them for executing the key activities, etc.

#### **Data Analysis involves:**

- 1) Documentation: The first formal analytical step is documentation. The various contacts, interviews, and written documents will be saved and listed. Documentation is critical to qualitative research for several reasons: It is essential for keeping track of what will be a rapidly growing volume of notes, tapes, and documents; it provides a way of developing and outlining the analytic process; and it encourages ongoing conceptualizing and strategizing about the text (Schutt, 2012). Therefore, the researcher will make sure interviews and other secondary data obtained during data collection process be documented systematically.
- 2) Examining Relationships and Displaying Data: Examining relationships is the centerpiece of the qualitative analytic process, because it allows the researcher to move from simple description of the settings to explanations of why things happened as they did with those people in that setting (Schutt, 2012). In this research the relationships among the key stakeholders in the Thai Medical Tourism industry will be examined.

## **FINDINGS**

### **The value chain of Thai Medical Tourism industry**

The value chain of Thai Medical Tourism Industry has been studied and proposed as shown in Figure 3. However, the interview data show that the Thai medical tourism value chain is rather different from the theory. Stakeholders in this industry are loosely connected thru the mechanism of association. Relevant associations are, for example, the Thai Medical Tourism Association, Thai Spa Operators Association, and Thai Hotels Association. The interview sessions with Thai Medical Tourism Association and Thai Spa Operators Association reveal a loose tie among their members. Most members are small or medium sized enterprises which mainly need help on marketing. Product bundle is attempted but usually only succeeded between active, top members. Members who are less active are usually neglected.

“Members who actively participated in association’s meeting tended to know each other well. Collaboration, therefore, occurred at this level first. For example, they bundle their products and offer promotions together for some international trade fair.” (Thai Spa Operators Association)

“We are still trying to pull more active members. Definitely, we want to go together as an association so the perceived image of our service is strong. The association is trying to facilitate the business matching among our members, but only few active ones were ready to do so.” (Thai Medical Tourism Association)

Four main issues concerning the value chain of Thai medical tourism industry are summarized as follows.

**A lack of central body to continuously facilitate and develop the industry.** The interview data revealed a lack of unit or body to continuously drive the industry. This led to an occasional development of the industry, and only readily competitive service providers were able to establish and penetrate the market by themselves.

“In previous government, budgets were allocated for us to help promote the medical tourism industry. Currently we got no more budget on this and therefore our plans are paused.” (OSMEP)

“We have got some budgets but we have to propose our projects to the Ministry. It depends on the current policy too. In some years, the government shifted focus to other sectors. Like this year, we have got only a small budget so we are not able to do much, and some of our projects had to be postponed” (ISMED)

“We have to find budget to support our operations and most of it comes from member fees, because at the moment the government does not focus on the medical tourism as the previous government.”

**Travel Agents play an inactive role in promoting the industry.** While agents (information aggregator) are important to the service-based industry, aggregators in Thailand appear to be inept. Major medical tourism agencies which are ranked on the top of search engine are foreign companies. Thai travel agencies do not focus on the medical tourism as they find it difficult to retain customers for the following reasons.

“Customers usually contact their doctor and hospital directly after their first visit. Besides, hospitals these days usually have their own customer database and contact customers directly for follow-ups.” (Managing Director of a travel agency company)

“Big private hospitals seek to expand and market to foreign customers by themselves and tend to contact with dedicated agents.” (A committee member of Thailand Tourism Council)

**Hotels and accommodations target a more general group of travelers.** Many hotels were not designed and built to facilitate patients. The height of bed, the design of the bathrooms, and the food, for example, are not prepared for patients but for general travelers. Although hotels can gain benefit from accommodating patient’s family or relatives, they do not see themselves as key stakeholders in the medical tourism supply chain. Rather, they are the stakeholders who gained indirect benefits.

“If we are to gain benefit from the booming medical tourism industry, it would be only partial...you know...from the family of the patient. We cannot focus only on accommodating patients during their recovery period. I mean we can facilitate them during their stay but we are not as well equipped as the hospital in terms of infrastructure.” (A hotel in Phuket)

**Highly competitive medical service providers arrange appointments and all the bookings for their customers.** Interviews with a dental clinic and a medical travel agent showed that big clinics facilitate their customers by helping them arrange transportation and accommodation. The clinics usually have hotels and private transportation company that they regularly deal with. Therefore, travel agents play no role in this case.

“Clinics and hospitals these days do it all. They contact hotels and transportation providers for patients’ family. Some clinics even have contract rates with hotels.” (A freelance medical tourism agent)

“Here we can also book a hotel and transportation for our patients if they request, without any extra charge. This is to facilitate our foreign patients.” (A dental clinic in Bangkok)

In summary, the value chain of medical tourism industry is different from that of tourism industry or other service industry. There is a distinct player, who is highly influential on customers’ perception, which is hospitals and clinics. While other tourism experiences are co-created by tourism attractions/activities, travel agents, hotels, and transportations, medical tourism experiences are mainly occurred in hospitals or clinics. Tourism is only supplement to the medical service that customers seek. Therefore, the way the medical tourism stakeholders collaborate and an approach to promote the industry are different. It should first focus on quality and availability of medical services that match the needs of foreign customers.

### **The use of Information Technology in the medical tourism industry**

Figure 4 shows the needs for information before, during and after receiving medical services. It shows that patients need a lot of information in the pre-procedure phase, as they are making a selection from available choices. Not only information about quality and credibility of the services but also experiences shared by other patients as well as legal requirements are sought during the pre-procedure period. After receiving services, follow-ups are the main activities and information during this period usually involves follow-up care and medical instruction. Therefore, information required during the post-procedure period is generated mostly by hospitals or clinics, while information required during the pre-procedure period can be generated by patients, travel agents, clinics, hospitals, and other stakeholders.

Information technologies that are widely adopted by medical tourism suppliers are website, email and YouTube. These technologies are utilized mainly for marketing purposes. YouTube are used as an effective channel to provide extra information and to promote credentials of the providers (hospitals or clinics). Since credibility is a key in selecting providers, many providers benefit from

using YouTube as a channel to showcase their expertise. Website and email are also used as a regular communication approach between the providers and their customers.

However, the key activities of the customers throughout the medical procedure show that pre-procedure stage is the prime period that the customers need information the most. Although clinics arrange hotel and transportation for the customers, visa and other legal requirements may still be troublesome. A specialized travel agent would be able to fulfill this gap, and website and email is the most convenient tool for the agent to connect to their customers.

## CONCLUSION

In summary, this study shows a unique characteristic of the Thai medical tourism value chain and how IT can be used to facilitate the value chain and promote the industry. Besides, the study highlighted that although it is difficult for travel agents to be an intermediary between medical service providers and customers, the medical tourism industry still need agents. They can help promote the industry by acting as a one-stop service for customers, especially in terms of choosing the right service and facilitating all the legal issues that are involved.

In terms of Information Technologies, the study shows that pre medical service period requires a lot of information exchange between providers and customers. Website, email and YouTube are used to publish and exchange information. However, most information are published by providers on their own websites. Only few providers take advantages of web 2.0 and social media concept to build a community of customers, where they can share their experiences. Since customers these days rely more on electronic word of mouth and it can help create customer loyalty (Yoo et al. 2013), providers should explore this option. In addition, travel agents can follow the information aggregator model of other B2C e-businesses and adapt it to medical services. Aggregating medical services information, including price comparison, would benefit the industry as well as the customers.

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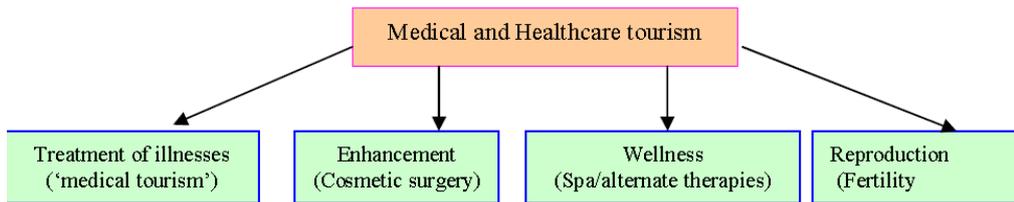


Figure 1: Medical and Healthcare tourism products/services  
(Source: Lee and Spisto, 2007)

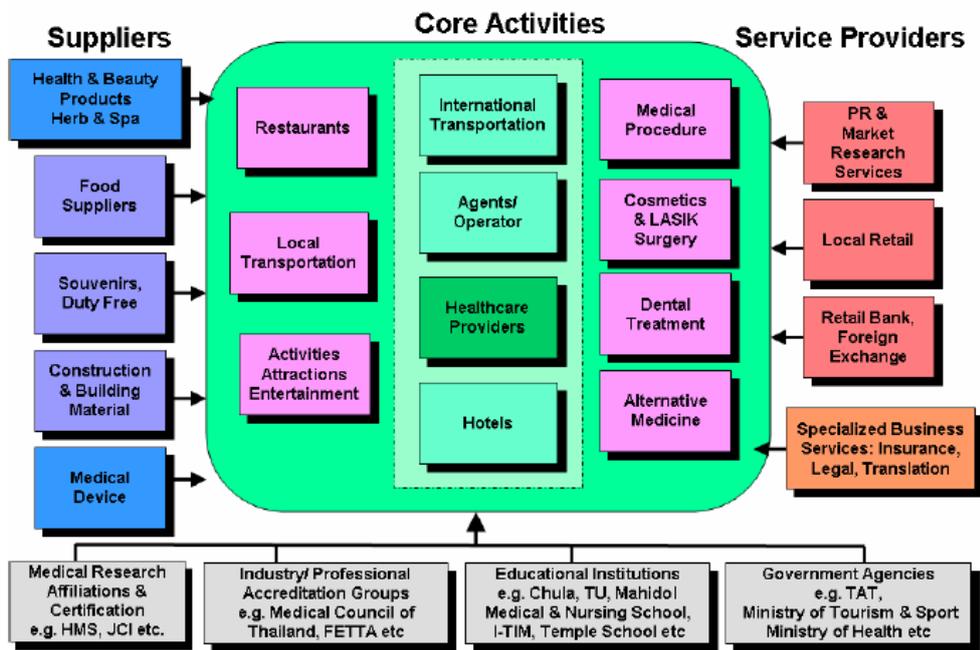


Figure 2: A model of medical tourism sector  
 (Source: Harryono et al. 2006)

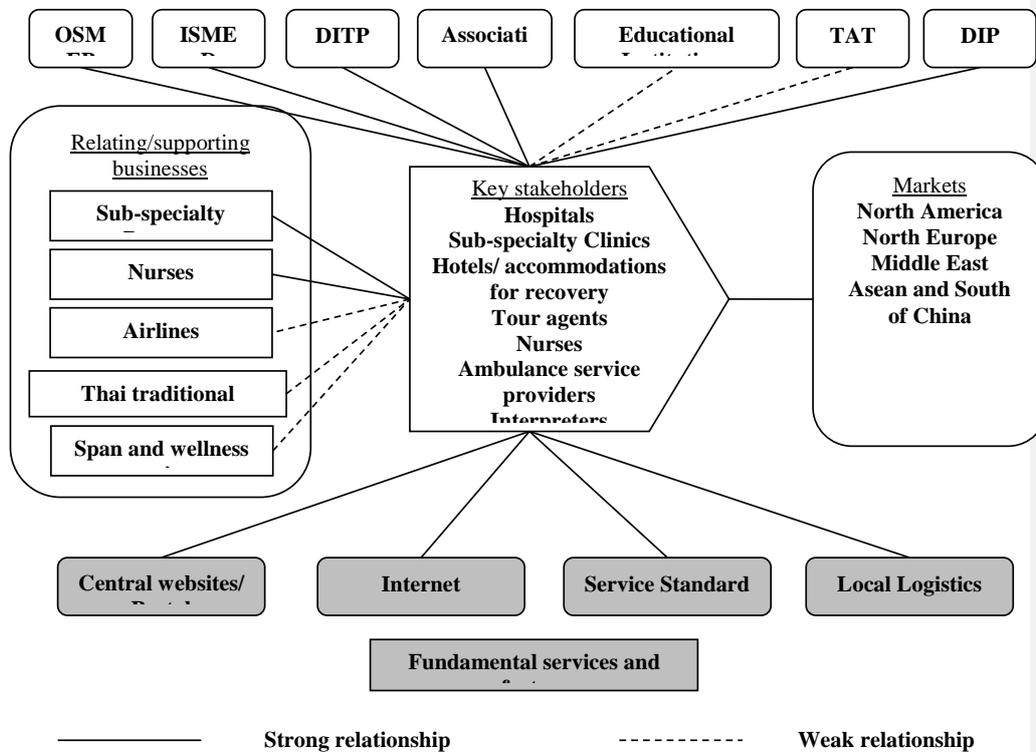


Figure 3: Thai medical tourism cluster map  
 (Source: <http://thai.thailandmedicaltourismcluster.org/Aboutus/ClusterMap.aspx>)

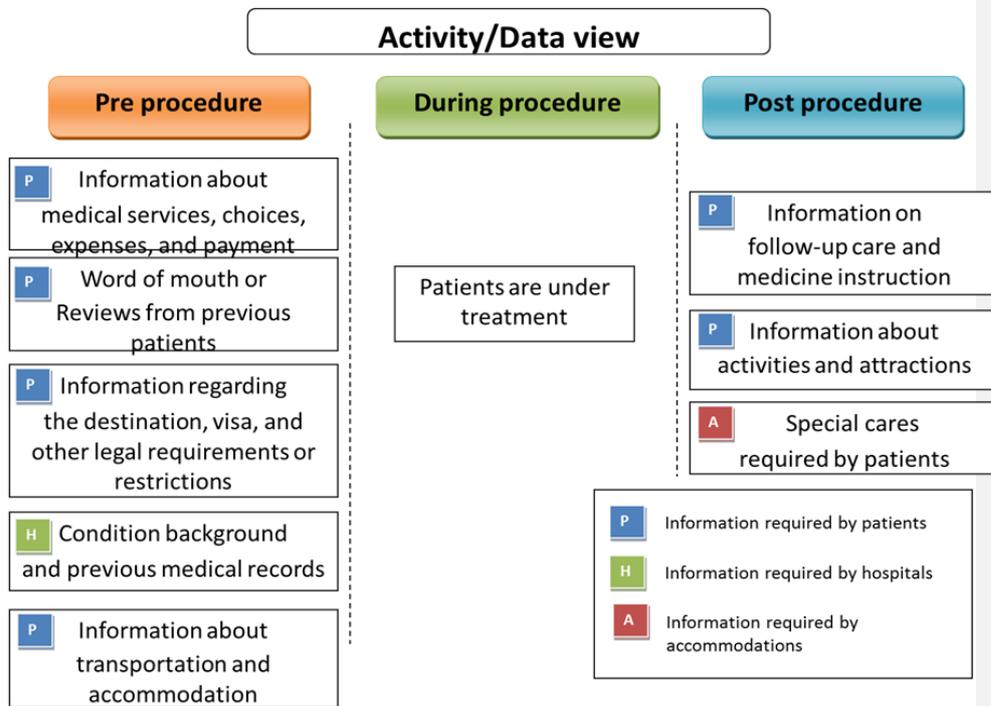


Figure 4: Information required by patients along the medical service procedure

## STOCK PRICE ANALYSIS UNDER EXTREME VALUE THEORY

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### ABSTRACT

The objective of this paper is to provide a practical tool for stock price evaluation and forecasting under Extreme Value Theory (EVT). Three existing models are reviewed; these models include: Modern Portfolio Theory, Black-Scholes, and Jarrow-Rudd models. It was found that these models may not be effective tools where option contract is not part of the investment regime. The data used in this research consist of the daily close price from a period of 30 days from 100 companies in the SET100 index. From the sample distribution  $F(X)$ , extreme values were identified. A tail index  $\xi$  was calculated to verify the distribution for each security was identified. Using EVT, the threshold value was estimated and used as a tool for risk assessment for each stock. It was found that Thailand's SET100 consists of two groups of stocks according to price distribution. The majority of the stocks are Weibull distributed and the remaining stocks are Fréchet distributed. Using Fisher-Tippett-Gnedenko's Generalized Extreme Value to calculate price volatility, the Weibull group shows the mean value of  $H(\xi, \mu, \sigma) = 0.57$ , and the Fréchet group shows  $H(\xi, \mu, \sigma) = 0.05$ . The findings may be used as a tool for risk assessment in stock investment. This finding rejects the general assertion that most financial data are fat-tailed distribution. The finding of this paper implies that investors face two categories of stocks: low and high price volatility. The idea of sector diversity becomes secondary. Empirical evidence shows that stocks from different sectors may have the same distribution and stocks of the same sector may have different distributions. Therefore, price volatility index is a better indicator for risk management.

KEYWORDS: Extreme Value Theory, risk management, stock price analysis

JEL CODE: C10, C13, C14, C46, E27, G11, G17

### INTRODUCTION

Investors in the stock market face the challenge of stock price analysis and forecasting. Investors may use software package to analyze and forecast stock price movement. Top-10 software available in the market include: MetaStock, TradeStation, eSignal, TC2000, Quantshare, Market Analyst, Ninja Trader, ProfitSource, ChartSmart and VectorVest. These programs are confined to basic statistical tests which may not be applicable to every scenario faced by investors. Many methods for stock price forecasting had been developed (Olaniyi, 2011). These methods include random walk theory, regime switching theory, cointegration and chaos techniques (Granger, 1992). However, these methods are too technical to be accessible by investors (Larsen, 2007). For that reason, there is a gap between investor's needs and practical tools available in the market. This paper proposes a new perspective in stock price analysis and forecasting through the use of Extreme Value Theory.

EVT may be used as a tool for investment risk management. Risk has been broadly defined as the effect of uncertainty on objectives (ISO 31000: 2009). However, some writers attempt to differentiate risk and uncertainty. For instance, one writer asserts that risk is quantifiable and uncertainty is not measurable (Knight, 1921). Other writers claim that both risk and uncertainty are measurable. This line of literature asserts that risk is measured by percentage possibility; uncertainty is measured by percentage probabilities (Hubbard, 2007). In finance, risk refers to the outcome of the return on investment which differs from the expected value. (Holton, 2004). If the return is higher than what has been expected, it is called an upside risk (Horcher, 2005). If the return is lower than what has been expected, it is called a downside risk (McNeil et al., 2005). One method of minimizing the effect of downside risk is the use of portfolio (Markowitz, 1952). Markowitz' modern portfolio theory suggests that a portfolio comprising of debt and equity may minimize the effect of return's deviation. However, Markowitz approach minimizes both downside and upside risk. Where downside risk represents a loss and upside risk represents a gain, an effective risk management tool should

minimize the loss and optimize the gain. Markowitz could not meet these requisites. This paper proposes that EVT may fill this gap.

EVT is an effective tool for risk management because it could quantify risk into percentage probability through the use of threshold p-quantile analysis. Generally, a threshold is defined by the predetermined upper and lower bound of the confidence interval called  $1-\alpha$  with a critical value of  $Z_{1-\alpha}$ . For example, if the confidence interval is 95%, the threshold is  $Z_{1-\alpha} \leq 1.65$  for two-tailed test. However, this approach assumes that the data is normally distributed. In real life, not all data is normally distributed. This assumption is faulty because it does not reflect reality. Empirical tests of SET100 also confirm that the assumption of normality of erroneous. EVT avoids making such an assumption by verifying each stock price series for its distribution through the use of tail index. By using empirical data to justify the modeling, EVT stands out as a more scientific method in risk analysis.

## LITERATURE REVIEW

Three models are reviewed as the foundational materials of the current literature for investing in the stock market. These models include: Modern Portfolio Theory (MPT), (ii) Black-Scholes Model (BSM), and (iii) Jarrow-Rudd Model (JRM). This paper asserts that these three models are not adequate tools for risk management for stock investing, especially in emerging markets. This paper proposes EVT as a supplemental tool. All models presented in this paper rely on statistics as the building block for stock price and market analyses. The fundamental tenet remains that “statistics is an applied science and deals with finite samples” (Berkson, 1980, p. 458).

### Modern Portfolio Theory

Markowitz introduced Modern Portfolio Theory (MPT) as a means to reduce risk in investment (Markowitz, 1952 & 1959). MPT is a mathematical formulation for risk reduction by many assets in an investment holding. Under MPT risk is defined as total portfolio variance. MPT assumes that investors are rational; the market is efficient; and the data is normally distributed (Elton & Gruber, 1997). The theory begins with the definition of expected return:

$$E(R_p) = \sum_i w_i E(R_i) \quad (1)$$

where  $R_p$  = return of the portfolio;  $R_i$  = return of asset  $i$ , and  $w_i$  = weight of the asset, i.e. proportion of asset in the portfolio. Since the return of the asset may fluctuate, the portfolio has a variance:

$$\sigma_p^2 = \sum_i \sum_j w_i w_j \sigma_i \sigma_j \rho_{ij} \quad (2)$$

Under this approach, the volatility of the portfolio return is simply the standard deviation. The standard deviation of the portfolio is given by:

$$\sigma_p = \sqrt{\sigma_p^2} \quad (3)$$

MPT argues that risk or the effect of volatility of the portfolio return may be reduced by holding a combination of assets that are not perfectly correlated:  $-1 \leq \rho_{ij} \leq 1$ . This rationale lays the foundation for the concept of risk reduction through assets diversification in hope of maximizing  $\mu$  and minimizing  $\sigma^2$  (Marling & Emanuelsson, 2012).

MPT assumes that investors are rational. However, in practice, it has been shown that investors are not rational (Koponen, 2003). Empirical evidence shows that investors are generally overconfident

and often caused asset price to be inflated (Kent et al., 2001). Other assumptions of MPT also had been challenged. For instance, MPT's assumption of normal distribution of returns had been criticized (Doganoglu et al., 2007). It was shown that asset returns are non-elliptical (Chicheportiche & Bouchaud, 2012). One writer rejects MPT as unworkable (Taleb, 2007). Witt and Dobbins (1979) wrote that in real life, no one uses MPT. The problem with MPT stems from the fact that it makes assumptions that do not reflect price and investor behavior in the stock market. As a risk management tool, the concept of asset diversification seems to work for downside risk; however, when it comes to upside risk, MPT is not helpful. MPT allows investors to reduce the effect of the fluctuation of prices or return rates. As such, it does not serve as a forecasting tool. Investors in the stock market need a tool that could provide price analysis, as well as forecasting. MPT provides a management tool for the *end*; investors need a tool to manage the *means*. To that end, MPT left a gap in the literature.

### Black-Scholes Model

Twenty years after MPT, a new model called the Black-Scholes equation was introduced (Black & Scholes, 1973). The Black-Scholes model allows the investor to reduce risk through hedging. Hedging is the taking of position in one market in order to reduce risk exposure in another market. Hedging is used when the firm is faced with financial constraint. Effective hedging minimizes the variability of the firm's cash balance (Mello & Parsons, 2000).

The Black-Scholes model assumes that the portfolio consists of two types of assets: risky asset called stock and riskless asset called bond (Sircar & Papanicolaou, 1998). The stock price fluctuates in a random walk with drift. The random walk of the stock price manifests geometric Brownian motion. It is assumed that the stock does not pay any dividends. The model also makes certain assumptions about the market. It assumes that the market does not have arbitrage. It is possible to borrow money at riskless rate. The buying and selling may occur for any amount without cost, i.e. no market friction.

The model assumes that the stock price is normally distributed with cumulative ( $N(x)$ ) and probability density functions ( $N'(x)$ ) as:

$$N(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x \exp\left(-\frac{z^2}{2}\right) dz \quad (4)$$

$$N'(x) = \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{x^2}{2}\right) \quad (5)$$

Black-Scholes argues that the call price is given by:

$$C(S, t) = N(d_1)S - N(d_2)K \exp(-r(T-t)) \quad (6)$$

where  $C$  = call price;  $S$  = price of stock;  $C(S, t)$  = call option of  $S$  stock at time  $t$ ;  $K$  = spot price;  $r$  = risk free rate; and  $d$  = cumulative probability of a standard normal point or implied volatility. A "call option" is the right to buy. The "put option" is the right to sell. According to (6) the stock price is a function of the difference between the distribution of the stock price general movement and the spot price accounted for volatility ( $d_i$ ) where:

$$d_1 = \frac{1}{\sigma\sqrt{T-t}} \left[ \ln\left(\frac{S}{K}\right) + \left(r + \frac{\sigma^2}{2}\right)(T-t) \right] \quad (7)$$

$$d_2 = d_1 - \sigma\sqrt{T-t} \quad (8)$$

The put price is given by:

$$P(S,t) = K \exp(-r(T-t)) - S + C(S,t) \quad (9)$$

To express (9) in terms of  $d_i$ , the formula may be written as:

$$P(S,t) = M(-d_2)K \exp(-r(T-t)) - N(-d_1)S \quad (10)$$

Black-Scholes model is an improvement over the oversimplified argument of MPT. The improvement comes from the introduction of the distribution of the past and spot price movements. However, Black-Scholes could not accommodate future price volatility (Gencay & Salih, 2003). Black-Scholes also shares a weakness with MPT in assuming normality of price without verifying the actual distribution of the price. Other assumptions, such as investors borrowing at riskless rate and the absent of market friction are equally impractical.

The weakness from the assumption in Black-Scholes may best summarized by two economists who wrote that: "Essentially, all models are wrong but some are useful" (Box and Draper, 1987, p. 424) and "... all models are wrong; the practical question is how wrong do they have to be to not be useful" (*ibid.*, p. 74). Writers admit that normal distribution is not always found in practical context (Geary, 1947). Nevertheless, we continue to make such an assumption. This paper attempts to lessen that tendency and proposes a more robust approach to data analysis by verifying the type of distribution through empirical tests. Such an attempt in the context of stock price analysis has been witnessed in the Jarrow-Rudd Model.

### Jarrow-Rudd Model

In 1982, the Jarrow-Rudd Model (JRM) was introduced as a new tool for stock price analysis (Jarrow & Rudd, 1982). This new method also employs price distribution as the building block of the model. The call price is distributed as  $F$  which is a function of a second distribution called  $A$ . By analyzing the central moments of these two distributions, a price forecasting may be obtained. The JRM method is given by:

$$C(F) = C(A) - \exp \left[ -rt \left( \frac{K_3(F) - K_3(A)}{3!} \right) \frac{da(K)}{dS_t} \right] + \exp \left[ -rt \left( \frac{K_4(F) - K_4(A)}{4!} \right) \frac{d^2 a(K)}{dS_t^2} \right] + \varepsilon(K) \quad (11)$$

where  $C(F)$  = call option based on stock price with distribution  $F$ ;  $C(A)$  = price based on known distribution  $A$ ;  $K_j(F)$  = cumulant of  $F$ ;  $K_j(A)$  = cumulant of  $A$ , such that:

$K_2(F) = \mu_2(F)$ ;  $K_3(F) = \mu_3(F)$ ; and  $K_4(F) = \mu_4(F) - 3\mu_2^2(F)$ ;  $\mu_i$  = central moment;  $aS_t$  = density of  $A$ ;  $S_t$  = random price of option  $A$  expired;  $K$  = strike price; and  $\varepsilon(K)$  = Edgewood series with terms based on higher order cumulants and derivatives (Corrado & Su, 1996).

If the above equation (11) drops the last term  $\varepsilon(K)$ , then a shorter version of the formula is given by:

$$C(F) = C(A) + \lambda_1 Q_3 + \lambda_2 Q_4 \quad (12)$$

where:  $\lambda_1 = \gamma_1(F) - \gamma_1(A)$  (12.1)

$\lambda_2 = \gamma_2(F) - \gamma_2(A)$  (12.2)

$$Q_3 = -\left(S_0 e^{rt}\right)^4 \left(e^{\sigma^2 t}\right)^2 \left(\frac{e^{-rt}}{3!}\right)^{3/2} \frac{d^2 a(K)}{dS_t^2} \quad (12.3)$$

$$Q_4 = -\left(S_0 e^{rt}\right)^4 \left(e^{\sigma^2 t}\right)^2 \left(\frac{e^{-rt}}{4!}\right)^2 \frac{d^2 a(K)}{dS_t^2} \quad (12.4)$$

JRM does not make any assumptions about distributions  $F$  and  $A$ . These two distributions are verified by empirical data. This approach is an improvement over MPT and BSM. However, JRM and BSM are employed in markets where option or future contracts are available. In the emerging markets or for day-traders where spot price is the overriding issue, JRM and BSM may be inadequate in emerging financial markets where options contracts are not available.

### Extreme Value Theory

According to the National Institute of Technology and Science: “Extreme Value Distribution usually refers to the distribution of the minimum of a large number of unbounded random observations” (NIST, 2013). Under this definition, the maximum of minimum values of the series are separated from the original observation and re-analyzed separately. A threshold value is used for removing the minimum or maximum values. These removed items are then re-examined for their distribution and characteristics. The distribution of the removed items may be estimated through the tail index. The tail index can provide information about the underlying distribution (Kostov & McErlean, 2002, p. 5). There are two approaches to estimate the threshold value in Generalized Extreme Value (GEV) theory. The first method uses the maxima block of points. This is called annual maxima series (AMS) approach (Hosking et al., 1985, and Madsen et al., 1997). The second method uses a specified points as the threshold beyond which points of values are considered extreme (Leadbetter, 1991). This is known as Peak Over Threshold (POT) approach. Although AMS and POT had been used in analysis natural disaster events, for market behavior they must be adapted to the nature of the event. For example, AMS may not be appropriate for financial risk management due to its requirement of longer period of observation. The POT method may be more appropriate for financial risk management due to its use of threshold value which could be defined by investors. The POT method is also known as Partial Duration Series (PDS) approach. Under PDS, the data set is assumed to take a particular distribution (Madsen et al., 1997). The question of “which distribution should PDS assume” remains unsettled. For instance, Shane and Lynn (1964) assume that PDS is Poisson distributed. Zelenhasic (1970) proposed that the exceedance is gamma distributed. Another group of writers, such as Miquel (1984) and Ekanayake and Cruise (1993), proposed that the exceedance is Weibull distributed. In Rosbjerg et al. (1991), it was suggested that lognormal distribution characterizes the exceedance. Lastly, there are researchers who suggests that the exceedance set is distributed generalized Pareto (Van Monfort and Witter, 1986; Hosking and Wallis, 1987; Fitzgerald, 1989; Davidson and Smith, 1990; Wang, 1991; Rosbjerg et al., 1992; and Madsen et al., 1995). This paper makes no assumption of data distribution. The distribution is verified by empirical evidence under the tail index.

The reason why writers cannot agree of a definite distribution of extreme series may come from the fact that both AMS and POT methods removed exceedance points from the original set  $X_i : (x_1, x_2, \dots, x_n)$  distributed as  $F(X)$  and treat the removed set independently as  $Y_i : (y_1, y_2, \dots, y_n)$  distributed as  $G(Y)$ . This has an inherent problem with sample size requirement. The size of  $Y_i$  varies from one study to another depending on the size of the original  $X_i$ ; thus, the resulting distribution of  $G(Y)$  is not definitive. If  $Y_i$  is small, it may approximate chi-square distribution. If  $Y_i$  is large enough, under the law of large number, the series may approximate a normal distribution. However, if  $Y_i$  is volatile it may be Gumbel, Fréchet, Weibull or any one of the continuous distributions; there is no definite answer as to the type of data distribution of  $Y_i$ .

In order to reconcile these differences and uncertainty, for smaller sample this paper suggests a two step process: (i) employing the standard score equation to verify the existence of outlier points; and (ii) if the outliers are found, use the entire original observation as the basis for EVA. This approach overcomes the issue of inadequate sample size for verifying the distribution of the points in excess of the threshold and allows research to work with smaller sample size, i.e. weekly or monthly stock price movement. In so doing, we do not “assume” any type of distribution, but empirically verify the distribution type through the tail index and p-quartile percentage probability.

Under GEV, no assumption about the data distribution is made. Prices of stocks are tested and verified for their distribution. Whereas MPT focuses on investors and sanctifies them as rational, EVT does not look at investors. In EVT, the stock price itself becomes the unit of analysis. As a tool for univariate and nonparametric testing, EVT allows investors to determine the threshold level for price level and the scale of price volatility as indicators of risk. Thus, EVT becomes increasingly relevant in risk management (Embrechts et al., 1999, p. 32).

## METHODOLOGY

Probability distribution under GEV is used to propose a tool for stock price analysis for purposes of risk management. GEV distribution is the generalized form of three extreme value distributions: Fréchet, Weibull and Gumbel (Gilli & Kaellezi, 2006; p. 5). One hundred companies in the SET100 Index were used as the main sample  $F$ . From this main sample a group of exceedance  $G$  were identified for tail index analysis. From the tail index  $\xi$ , the correct type of distribution is assigned to each company’s price data.

### Data

The data used in this paper comes from SET100. SET100 is an index of stock prices traded at the Stock Exchange of Thailand (SET). SET100 is an index comprised of 100 companies. The close price of the individual index components for 30 trading days was used as the data set. One company in the index has no data information. The remaining 99 companies were used as the final sample. Additional data consists of the SET100 index values for the same period.

### Sampling and Sample Size

During this study period, the Stock Exchange of Thailand has 686 listed companies. SET classifies these companies into 9 industries and 16 sectors. It maintains three active indices: SET Index for the entire market; SET100 Index for 100 leading companies and SET Index for leading 50 companies. The data from SET and SET100 were used in this study. SET50 was not included because companies in SET50 are also listed in SET100.

The effective sample size after the removal of defective data is comprised of close price of 30 consecutive trading days for 99 companies. Individual stock price was collected from April 16, 2015 to June 2, 2015. The monthly market index SET was collected from January 2012 to May 2015. The rationale for using a longer period for market data collection is to assure the stability of data distribution at a market level. The individual stock data was confined to 30 trading days due to the time frame of information needed for short-term risk assessment. A longer period would not be practical due to potential price volatility and the aging of the data.

Since this study involves multiple stocks with diverse price level, the adequacy of sample size was calculated by using the Central limit Theorem (CLT). The Central Limit Theorem states that a given set of randomly occurring events  $X_i : (x_1, x_2, \dots, x_n)$  in space  $\Omega$  is distributed approximately normal if in has adequate sample size. There are three CLT methods commonly employed in CLT analysis; these include (i) Lindeberg, (ii) Lindeberg-Levy, and (iii) Lyapunov methods. The Lindeberg method is given by:

$$\lim_{n \rightarrow \infty} \frac{1}{S_n^2} \sum_{i=1}^n E \left[ (X_i - \mu_i)^2 \cdot \mathbf{1}_{\{|X_i - \mu_i| > \varepsilon S_n\}} \right] = 0 \quad (13)$$

The Lindeberg-Levy's CLT method is given by:

$$\lim_{n \rightarrow \infty} \Pr \left[ \sqrt{n}(\bar{X} - \mu) \leq Z \right] = \Phi \left( \frac{z}{\sigma} \right) \quad (14)$$

The term  $\Phi(x)$  is the standard normal CDF evaluated at  $x$ . This is a pointwise estimation. The convergence of  $\bar{X} \Leftrightarrow \mu$  is uniform in  $z$  because:

$$\lim_{n \rightarrow \infty} \sup \left| \Pr \left[ \sqrt{n}(\bar{X} - \sigma) \leq z \right] - \Phi \left( \frac{z}{\sigma} \right) \right| = 0 \quad (15)$$

Lastly, the Lyapunov's CLT method is given by:

$$\lim_{n \rightarrow \infty} \frac{1}{S_n^{2+\delta}} \sum_{i=1}^n E \left[ |X_i - \mu|^{2+\delta} \right] = 0 \quad (16)$$

This paper introduces a new approach for CLT as a mean for sample size calculation based on the rational that if the sample fairly represents the population distribution then  $T \cong Z$ ; if so, then  $(\bar{X} - \mu) / (S / \sqrt{n}) = (\bar{X} - \mu) / (\sigma / \sqrt{n})$ . By simplification, we obtained  $S = \sigma$  or  $S^2 = \sigma^2$ .

Since the square of the standard deviation is the variance, and the variance represents the shape of the curve, it follows that under the condition  $T \cong Z$ , the sample and population variances are equal. This equivalence is a range within a specified confidence interval, not a point in space. This approach to CLT differs from Lindeberg, Lindeberg-Levy and Lyapunov because it does not use location comparison  $(\bar{X} - \mu)$ , but using shape analysis ( $S^2$  and  $\sigma^2$ ). Additionally, unlike prior CLT approaches which use the value zero as the test reference, the proposed variance analysis uses the error created by the overlapping shapes between the observed and theoretical curves as the reference point. The proposed CLT is given by:

$$\lim_{n \rightarrow \infty} \frac{1}{S\sigma} \Pr \left[ \frac{|S^2 - \sigma^2|}{\sqrt{n}} \right] \leq E \quad (17)$$

where  $E$  = standard error given by  $E = \sigma / \sqrt{n}$ . The proposed CLT is based on the argument that the expected difference among the sample and population variances must not exceed a threshold level of standard error. Thus the term  $|S^2 - \sigma^2|$  in equation (7) represents the term  $\sigma$  in  $E = \sigma / \sqrt{n}$ . Under this CLT, sample size may be tabulated in a table.

**Table 1** Sample Size Tabulation under Variance Difference CLT

Initial T(0.95)	Confidence Interval	Error Level (%)	Sample Size
1.70	99%	1	30
1.72 & 1.73	98%	2	20 - 21
1.76	97%	3	15
1.70	96%	4	13 - 14
1.80	95%	5	12

### Generalized Extreme Value (GEV)

Rosbjerg and Madsen (1992) recommended that the threshold level ( $q_0$ ) should be obtained by the sum of the expected mean plus the product of the  $k$  count and the sample's standard deviation, thus:

$$q_0 = E[Q] + kS[Q] \quad (18)$$

where  $E[Q]$  = observed mean of the sample;  $S[Q]$  = sample standard deviation; and  $k$  = predefined frequency factor. This method of identifying exceedance level  $q_0$  has been used in flood studies (Rasmussen & Rosbjerg, 1991) and precipitation research (Madsen et al., 1994). However, in financial data analysis where the time period is short and sample size is small, this method is not practical. For instance, if we deal with a sample of five items:  $X_i : (1, 2, 3, 4, 10)$ . The mean is 4.00 and the standard deviation is 3.54. The  $k$  count is 1 since one value (10) in the series stands out as an "apparent extreme." Using equation (14):  $q_0 = E[Q] + kS[Q] = 4 + 1(3.54) = 7.54$ . It is determined that the extreme point ( $u$ ) is 7.54. However, if  $X_i : (1, 2, 3, 4, 10)$  is distributed as  $F(X)$  in space  $\Omega_1$  and the exceedance is expected to distribute as  $G(X)$  in space  $\Omega_2$ , it is not possible to determine the distribution type for  $G(X)$  because the  $k$  count is 1 or one point in space  $\Omega_2$ . This is the inherent limitation of the  $q_0$  approach.

This paper proposes that extreme values should be determined by the use of standard score equation:

$$Z = \frac{X_i - \bar{X}}{S} \quad (19)$$

where  $X_i$  = daily close price of individual stock;  $\bar{X}$  = mean close price of individual stock; and  $S$  = standard deviation of the daily close price. The array  $X_i : (x_1, x_2, \dots, x_{30})$  for 30 trading days called sample  $F(X)$  was subjected to equation (13) under 0.95 confidence interval:  $Z(0.95) = \pm 1.65$ . Prices that exceeds 1.65 or less than -1.65 are separated into a group called  $G(X)$ . The elements of  $G(X)$  are used to calculate the tail index. For small sample size as in  $X_i : (1, 2, 3, 4, 10)$ , once an extreme point is identified, the entire set is used for the tail index calculation, i.e.  $F(X) \cong G(X)$ .

Extreme values may be analyzed under the generalized extreme value (GEV) distribution proposed by Fisher-Tippett-Gnedenko:

$$H(x; \mu, \sigma, \xi) = \exp \left\{ - \left[ 1 + \xi \left( \frac{x - \mu}{\sigma} \right) \right]^{-1/\xi} \right\} \quad (20)$$

where  $\mu$  = location;  $\sigma$  = scale; and  $\xi$  = shape. If  $\xi > 0$ ,  $H$  becomes a cumulative distribution function (CDF); if  $\xi < 0$ , it is valid for  $x < \mu + \sigma / (-\xi)$ ; and if  $\xi = 0$ ,  $H$  is undefined. (Bensalah, 2000). However, if  $\xi \rightarrow 0$ , then (20) is reduced to:

$$H(x; \mu, \sigma, 0) = \exp \left\{ - \left( \frac{x - \mu}{\sigma} \right) \right\} \quad (21)$$

The parameter  $\xi$  is the tail index of the distribution. This index may be used to classify the type of extreme value distribution. If  $\xi = 0$ , the  $H$  distribution is Gumbel distribution, also known as Type I where  $x \in \mathfrak{R}$  and  $\xi = 0$ . The Gumbel distribution is given by:

$$H(x; \mu, \sigma, 0) = \exp \left\{ -\exp \left( \frac{x - \mu}{\sigma} \right) \right\} \quad (22)$$

If  $\xi > 0$ , the  $H$  distribution is a Fréchet distribution or Type II. The Fréchet distribution is given by:

$$H(x; \mu, \sigma, \xi) = \begin{cases} 0 & \text{for } x < \mu \\ \exp \left\{ \left( \frac{x - \mu}{\sigma} \right)^{-\alpha} \right\} & \text{for } x > \mu \end{cases} \quad (23)$$

In Fréchet distribution with sample size  $n$  and parameters:  $\alpha$  and  $\beta$  (Abbas & Yincai, 2012). The maximum likelihood estimation of  $\beta$  is:

$$\hat{\beta}_{ML} = \left( \frac{n}{t} \right)^{1/\alpha} \quad (24)$$

If  $\xi < 0$ , the  $H$  distribution is Weibull distribution or Type III. The Weibull distribution is given by:

$$H(x; \mu, \sigma, \xi) = \begin{cases} \exp \left\{ - \left( - \left( \frac{x - \mu}{\sigma} \right) \right) \right\}^{-\alpha} & \text{for } x < \mu \\ 1 & \text{for } x \geq \mu \end{cases} \quad (25)$$

The next step was to classify the type of extreme value distribution of the series through the use of the tail index. There are two methods for the tail index estimation: the Pickands method (Pickands, 1975), and the Hill method. (Wagner and Marsh, 2000). Firstly, the Pickands method is given by:

$$\hat{\xi}_{k,m} = \frac{1}{m} \sum_{i=1}^k (\ln X_{n-i+1} - \ln X_{n-m}) \quad (26)$$

where  $m$  = number of observations whose tail is to be observed and  $k$  = sample size. Secondly, the Hill method is given by:

$$\hat{\xi}_{k,T} = \frac{1}{k} \sum_{i=1}^k (\ln R_{i,T} - \ln R_{k,T}) \quad (27)$$

where  $R = \sigma Z$ ; recall that  $\sigma$  is the estimated population standard deviation and  $Z$  is the standard score of the series. Both methods follows the same conditions in providing the decision rule for classifying the type of extreme value distribution: *Frechet* =  $\xi > 0$ , *Weibull* =  $\xi < 0$  and *Gumbel* =  $\xi = 0$ .

## FINDINGS

Contrary to the general assertions found in the current literature that financial data, specifically stock price data, is a fat-tailed (Fréchet) distribution, empirical test of data from Thailand's Stock Exchange shows that the stock market price distribution contains no extreme values under the standard score formula approach for verifying exceedance. The tail index of the market data shows that SET is a mixed of Fréchet and Weibull distributions when  $F(X) \cong G(X)$ . This empirical evidence also contradicts Markowitz' and Black-Scholes' assumptions of normality in stock price distribution. This finding has significant implication on how market analysts and investors should approach risk management in stock investment.

### Extreme Value Identification

Using the Z-score method under 0.95 CI, the market data shows that there are no extreme values. The market index over a period of two years for the Thai Stock Exchange is stable. Nevertheless, it is still necessary to verify the distribution for SET, SET50 and SET100 indices. Since the standard score calculation shows that there is no extreme values, the entire series for 14 months were used to verify distribution. All three indices were Weibull distributed with the tail indices of  $\xi = -1.05, -1.02$  &  $-1.11$  respectively.

Individual stocks were tested for extreme values over a period of 30 trading days. Out of 100 companies in the SET100 index, 97 companies show extreme values in 30 consecutive trading days between April 16 – June 2, 2015. Three companies were removed for incomplete or defective data.

### Tail Index and Distribution Verification

Three sets of calculations were made for the tail index at the macro-level; these indices include the tail index for SET, SET50 and SET100. Under the Hill method, it was found that the tail indices were -1.05 for SET, -1.02 for SET50 and -1.11 for SET100. The stock market in Thailand is Weibull distributed.

A second set of tail index calculation was used to identify the tail for component stocks of SET100. Among these 100 companies, 26 companies were confirmed Fréchet distributed; 71 were Weibull distributed; one was distributed Gumbel and two companies were removed for data incompleteness or defect.

**Table 2** Tail Index Identification for Market Indices and Individual Stocks

Data Source Thailand	Fréchet $\xi > 0$	Weibull $\xi < 0$	Gumbel $\xi \neq 0$	Tail Index $\xi$
SET	-	✓	-	-1.05
SET50	-	✓	-	-1.02
SET100	-	✓	-	-1.11
Individual Stocks	26 companies	71 companies	1 company	$\xi \neq 0$

### Fisher-Tipett-Gnedenko's GEV's Scale and Risk Indicator

Using GEV parameters, the scale of the exceedance is determined by:

$$\beta = \sigma + \xi(u - \mu) \quad (28)$$

where  $\sigma$  = estimated standard deviation of the exceedance;  $\mu$  = mean of exceedance;  $\xi$  = tail index; and  $u$  = threshold value. (Moscadelli, 2004). The threshold value used in this case is the critical score at CI(0.95) or 1.65 for two-tailed test. From the scale  $\beta$ , the upper bound of the estimated price is determined by  $U = \bar{X} + \beta$  and the lower bound  $L = \bar{X} - \beta$ . The range is simply  $R = U - L$ . This range is the bound within which price may fluctuate without being classified as risk: upside or downside. Thus, the risk indicator  $Z_k$  is obtained by:  $Z_k = (R_i - \bar{R}) / S$  which is a reformulation of

equation (13). An upside and downside risks are defined by value outside of the boundary  $-1.65 \leq Z_k \leq 1.65$ .

**Table 3** Price Volatility of Individual Stocks by Distribution Type

Distribution	$\bar{H}(\xi, \mu, \sigma)$	$P$	Up/Downside Risk:*			Volatility
			CI: 0.95, 0.90 & 0.80			
Fréchet	0.05	0.53	+1/-0	+2/-3	+5/-6	Low
Weibull	0.57	0.57	+4/-0	+6/-0	+7/-0	High
Gumbel	-	-	-	-	-	-

\*A plus sign (+) denotes upside risk; (-) downside risk frequency counts.

The results in Table 2 are used to verify statistical significance of the upside and downside risk for the two groups of stocks: Fréchet and Weibull distributed. Firstly, the discrete probability of upside risk for the Fréchet group is calculated with the determination of the Laplace Rule of Succession (Durrett, 2013):

$$p = \frac{s+1}{n+2} \quad (29)$$

where  $s$  = combined number of upside risk at 0.95, 0.90 and 0.80 CI;  $n$  = number of stocks showing exceedance distributed Fréchet. The probability of upside risk is  $p = 0.64$  and the probability of non-upside risk is  $q = 0.36$ . The test statistic follows the De Moivre-Laplace Theorem (Balazs and Balint, 2014):

$$Z = \frac{|S_n| - np}{\sqrt{npq}} \quad (30)$$

From Table 3,  $s = 5$ ; thus,  $p = (5+1)/(26+2) = 6/28 = 0.21$  and  $q = 0.79$ . The result of the calculations:  $Z_u = (11 - 26(0.21))/\sqrt{26(0.21)(0.79)}$ ; thus,  $Z_u = 2.61$ . Using 0.95 confidence interval where  $-1.65 \leq X \leq 1.65$ , the finding of  $Z_u = 2.61$  is statistically significant. Similarly, for the downside risk among the Fréchet group is also statistically significant:  $Z_d = 6.97$ . Among the 26 stocks that are distributed Fréchet, the following stocks manifest statistically significant risk: BH, BIGC, KBANK, KTC, PTT, SCB and SCCC. The summary of their price statistics and risk indicator  $Z_k$  are summarized in the Table 3.

**Table 4** List of Upside Risk Stocks in the Fréchet Group

Stock Symbol	30-days Mean	Mean: $\mu$	Deviation: $\sigma$	$Z_{upside}$
BH	166.51	159.79	15.76	3.26
BIGC	218.04	211.07	15.80	3.52
KBANK	216.73	208.03	17.45	4.04
KTC	99.00	96.03	6.73	0.87
PTT	354.00	349.20	9.66	1.63
SCB	168.25	163.96	8.23	1.30
SCCC	384.08	376.54	16.47	3.67

There are 11 stocks in the Weibull group that shows upside risk. There is now downside risk indication in this group. The  $Z$  value under the De Moivre-Laplace Theorem for the Weibull group is  $Z = ((1 - 71(0.125))/\sqrt{71(0.125)(0.875)})$  or  $Z = -2.82$ ; compared to -1.65, the upside risk in the Weibull group is statistically significant.

**Table 5** List of Upside Risk Stocks in the Weibull Group

Stock Symbol	30-days Mean	Mean: $\mu$	Deviation: $\sigma$	$Z_{upside}$
AMATA	17.53	17.12	0.75	1.39
AP	7.38	7.20	0.40	-1.40
BCH	7.94	7.64	0.74	1.00
BLAND	1.51	1.36	0.20	-0.96
MBCL	1.90	1.87	0.08	2.66
BTS	9.26	9.15	0.22	-1.53
EARTH	4.85	4.78	0.13	1.27
TRIPL	2.78	2.71	0.17	0.94
TUF	20.63	20.44	0.46	-1.12
UV	8.04	7.88	0.39	-1.28
VGI	4.55	4.42	0.24	-1.14

The upside risk shows that  $Z_u = ((57 - 71(0.11)) / \sqrt{71(0.11)(0.89)})$ ; thus,  $Z_u = 18.63$  which is higher than the standard reference value of 1.65. The upside risk for the Weibull group is statistically significant. No stocks in the Weibull group manifest downside risk. Among the Fréchet group of stocks show a total of 9 downside risk at CI 0.95, 0.90 and 0.80.

## DISCUSSION

It has been asserted that normality has been assumed for the sample; however, the standard score equation has been used for verifying the presence of exceedance. These two conditions are not contradictory. The examination of the sample distribution consists of two stages: (i) identifying the exceedance threshold; and (ii) verify the sample distribution through the tail index. The sample is drawn from a non-finite population whose characteristic is defined by the law of large number which states that at an adequate size the population and the sample means are equal. The probability distribution of such population takes the form of a normal distribution; thus, the Z-equation is used in this stage-1. The sample is taken from this non-finite population. The use of the Z-equation reflects the original condition from which the sample is drawn. Once the exceedance is found in the sample, the entire sample is then subjected to distribution verification by using the tail index in stage-2.

Two additional observations are made. First, EVT is an effective tool for risk assessment. This efficacy is evidenced through distribution analysis under EVT. The parameters of the distribution functions allow investors to gauge the threshold of risk level or volatility level and manage risk accordingly. These parameters include distribution location, shape, and scale. Second, the result of empirical test from SET100 data shows that MPT's and BSM's assumptions of normal distribution is not practicable.

If both the upside and down risks are statistically significant, then the stock is volatile. Volatility in this context is defined as  $1.65 \leq Z_k \leq -1.65$ . Thus, in this study, the Fréchet group of stocks shows both significant upside and downside risk. Stocks in this group are considered volatile. They are more appropriate for investors who are risk affine or have higher tolerance for risk. Stocks in the Weibull group shows significant upside risk but has no down side risk. These stocks are considered non-volatile. They are more appropriate for investors with lower tolerance for risk. The method used to arrive at these conclusions is a contribution to stock investment practice.

The reading of individual stocks must be read with the market's movement. In the present case, SET100 as a whole is distributed Weibull. Uner Fisher-Tippett-Gnedenko's GEV equation both Fréchet and Weibull distributed data may be generalized under one general equation  $H(\xi, \mu, \sigma)$ .

Therefore, if the upside and downside risk indicators for SET100 are determined, a  $2 \times 2$  table could be constructed for comparing the individual stock price to the market index.

**Table 6** Chi Square Analysis under  $2 \times 2$  Table

	Upside Risk $Z_u$	Downside Risk $Z_d$	Total Counts
Individual Stock: $X_i$	$a$ 11	$b$ 0	$a + b$ 11
Market: SET100	$c$ 9	$d$ 10	$c + d$ 19
Total Counts	$a + c$ 20	$b + d$ 10	$a + b + c + d$ 30

The test statistic is the chi square test with one degree of freedom or  $\chi_{1(0.95)}^2 = 3.80$ . The chi square test is given by:

$$\chi_1^2 = \frac{(n-1)(ad+bc)^2}{(a+b)(a+c)(b+d)(c+d)} \quad (31)$$

The test under (24) indicates whether the individual stock's upside and downside risks are significantly different from that found in SET100's distribution. The result under equation (24) is  $\chi^2 = 8.39$ . Compared to the standard reference value of  $\chi_{1(0.95)}^2 = 3.80$ , it is concluded that individual stock's exceedance and SET100 are significantly different. Therefore, SET100 could not serve as an indicator or guide for stock price movement. This finding provides an important implication because the index and its components do not reflect one another. This is antithetical to the idea of stock market index: a reference against which individual stock prices are compared. The experience of Thailand's stock market shows that the individual stocks identified by EVT are significantly different from that of the index of which they are components.

#### Risk Assessment Tool

EVT verifies data distribution type through empirical testing. There is no need for making an assumption about data distribution. The investor could verify the type of data distribution through the use of tail index  $\xi$ . Conventionally, risk has been defined as the variance of the returns from the asset. However, in stock price movement analysis, risk is defined as the volatility of the price itself. For this reason, the shape, location and scale of the stock price distribution are key indicators for risk assessment. The location of the mean on the distribution curve indicated expected price level. The shape of the curve indicates the characteristic behavior of the stock price. The scale of the curve indicates the level of volatility of the price. These three parameters may be used as risk assessment tools. EVT provides these tools a practical and accessible to investors at large. No complicated computer software or cumbersome mathematical formulae are necessary. By following series of simple calculations outlined in this paper, investors could assess risk and make investment decision according to the value of  $Z_u$  for upside risk and  $Z_d$  for downside risk. These simplified calculations could be accommodated by common Excel spreadsheet.

#### Implications on Modern Portfolio Theory

Thailand's Stock Exchange is comprised of 9 industries and 16 sectors. It is tempted to accept MPT's concept of portfolio diversification by holding assets drawn from various industries and sectors. However, empirical testing shows that the entire SET100 index components have two types of distribution: Fréchet and Weibull. The type of distribution does not depend on sector or industry. This finding implies that MPT's concept of equity-only portfolio diversification has no merit for the stock market in Thailand unless the portfolio mixes stocks and non-stock assets. This assessment does not apply to the case where MPT advocates a combined holding of stock and bonds. Whether this conclusion could be made about other markets, further research and testing are required.

### Sample Size of Exceedance

The application of EVT is a two-steps process: (i) taking the main sample distributed as  $F(X)$  within which a threshold point  $u$  is designated; and (ii) collecting all points that exceeds  $u$  which distributed as  $G(X)$ . The problem arises when  $G(X)$  is too small to provide meaningful extraction of the tail index in order to verify the distribution of  $G(X)$ . For instance, if  $G(X)$  comprises of two points no distribution could be stipulated. To solve this problem, it is suggested that if the original sample  $F(X)$  is small and the finding of extreme point for  $G(X)$  is also unreasonably small, the entire  $F(X)$  should be used for the tail index calculation. This approach would be more appropriate in stock price analysis since investors trading on spot market would often deal with small sample size. This approach is akin to using the finding of exceedance, no matter how small, as a diagnosis. Once exceedance values are found, the application of EVT on the entire sample is applied. This method is practical for day-traders and short-term investors in the equity market.

This paper urges that no assumption of distribution should be made and that data distribution should be verified through the tail index; yet the identification of the exceedance is obtained through the Z score equation. The underlying assumption of the Z equation is normal distribution. This apparent contradiction may be explained.

Recall that sample  $n$  distributed as  $F(X)$  was taken from population  $N$  distributed as  $\Phi(Z)$ . By definition for adequately large i.i.d.  $N$ ,  $\Phi(Z)$  is distributed normally. This logic was offered by the deMoivre-Laplace theorem (MLT) (Balazs & Toth, 2014). Under MLT, discrete data would approximate normal distribution as the sample size  $n$  approaches infinity, thus:

$$\lim_{n \rightarrow \infty} P \left[ a < \frac{X - np}{\sqrt{npq}} < b \right] \cong \frac{1}{\sqrt{2\pi\sigma^2}} \exp \left( -\frac{(x - \mu)^2}{2\sigma^2} \right) \quad (32)$$

In our case  $N$  is non-finite or  $N \rightarrow \infty$ , thus if the original distribution of  $N$  from which sample  $n$  is taken was  $N(0,1)$  then  $F(X) \leftrightarrow \Phi(Z)$ . Therefore, the use of the standard score:  $Z = (X - \bar{X})/S$  to identify exceedance in set  $n$  reflects  $\Phi(Z)$  distribution type of  $N$  from which  $n$  was drawn. The distribution of  $n$  is also verified by CLT under the variance difference method: (17), *supra*.

### CONCLUSION

This paper reviews three existing risk management tools in stock investment, namely Markowitz's Modern Portfolio Theory (MPT), Black-Scholes Model (BSM), and Jarrow-Rudd Model (JRM). Using SET100 index and its components from Thailand's Stock Exchange as a case study, evidence shows that MPT has a weakness for intra- and inter-sector diversification due to the lack of diversity when the data distribution is the unit of analysis. If the portfolio is a mix of debt and equity, MPT might perform differently; however, such an issue is beyond the scope of this paper. BSM assumes that the market is normally distributed. However, in practice the market is not normally distributed. In this study, price data of the SET contains stocks that are distributed Fréchet and Weibull. BSM has been criticized in the literature and empirical evidence in this study also echoes those criticisms over the model's assumption of normality. Finally, a review of JRM saw an improvement over MPT and BSM by using empirical distribution. However, like BSM, JRM is more applicable to markets where hedging and future contracts are available. Such a requisite is more applicable for advanced and developed markets, such as NYSE, NASDAQ, FTSE, CAC40 or NIKKEI. In emerging markets, such as SET or other markets in the ASEAN region where option contracts may not be available, JRM may still be out of reach as an investment management tool. This paper proposes a fourth alternative under extreme Value Theory (EVT). Under EVT, this paper advocates four-steps process in investment risk management for stock traders: (i) use 30 trading daily sessions as the references sample  $F(X)$  from which extreme values are identified; (ii) with predefined risk tolerance level under percentage

confidence interval, fix a threshold value beyond which the event is classified as extreme; (iii) collect all extreme events into a separate group called  $G(X)$ ; use the tail index calculation to verify the distribution of  $G(X)$  and impute such distribution onto  $F(X)$ ; and (iv) use the shape, location, and scale parameters under Fisher-Tippett-Gnedenko's General Extreme Value (GEV) to assess risk level or investment decision, i.e. buy or sell orders. This 4-steps process may be a practical risk management tool in stock investment in emerging markets where option contracts are not available.

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## EFFECT OF COMMISSION PAYMENT ON RATING INFLATION

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### ABSTRACT

This study investigates whether the commission scheme can be used to discourage CRA's rating inflation under an issuer-pay model. We model a setting where an issuer can request a level of information accuracy; the CRA can decide rating reported regime. The CRA is offered an upfront to cover information cost as well as a commission tied to the project outcome. We find that commission, with the issuer's requested level of information accuracy, can induce the CRA to give truthful ratings in good and bad. In good market, the CRA reports truthfully if the commission is relatively small, and inflates ratings otherwise. In bad market, the CRA always reports truthfully. Our results illustrate how the payment scheme and the issuer's actions can affect the CRA's behavior.

**Key words:** Credit rating agency, commission payment, issuer-pay model, rating inflation, rating accuracy

### INTRODUCTION

In 2007 and 2008, highly rated structured finance products have massively defaulted which ignites the onset of the U.S. financial crisis. Due to credit rating failures, significant amount of media and public attention has continuously been placed on the credit rating agencies (CRAs) since the CRAs have played an important role in reducing asymmetric information between issuing firms and investors by releasing information concerning credit risk of securities which reflects the quality of underlying assets.

Business models of CRAs are analyzed to understand causation of low rating quality. There are two existing business models namely the issuer-pay and investor-pay model the CRA adopts around the world but most CRAs build their business based on the issuer-pay model. However, many observers point out that conflict of interest inherent in the issuer-pay business model of CRAs causes the low quality of ratings (Griffin and Tang, 2011; He et al., 2012; Opp et al., 2013).

The issuer-pay based CRAs collect upfront fee after evaluating credit risk and the credit ratings are announced to public. The CRAs are not financially affected by any defaults deriving from the securities they rated so that they may occasionally issue biased ratings to maximize their profits. Besides, the CRA may not fully reveal all information of underlying assets. To mitigate the CRAs' incentive to give out biased ratings, Partnoy (2009) proposes policy that CRA compensation should be tied to their performance. Accordingly, this study focuses mainly on impacts of commission payment on CRAs' incentive toward issuing accurate credit ratings.

To fill the gap of the recommended policy, this theoretical study attempts to analyze whether commission payment can induce issuer-pay based CRAs to produce accurate ratings. To monitor CRA's incentive toward information revelation in a rating evaluation process, the issuing firm in this study is modeled to choose information level that the issuer-pay based CRA employs in information production. In addition, the CRA's behavior of inflated rating is taken into account. However, this study considers only the case that issuers purchase solicited ratings from CRAs.

### LITERATURE REVIEW

There are endogenous and extraneous factors that can motivate issuer-pay based CRAs to issue inflated ratings. Extraneous factors that motivate the CRA to inflate ratings are such as rating shopping behavior of issuing firms, regulatory reliance on ratings, and increasing competition in CRA

industry. The issuing firms' behavior of rating shopping can motivate the CRAs to inflate rating since the CRAs try to extract upfront fee from the firms by offering overly high ratings in exchange of upfront fee (Skreta and Veldkamp, 2009). Increased competition by reducing barrier to entry in CRA industry causes more CRAs which may drive the CRAs to offer overly high ratings to allure the issuing firms to purchase ratings or worsen rating inflation problem (Sangiorgi et al., 2009). Endogenous factors that adversely affect rating quality occur from desire to develop long-term relationship with promising issuing firms, inadequate rating model, and analysts' bias. The CRAs attempts to maintain long-term relationship with potential issuing firms so that they have incentives to offer inflated ratings to the firms (Mullard, 2012). In addition, the rating models fail to determine credit risk of securities, especially complex structured products (Benmelech and Dlugosz, 2010) and CRAs calibrate their rating models by allocating more weight to qualitative information to provide overly high ratings (Ashcraft et al., 2010). Evidence demonstrates that issuers and CRAs have incentive to advocate rating shopping which adversely deteriorates rating accuracy. To address problems of inaccurate rating, risk retention regulation mandates CRAs to retain a fraction of securitized loans so that the issuing firms should prudently screen their loans which may align incentive of issuing firms with incentive of investors (Chemla and Hennessy, 2014). However, the risk retention regulation may not improve efficiency of the CRA since the CRA compensation is not tied to her performance. Accordingly, some financial regulators pay attention to impose some payment scheme that induces the CRAs to assign accurate rating into rating regulation reform (Kotecha et al., 2012). There exist studies on payment scheme to induce CRAs to produce accurate ratings such as Kashyap and Kovrijnykh (2013), Ozerturk (2014), and Bongaerts (2013). Ozerturk (2014) theoretically studies whether upfront fee or rating contingent fee improves rating quality better. The results show that both fees provide similar quality of rating if the CRAs set rating policy prior to soliciting rating but upfront fee can improve rating quality if the CRAs set rating policy after rating is solicited. Bongaerts (2013) derives mandatory co-investments that require the CRA to invest in the securities they rate to improve social welfare so that CRAs' and investors' incentive are aligned. Kashyap and Kovrijnykh (2013) analyzed optimal payment scheme under different agents (social planner, investor, issuing firm) who order ratings while the CRAs' effort is unobservable and compensated only if they provide accurate ratings. The results show that rating accuracy is lowest when the issuing firm orders rating. However, these studies do not incorporate CRAs' behavior of inflating rating into the model. To develop the payment scheme which ties to CRA performance, this study aims to theoretically analyze commission scheme to induce the issuer-pay based CRA to increase rating accuracy by taking the CRAs' behavior of inflating rating into consideration.

## MODEL

A one-period model of performance-based payment scheme is considered. In the market, there are economic agents namely a firm, an investor, and a credit rating agency (CRA). These economic agents are rational and risk-free rate is zero. The investor has sufficient fund to invest in projects. The CRA has information production technology to assess quality of financial assets. A manager-owned firm has no cash and a risky project on hand. The risky project is assumed to be initiated with investment of 1 and yields return at the end of the period. The net cash flow produced is  $R > 1$  if the project succeeds while the net cash flow is zero if the project fails. The project types are classified into two types  $n \in \{g, b\}$  where  $g$  and  $b$  are good and bad types of projects, respectively. The only difference of the projects is the probability of success  $p_n$  and  $0 \leq p_b < p_g \leq 1$ . The expected payoff of each type of projects is:

$$x_n(R) = p_n R - 1$$

Only a good project generates positive payoff  $x_g(R) = p_g R - 1 > 0$ , while a bad project yields negative payoff,  $x_b(R) = p_b R - 1 < 0$ . The firm seeks fund from the investor to finance the project via debt markets. The fraction of good projects before evaluating credit ratings  $\alpha_g$  and a fraction of bad projects before observing credit ratings  $\alpha_b = (1 - \alpha_g)$  are publically known. The sequence of a rating process is: (i) the CRA sets disclosure rule  $\sigma$ , (ii) the investor selects information level  $i$ , and

solicits a rating, (iii) the CRA observes a private signal  $\emptyset$ , and incurs information production cost  $C(i)$ , (iv) the CRA informs an indicative rating  $\tilde{r}$ , and (v) the investor invests in a  $h$ -indicative rating only.

The CRA gets upfront payment which can cover cost of information production at period 0 and gains non-negative profit sharing  $(1 - \beta) \geq 0$  based on its rating accuracy at period 1. The investor pays upfront to the CRA at period 1 and claims portion of retained profit  $\beta \geq 0$  depending on performance of rated assets at period 1. In real practice, the CRA acquires both qualitative and quantitative data to assess success probability of each project. Accordingly, there exists cost of information production in a rating process  $C(i)$  which is strictly convex in the level of information production. The cost of information production is:

$$C(i) = ai^2 \quad \text{and } a > 0$$

The quality of rating evaluation depends on the level of information production,  $i \geq 0$ . The CRA observes a private signal  $\emptyset \in \{h, l\}$  where  $h$  and  $l$  are high and low quality of the project, respectively. The probability that CRA evaluate the project type accurately correlates positively with increased level of information production. On the contrary, the probability that the CRA commits wrong evaluation is reduced when the level of information production increases.

$$\Pr\{\emptyset = h|n = g\} = \Pr\{\emptyset = l|n = b\} = 0.5 + i$$

Where  $i \in [0, 0.5]$  represents level of information production. The level of information production,  $0.5 + i$ , is unobservable. The CRA can privately choose level of information disclosure  $\sigma$  which represents the probability of rating inflation. Since the signal and level of information disclosure are privately known, the CRA may have incentive to offer the investor an indicative rating  $\tilde{r}$  which is higher than the signal to induce the investor to purchase rating.

### Analysis

The issuing firm intends to raise fund from the investor to finance a project via the debt market. To make an investment decision, the investor requires the CRA's opinion toward quality of the project. The firm and investor realize return from the project at the end of period. The CRA charges an upfront fee  $C(i)$  when the investor purchases rating with information level of  $i$ , and gives commission to the CRA  $(1 - \beta) \geq 0$  if the issued rating reflects quality of the project. If the issued rating doesn't reflect quality of the project or the project subsequently defaults, the CRA doesn't gain any commission.

In this study, the issuer-pay model with commission scheme is examined to observe whether it can align the issuer's and investor's incentive and prevent the CRA from giving out overly high rated securities.

The probability of the project to get signal of  $h$  after observing rating is:

$$\pi_{ah}(i) = \alpha_g(0.5 + i) + \alpha_b(0.5 - i)$$

The probability of the project to get signal of  $l$  after observing rating is:

$$\pi_{al}(i) = \alpha_g(0.5 - i) + \alpha_b(0.5 + i)$$

The probability of the project to get an indicative rating of  $h$  after rating evaluation is:

$$\pi_h(i, \sigma) = \alpha_g[(0.5 + i) + (0.5 - i)\sigma] + \alpha_b[(0.5 - i) + (0.5 + i)\sigma]$$

The probability of the project to get an indicative rating of  $l$  after rating evaluation is:

$$\pi_l(i, \sigma) = [\alpha_g(0.5 - i) + \alpha_b(0.5 + i)][1 - \sigma]$$

The success probability given the high-rating project after evaluation is:

$$\pi_{ahs}(i) = \frac{\alpha_g p_g [(0.5 + i) + (0.5 - i)\sigma] + \alpha_b p_b [(0.5 - i) + (0.5 + i)\sigma]}{\pi_h(i, \sigma)}$$

The success probability given the low-rating project after evaluation is:

$$\pi_{als}(i) = \frac{[\alpha_g(0.5 - i)p_g + \alpha_b(0.5 + i)p_b][1 - \sigma]}{\pi_l(i, \sigma)}$$

### Decision of credit rating agency

The CRA can maximize its profit by selecting the level of information disclosure  $\sigma$  so that three different regimes, the CRA can potentially implement are (i) full disclosure,  $\sigma = 0$ , (ii) partial disclosure,  $0 < \sigma < 1$ , (iii) rating inflation  $\sigma = 1$ . The CRA can collect the upfront fee in period 0 and commission in period 1. The rationale issuer finances the  $h$ -rated project only. Therefore, the expected profit maximization of the CRA is:

$$V_{CRA} = \max_{\sigma} [\pi_{ah}(i)x_g(R) + \pi_{al}(i)\sigma x_b(R)](1 - \beta)$$

To determine the CRA's behavior, the optimal choice of disclosure level is studied.

**Proposition 1:** The CRA would adopt either the full disclosure,  $\sigma^* = 0$ , or the rating inflation regime,  $\sigma^* = 1$ . The full disclosure regime is optimal when  $i \geq \bar{i} = \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]}$ . Otherwise, the rating inflation regime is optimal.

The CRA has incentive to strategically select reporting regime (full disclosure or rating inflation) based on level of information accuracy requested by the investor. If the issuer requests level of information accuracy  $i$  lower than the CRA's information-production threshold  $\bar{i}$ , the CRA tends to assign inflated rating (the rating inflation regime). In contrast, the CRA tends to truthfully report rating (the disclosure regime) if the issuer requests level of information accuracy  $i$  higher than the CRA's information-production threshold  $\bar{i}$ . In addition, it is not possible for the CRA to implement the partial disclosure regime  $0 < \sigma < 1$  since it doesn't maximize profit of the CRA.

### Decision of issuing firm

The issuer can choose the level of information accuracy  $i$  to maximize its profit. There are two alternatives for the issuer when solicits the rating in order to make an investment decision: (i) invest in the project given high-rated, and (ii) invest in the project given low-rated. Accordingly, the expected payoff of each alternative  $V_I$  is shown as follows:

(i) invest in the project given high-rated: the expected payoff of the issuer is  $\pi_h(i, \sigma)\{\pi_{ahs}(i, \sigma)R - 1\}\beta - C(i) = [\pi_{ah}(i)x_g(R) + \pi_{al}(i)\sigma x_b(R)]\beta - C(i)$

(ii) invest in the project given low-rated: the expected payoff of the issuer is  $\pi_l(i, \sigma)\{\pi_{als}(i, \sigma)R - 1\}\beta - C(i)$

Since quality of the project is ambiguous to the issuer, it does not make sense for the issuer to opt for the second alternative. Therefore, the issuer's expected profit maximization when interact with the CRA is:

$$V_I = \max_i [\pi_{ah}(i)x_g(R) + \pi_{al}(i)\sigma x_b(R)]\beta - C(i)$$

To examine incentive of the issuer who finance only the high-rated project, optimal choices of information accurately level chosen by the issuer is investigated.

**Proposition 2:** In favorable market and sufficiently low portion of retained profit, the issuer does not acquire any information accuracy  $i^* = 0$ . Otherwise, the issuer demands sufficiently high information accuracy  $i^* = \frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta}{2a}$ .

In favorable market,  $\alpha_g x_g(R) > -\alpha_b x_b(R)$ , the issuer decides to acquire information accuracy  $i$  based on a portion of retained profit the financial asset yields. The issuer tends to not acquire any information from the CRA ( $i^* = 0$ ) if the issuer retains a sufficiently low portion of retained profit because the CRA is optimally motivated to issue accurate rating to secure their large portion of commission. In contrast, the issuer requests the positive level of information accuracy  $i^* = \frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta}{2a}$  that induces the CRA to adopt the full disclosure regime if the issuer allots sufficiently small portion of commission to the CRA.

In unfavorable market,  $\alpha_g x_g(R) \leq -\alpha_b x_b(R)$ , it is optimal for the investor to ask for a positive level of information accuracy  $i^* = \frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta}{2a}$  regardless of how large portion of commission is given to the CRA. The CRA may inflate rating in unfavorable market because she may have incentive to extract upfront fee to survive in the business.

### CONCLUSION

The CRA have control over the information disclosure level that allows her to form rating-reported strategy (e.g., the full disclosure, and rating inflation regime). Based on expected profit maximization, she sets the information accuracy threshold  $\bar{i}$  as criteria to make a strategic decision. If the issuer acquires the information accuracy  $i$  less than the information threshold  $\bar{i}$ , the CRA tends to adopt the rating inflation regime. Contrarily, the CRA tends to implement the full disclosure when the issuer

requires the information accuracy  $i$  greater than or equal the information threshold  $\bar{i}$ . The issuer makes decision to choose level of information accuracy that benefits him most. In both favorable and unfavorable market, the issuer has incentive to require sufficiently high information accuracy level if he prefers to retain a large portion of realized profit from the high rated project. The issuer tends not to request any information accuracy level only if the market is favorable and he realizes only a small portion of profit from the high rated project. In practice, the issuing firm practically retains a large portion of profit from the rated project in either favorable or unfavorable market so that the commission payment scheme can induce the issuer to choose sufficiently high information accuracy level.

With commission payment scheme, the CRA can directly observe whether the issuer has intention to pool good project with bad project because the information accuracy level the issuer requests can imply. In addition, the investor can anticipate how good the proposed project is by looking at the proportion of profit from the project the issuer holds. Accordingly, the commission payment scheme should be a reasonable option to improve rating accuracy. For future study, the commission scheme should be analyzed under the investor-pay model of the CRA.

## APPENDIX

### Proof of proposition 1:

The CRA can maximize her profit by implementing one of the three regimes namely (i) a full disclosure ( $\sigma = 0$ ), (ii) partial disclosure ( $0 < \sigma < 1$ ), or (iii) rating inflation ( $\sigma = 1$ )

$$V_{CRA} = \max_{\sigma} [\pi_{ah}(i) \cdot x_g(R) + \pi_{al}(i) \cdot \sigma \cdot x_b(R)] (1 - \beta)$$

$$V_{CRA} = \max_{\sigma} \left[ [\alpha_g(0.5 + i)x_g(R) + \alpha_b(0.5 - i)x_b(R)] + [\alpha_g(0.5 - i)x_g(R) + \alpha_b(0.5 + i)x_b(R)]\sigma \right] (1 - \beta)$$

The first differentiation:  $\frac{\partial V_{CRA}}{\partial \sigma} = [\alpha_g(0.5 - i)x_g(R) + \alpha_b(0.5 + i)x_b(R)](1 - \beta)$

The second differentiation:  $\frac{\partial^2 V_{CRA}}{\partial \sigma^2} = 0$

From the first differentiation, the profit of the CRA with respect to disclosure-rule level can be either negative or positive depending on the information level selected by the issuer. From the second differentiation, the change of bias rating level does not affect the change in the profit of the CRA so that the CRAs' profit is a linear function of the selected regime.

Since  $\frac{\partial V_{CRA}}{\partial \sigma}$  can be either negative or non-negative, the optimal solution must be boundary. In other words, the optimal regime for the CRA is either full disclosure or rating inflation.

If  $\frac{\partial V_{CRA}}{\partial \sigma} \leq 0$ , then  $(0.5[\alpha_g x_g(R) + \alpha_b x_b(R)] - i[\alpha_g x_g(R) - \alpha_b x_b(R)])(1 - \beta) < 0$ :

$$i \geq \bar{i} = \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]} \quad \text{---(A1)}$$

If  $\frac{\partial V_{CRA}}{\partial \sigma} > 0$ , then  $(0.5[\alpha_g x_g(R) + \alpha_b x_b(R)] - i[\alpha_g x_g(R) - \alpha_b x_b(R)])(1 - \beta) \geq 0$ :

$$i < \bar{i} = \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]} \quad \text{---(A2)}$$

Thus, there exists a threshold of information level  $\bar{i}$  that induces the rating agency to opt for the optimal regime to maximize its profit. If  $\bar{i} \geq \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]}$ , the rating agency adopts the full disclosure regime,  $\sigma^* = 0$ . If  $\bar{i} < \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]}$ , the rating agency implements the rating inflation regime,  $\sigma^* = 1$ .

### Proof of proposition 2:

The issuer's expected when the CRA adopts the full disclosure regime,  $\sigma = 0$ , is:

$$V_i^{FD}(i) = \left[ [\alpha_g(0.5 + i)x_g(R) + \alpha_b(0.5 - i)x_b(R)] \right] \beta - C(i)$$

First differentiation:  $\frac{\partial V_i^{FD}(i)}{\partial i} = [\alpha_g x_g(R) - \alpha_b x_b(R)] \beta - C'(i)$

Second differentiation:  $\frac{\partial^2 V_I^{FD}(i)}{\partial i^2} = -C''(i) = -2a < 0$

Accordingly, the profit of issuer is strictly concave with respect to the level of information so that there exists the information level  $i$  which the issuer can choose to maximize his profit.

Case 1: To find the optimal information accuracy,  $i_o^*$ , selected by the issuer under the full disclosure regime,  $\sigma = 0$ :

The first order condition: 
$$\frac{\partial V_I^{FD}(i)}{\partial i} = [\alpha_g x_g(R) - \alpha_b x_b(R)]\beta - C'(i) = 0$$
$$i_o^* = \frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta}{2a}$$

The optimal information level,  $i_o^*$ , needs to be checked if it is a boundary,  $i_o^* < \bar{i}$ , or interior solution,  $i_o^* \geq \bar{i}$ . To induce the rating agency to adopt the full disclosure regime ( $\sigma = 0$ ), the investor must choose the information level equal to the threshold of the information level ( $\bar{i}$ ) for the boundary solution while the optimal information level ( $i_o^*$ ) is sufficient for the interior solution.

Then  $\sigma = 0$  only if  $i_o^* < \bar{i}$ : 
$$\frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta}{2a} < \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]}$$
$$\beta < \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$$

Then  $\sigma = 1$  only if  $i_o^* \geq \bar{i}$ : 
$$\frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta}{2a} \geq \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]}$$
$$\beta \geq \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$$

Thus, the information level that induces the CRA to adopt the full disclosure regime ( $i_{FD}^*$ ) for both boundary and interior solutions is:

$$i_{FD}^* = \begin{cases} \bar{i} & \text{if } \beta < \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2} \\ i_o^* & \text{if } \beta \geq \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2} \end{cases} \quad \text{---(A3)}$$

Rearrange  $V_I^{FD}$  equation and the profit of the issuer under the full disclosure regime is:

$$V_I^{FD}(i_{FD}^*) = [0.5[\alpha_g x_g(R) + \alpha_b x_b(R)] + i_{FD}^*[\alpha_g x_g(R) - \alpha_b x_b(R)]]\beta - C(i_{FD}^*)$$

When the issuer chooses  $i_{FD}^* = \bar{i}$ , the optimal profit of the issuer under the full disclosure is:

$$V_I^{FD}(\bar{i}) = [\alpha_g x_g(R) + \alpha_b x_b(R)]\beta - a \left[ \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]} \right]^2 \quad \text{---(A4)}$$

When  $i_{FD}^* = i_o^*$ , the optimal profit of the issuer under the full disclosure is:

$$V_I^{FD}(i_o^*) = \frac{[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta}{2} + \frac{[[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta]^2}{4a} \quad \text{---(A5)}$$

$$V_I^{FD}(i_{FD}^*) = \begin{cases} [\alpha_g x_g(R) + \alpha_b x_b(R)]\beta - a \left[ \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]} \right]^2 & \text{if } \beta < \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2} \\ \frac{[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta}{2} + \frac{[[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta]^2}{4a} & \text{if } \beta \geq \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2} \end{cases}$$

Case 2: The issuer's expected when the CRA adopts the rating inflation regime,  $\sigma = 1$ , is:

$$V_I^{RI}(i) = [[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta - C(i)]$$

First differentiation:  $\frac{\partial V_I^{RI}(i)}{\partial i} = -C'(i) < 0$

Second differentiation:  $\frac{\partial^2 V_I^{RI}(i)}{\partial i^2} = -C''(i) < 0$

Accordingly, the profit of issuer is strictly concave in the level of information. From the first differentiation, the profit of the investor with respect to the information level is decreasing so that  $i = 0$  is the optimal information level ( $i_o^*$ ), which needs to be checked for an interior ( $\bar{i} \geq 0$ ) and boundary solution ( $\bar{i} < 0$ ).

If ( $\bar{i} \geq 0$ ), the optimal information level the investor chooses to maximize the profit is:

$$i_{RI}^* = i_o^* = 0$$

Substitute  $i_{RI}^* = i_o^* = 0$  into  $V_I^{RI}$  equation and knowing that  $C(0) = 0$ .

Then, the optimal profit of the issuer under the rating inflation regime is:

$$V_I^{RI}(i_{RI}^*) = [\alpha_g x_g(R) + \alpha_b x_b(R)]\beta \quad \text{---(A6)}$$

If  $(\bar{t} < 0)$ , any non-negative level of information the investor chooses can induce the rating agency to adopt the full disclosure regime ( $\sigma = 0$ ) so that  $i_{FD}^*$  is optimal. From  $i_o^* = 0$ , if  $\bar{t} \geq i_o^*$ , then  $i_{RI}^* = 0$  and  $V_I^{RI}(i_{RI}^*) = [\alpha_g x_g(R) + \alpha_b x_b(R)]\beta$ . If  $\bar{t} < i_o^*$ , then  $i_{FD}^*$  is optimal.

To observe the issuer's incentive, the issuer's profits under the full disclosure and rating inflation regime are compared:

$$\text{Case 1: } V_I^{FD}(i_{FD}^*) \text{ is compared with } V_I^{RI}(i_{RI}^*) \text{ when } \bar{t} = \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]} < 0$$

The issuer's profit depends on the optimal information level ( $i_{FD}^*$ ) chosen since the CRA always adopts the full disclosure regime.  $\beta < \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$  cannot occur in the region of  $\bar{t} < 0$  because

$\beta$  is non-negative by definition. When  $\beta \geq \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$ , the issuer's profit maximized by information accuracy ( $i_{FD}^* = i_o^*$ ) is:

$$V_I^{FD}(i_o^*) = \frac{[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta}{2} + \frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta^2}{4a}$$

The optimal information level is:

$$i^* = i_o^* \quad \text{if } \alpha_g x_g(R) < -\alpha_b x_b(R) \quad \text{---(A7)}$$

$$\text{Case 2: } V_I^{FD}(i_{FD}^*) \text{ is compared with } V_I^{RI} \text{ when } \bar{t} = \frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]} \geq 0$$

If  $\bar{t} = 0$ , there is no  $\beta$  that can satisfy  $0 \leq \beta < \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$  and  $\beta > \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$ . Thus,  $\beta$  that can satisfy the two conditions occurs only under the region of  $\bar{t} > 0$ .

2.1 When  $0 \leq \beta < \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$  so  $i_{FD}^* = \bar{t}$ ,

$$\frac{V_I^{FD}(i_{FD}^* = \bar{t})}{V_I^{RI}(i_{RI}^* = 0)} = \frac{[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta - a\left[\frac{\alpha_g x_g(R) + \alpha_b x_b(R)}{2[\alpha_g x_g(R) - \alpha_b x_b(R)]}\right]^2}{[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta}$$

Divide Numerator and denominator by  $[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta$ :

$$\frac{V_I^{FD}(i_{FD}^* = \bar{t})}{V_I^{RI}(i_{RI}^* = 0)} = 1 - \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{4\beta[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$$

From  $\beta < \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$  and let  $z = \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$ , then  $\frac{z}{\beta} > 1$ ;

$$\frac{V_I^{FD}(i_{FD}^* = \bar{t})}{V_I^{RI}(i_{RI}^* = 0)} = 1 - \frac{z}{4\beta} < 1$$

Then, the issuer's profit under the full disclosure regime is always less than that under the rating inflation regime so that the optimal information level is:

$$i^* = 0 \quad \text{if } \alpha_g x_g(R) > -\alpha_b x_b(R) \text{ and } \beta < z$$

2.2 When  $\beta \geq \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$  so  $i_{FD}^* = i_o^*$ :

$$\frac{V_I^{FD}(i_{FD}^* = i_o^*)}{V_I^{RI}(i_{RI}^* = 0)} = \frac{[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta}{2} + \frac{[\alpha_g x_g(R) - \alpha_b x_b(R)]\beta^2}{4a}$$

Divide Numerator and denominator by  $[\alpha_g x_g(R) + \alpha_b x_b(R)]\beta$ :

$$\frac{V_I^{FD}(i_{FD}^* = i_o^*)}{V_I^{RI}(i_{RI}^* = 0)} = \frac{1}{2} + \frac{\beta[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}{4a[\alpha_g x_g(R) + \alpha_b x_b(R)]}$$

From  $\beta \geq \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$  and let  $z = \frac{a[\alpha_g x_g(R) + \alpha_b x_b(R)]}{[\alpha_g x_g(R) - \alpha_b x_b(R)]^2}$ , then  $\frac{\beta}{z} \geq 1$ ;

$$\frac{V_I^{FD}(i_{FD}^* = i_0^*)}{V_I^{RI}(i_{RI}^* = 0)} = \frac{1}{2} + \frac{\beta}{4z}$$

Then, the optimal information level is:

$$i^* = \begin{cases} 0 & \text{if } \alpha_g x_g(R) > -\alpha_b x_b(R) \text{ and } z \leq \beta < 2z \\ i_0^* & \text{if } \alpha_g x_g(R) > -\alpha_b x_b(R) \text{ and } \beta \geq 2z \end{cases} \quad \text{----(A8)}$$

From (A7) and (A8), the optimal information accuracy the investor chooses is:

$$i^* = \begin{cases} 0 & \text{if } \alpha_g x_g(R) > -\alpha_b x_b(R) \text{ and } \beta < 2z \\ i_0^* & \text{if } \alpha_g x_g(R) > -\alpha_b x_b(R) \text{ and } \beta \geq 2z; \text{ or } \alpha_g x_g(R) \leq -\alpha_b x_b(R) \end{cases}$$

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## PAYMENT BANKS: SUSTAINABLE GAME CHANGER OR A PASSING FAD

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### ABSTRACT

In this paper we focus on the recently licensed payment banks which are part of the ambitious Indian banking reforms towards complete financial inclusion. We study the stipulated regulatory framework and examine the need that led to the establishment of these banks. We examine the electronic and mobile banking experiences in other developing countries and discuss how establishment of payment banks is a step forward in the right direction. Further we analyse the huge market potential for these banks and discuss the challenges that need to be overcome to realise the prospects. Moreover, we examine the market and analyse how these new age niche banks may either compliment or compete with the traditional banks depending upon how the latter chose to operate.

### INTRODUCTION

Payment bank is an advanced form of prepaid instrument issuer and can be understood as financial institutions which provide banking services but are not allowed to operate as a full-fledged bank. e.g. in India, payment banks are not allowed to lend money and cannot accept deposits beyond a limit. In other words they are a non-full service niche bank which can provide limited banking services.

In September 2013, Reserve Bank of India (RBI), the regulator of Indian banking system set up a committee on Comprehensive Financial Services for Small Businesses and Low Income Households. The mandate for the committee was to frame a clear vision and guidelines for improving the financial inclusion in India. RBI released the detailed report in January 2014 and presented the ambitious recommendation of providing universal banking to all adult citizens. To achieve this target, the committee recommended setting up of differentiated banking system and suggested establishment of payment banks among other proposed differentiated banks.

Acting on the report, RBI came up with draft *guidelines for Licensing of Payments Banks* in July 2014 and with final guidelines and invitation of applications in November 2014. Application came from more than 40 entities and finally in August 2015 in principle approval was given to 11 applicants to setup payment banks in India.

#### Guidelines for Payment Banks

RBI has issued the following guidelines for newly licensed payment banks in India

Payment banks can

- Accept deposits upto Rs. 1,00,000 (approx. \$1500)
- Pay interest on the deposits
- Provide service for remittances and transfer using mobile phones
- Issue debit cards and ATM cards and these will be acceptable in ATMs of all banks
- Offer service like payment of utility bills and cashless purchases etc through mobile phone
- Offer foreign exchange cards which can be used across all banks ATMs
- Provide service of direct money transfer to bank accounts at low cost as they are part of bank gateway
- Distribute financial products like mutual funds and insurance
- Provide card acceptance mechanisms to third parties such as the ‘Apple Pay

Payment banks cannot

- Provide lending services
- Issue credit card
- Accept deposits greater than the stipulated amount (Rs. 1 lakh)
- Accept Non Resident Indian deposits

- Set up subsidiaries for non-banking financial services.

#### Need for Payment Banks

The traditional banking system has not been able to reach a mass chunk of the Indian population. The rural and lower income population which forms a major portion of the country's population has remained aloof from the formal banking. "The banking model has worked for only 20 to 30 per cent of the population," says Naveen Surya, Managing Director of ItzCash. The Prepaid Payment Instruments (PPI) have somewhat helped in increasing the penetrating. The increasing reach and decreasing cost of mobile communications has enabled the mobile network to reach places where no banking system has ever gone. However lack of trust among masses towards PPIs and PPIs themselves being not part of formal banking were causes of hindrances in expanding the reach.

The intention of RBI when granting payment bank license was to enable the last-mile access in areas where banking services are limited or have not been able to reach. Since the technology dependant payment banks will not require huge infrastructure requirements as required by brick and mortar banking system, therefore RBI expects that payment banks will help in reaching every household through mobile technology.

The need of setting up of payment banks can thus be summed as below:

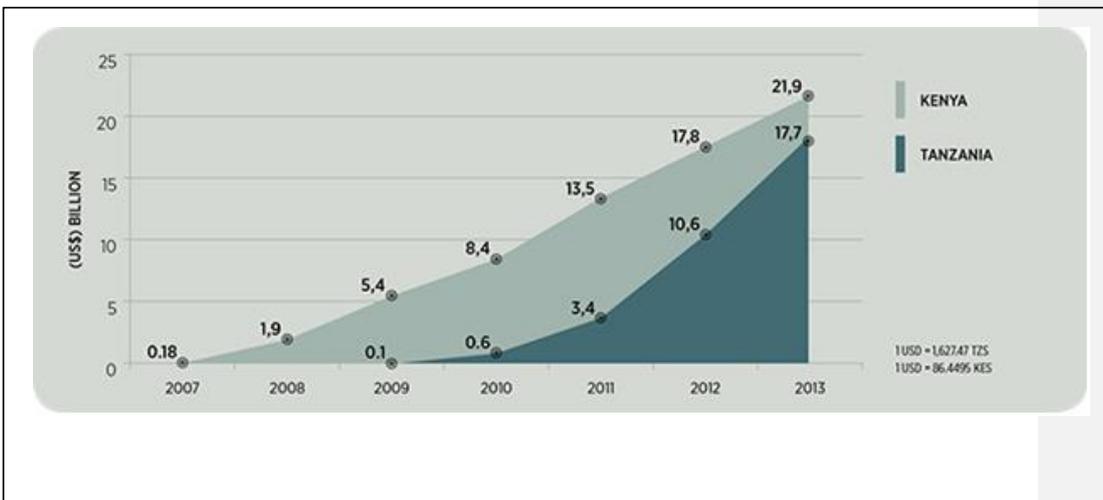
- 1) Lack of banking infrastructure in remote areas
- 2) Enable reach of mobile banking to the last mile and thus aid in cheap services
- 3) Save poor from clutches of informal banking
- 4) Enable efficient transfer of government subsidy and benefits
- 5) Enable convenient remittance service to migrant labour force
- 6) Enable convenient payment of utility bills, insurance premiums etc.

RBI has stated "The objectives of setting up of payments banks will be to further financial inclusion by providing (i) small savings accounts and (ii) payments/remittance services to migrant labour workforce, low income households, small businesses." etc.

#### Mobile Banking Experience of Other Countries

India is calling this new category of banks as payment banks and though this concept of niche banking entity is somewhat new, it's not totally innovative. The concept of payment banks is based on the prepaid mobile instruments which is already working well in many parts of world especially in developing countries e.g. M-Pesa in Africa.

One of the highly cited success stories is that of Kenya where Vodafone's M-Pesa has become a huge success. M-Pesa was introduced by Vodafone, Safaricom and IBM in 2006. As per latest reports, now over \$1 billion worth of M-Pesa transactions happen every month and there are over \$13 million active users. The scale of success can be understood by the fact that more than 25% of the Kenyan GDP is routed through M-Pesa and that more than 75% of the Kenyan population is using it. Moreover, Safaricom and Vodafone are earning more than 20% of their revenues from this M-Pesa system. In this system mobile phones are used for electronic payments, deposits and withdrawals. For depositing and withdrawing cash they can exchange cash with electronic value at a network of retail agents which are small grocery or other shops. Once money is in their account they can use mobile phone for payments of bills, buying airtime etc. The success of this system is also seen in Tanzania, where more than 5 million people do transactions worth \$1.5 billion using the M-Pesa system.



Source: <http://blog.unibulmerchantservices.com>

Figure 1: Comparing the yearly transaction value of mobile money in Kenya and Tanzania

Similar systems are found at other places too e.g. in Philippines ‘Smart Money’ offered by Banco De Oro (BDO) which is a person to person transfer system using mobile technology has become quite popular since its start in 2001. The service is supported by Master Card which is an added advantage and now Apple has also tied up to offer Apple Pay. More than 6 million people have been using this service and Smart Money has been termed as a success.

In Pakistan, a similar type of mobile banking service called EasyPaisa provided by Telenor and Tameer Bank is one of the leading payment service with more than 7 million users and they have established one of the biggest branchless banking service in Pakistan. The combined skill of a mobile operator (Telenor) and a large bank (Tameer bank) has led to this success.

In Bangladesh mobile banking service like BRAC Bank’s subsidiary bKash accounts as well as M-Cash, launched by Bangladesh’s largest private bank, are becoming hugely popular.

Even in Afghanistan, a similar type of mobile banking service has been launched by the country’s largest telecommunications company Roshan and Vodafone have launched M-Paisa and the Ministry of the Interior have been using it to pay police salaries. The service is gaining popularity and has now more than a million users.

India already has these M-Pesa type of prepaid instruments (PPI) and were duly licensed by the RBI since 2009. These instruments though somewhat popular in urban areas, have never been huge success. However by issuing the license for Payment banks the regulator had made a step forward. These payment banks in addition to being issuer of prepaid instruments will now also be part of the formal banking system. This will allow for more security and control and at the same time will increase the bouquet of service that can be provided by them. For example now they can have their own ATM cards and ATM machines and can now transact without the need of a supporting full scale bank account. Thus the concept of payment Banks is the next step in mobile banking.

### Potential for Payment Banks

The payment banks will offer interest rates in line with the prevailing interest rates in saving accounts of traditional banks i.e. 4-5% and they will deploy these funds in government securities (mandated by RBI) and earn 7-8%. They may also charge 1-2% percent for remittances. Experts believe that initial margin will be around 1% but the firms needs to survive on volumes.

According to industry estimates, the domestic remittances alone account for Rs. 12,000 million and has annual growth rate of 10 to 15%. The payment banks are also allowed to distribute mutual funds and insurance. In India the mutual funds annual subscription is approx. Rs. 5,400 million and the life insurance premium is around Rs. 11,964 million. The commission from these can be significant. Moreover the utility bill payment is estimated at Rs. 96,000 million with annual growth

of 20-22%. Similarly railways ticketing is around 4,00,000 bookings per day and mobile recharges are around Rs. 500 crores with growth rate of 8 to 10%.

Moreover, according to Deloitte, developing countries like India are far behind developed economies in terms of bank branches, number of ATMs and PoS Terminals. As per its report India has 1.1 bank branches per million people in comparison to 3.6 in US. Similarly number of ATMs are 1.1 per million in comparison to 13.7 in US and PoS terminals are 684 per million in comparison to 17,020. According to Capgemini, world payments report the M-payments has an annual CAGR of around 60% in developing countries which is huge in itself.

Table 1: Trend in usage of Mobile Banking in India

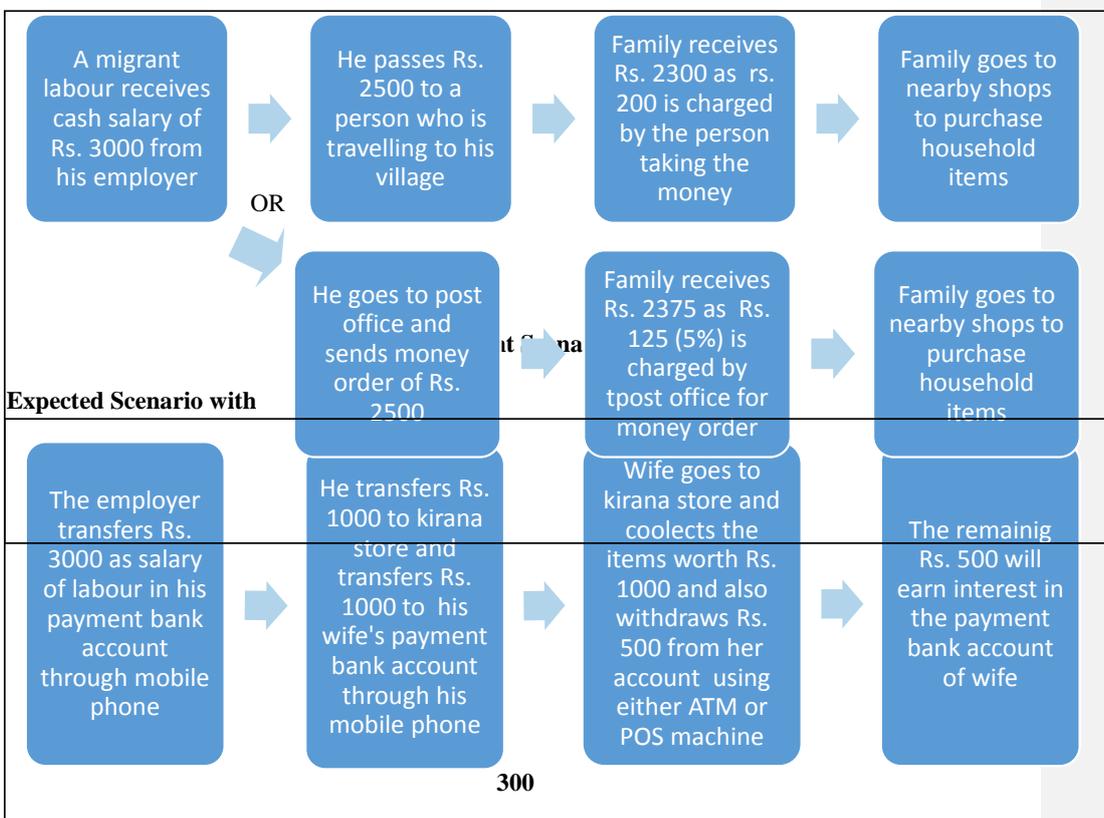
Year	No. of Users (Million)	Volume (Million)	Value (Billion Rs.)
2010-11	5.96	6.85	6.14
2011-12	12.96 (117.45%)	25.56 (273.139%)	18.21 (196.58%)
2012-13	22.51 (73.69%)	53.30 (108.53%)	59.90 (228.94%)

Note: figures in brackets indicate the growth over the previous year.

Source: RBI

Many of the bank accounts opened for the poor have remained inactive. For example according to the website of ‘Pradhan Mantri Jan Dhan Yojana’ (the Prime minister’s scheme to open bank accounts for unbanked people) 45% of the 180 million accounts opened are dormant. This again provides a large opportunity for the new payment banks. Thus large market volume and its high growth potential together provide huge opportunities for the upcoming payment banks and will keep the firms making foray into the business deeply interested.

Indian Finance Minister, Mr. ArunJaitley said payment banks “will change the way people think, change the way they keep the money, where they keep their money, the way they pay,” Figure 2 show an examples of change that is expected by establishment of payment banks.



## Payment Banks

### Figure 2: Change in transaction scenario before and after payment banks

#### Challenges for Payment Banks

Despite the growing presence of cellular networks and mobile services, digital payment services in most countries (other than few exceptions) have not tasted much success. In India too, despite the presence of a considerable number of PPI issuers, their services have mostly remained concentrated to the higher and upper middle income groups. The road for payment banks too will not be very smooth and there are a number of challenges that lie in their path.

*Addiction to cash:* India has traditionally remained a cash loving society. Even in urban areas where all banking facilities are easily accessible, one of the most preferred mode of payment for e-commerce purchase is 'Cash on Delivery'. A survey conducted by 2014 Intermedia Financial Inclusion Insights (FII) has found that more than 80% adults prefer cash for small to medium size transactions. The payment banks would need to overcome this barrier by either offering extremely low transaction fees or by even offering free transactions for promoting use of payment bank accounts.

*OTC Trap:* Microsave coined a term called 'OTC Trap' which means that users only use digital wallets/accounts to transact and will not store any money in it. This has been witnessed widely in Pakistan and Bangladesh. This does not allow the banks to use the deposited fund for investments and earn returns. Thus the payment banks need to promote use of account rather than just becoming a facilitator for payment.

*Availability of Alternatives:* India already has low cost remittance alternatives like postal department, online banking and informal Hawala channels all costing below 6%. The payment banks need to price their products very competitively in order to compete with these channels.

*Large Investment Requirements:* International examples suggest that the payment banks need to invest heavily upfront build a network of agents and correspondents. Thus these banks will need to have deep pockets as the returns in the initial period will be limited and it will take some time for them to break even.

Hence though the opportunities are exciting, the challenges threaten to provide enough hiccups in the ride of payment banks.

Payment Banks: possible threat to existing banks:

At this point of time it is very difficult to predict whether these new payment banks will impact the existing banks positively or not. One school of thought believes that these banks will prove as disrupters to the existing PS and private banks. However, RBI Governor has an opposite school of thought and he is of the view that these banks would complement rather than compete among each other. Although, the new payment banks will increase competition for existing banks, they will also be catering to the needs of people who have limited funds at their disposal, Public Sector banks, with much more resources available, can focus on high networth clients.

RBI had issued licences for 11 payment banks, interestingly, which includes names like Airtel, Vodafone and Idea, which are mobile service providers who are already having a customer base of over 580 million potential customers. Since many of them are already well placed the mobile technology they can pose to be biggest threat to Public Sector Banks. These mobile service providers, as they already have grounds prepared for them.

Economists and thinkers of the era have an opinion that nothing will be same after the implementation of the system. The old oligopoly of the big banks will of course be under threat from the new challengers. This will make banking services accessible to nearly all potential customers rich or poor. Costs for customers will come down and service quality should improve with time as the competitive landscape changes dramatically with the entry of scores of differentiated banks.

Looking from another perspective, payments banks will try to wean away the cheapest deposits of banks, while small banks would like to target the highest interest-paying borrowers when they expand across the country.

To an extent, there has been some complaint about how the initial lot of payment bank licensees has been chosen by the Reserve Bank. Looking at the larger picture is that this may not matter. The central banks' intention is to make payment and small finance bank licenses available on capture anyone who is eligible after assessing how the initial set of licensees performs. Cautious as always, the RBI is probably doing the right thing by moving slowly.

It is believed that of the two sets of new, differentiated banks, payment banks are probably going to do more in the initial stages, since they can dramatically increase the reach of banking by using mobile-based technology. And the biggest players in this game are all well-funded and credible. Among the initial licensees are the Aditya Birla Group, Airtel, Vodafone, Reliance, India Post (the country's postal service), billionaire DilipShangvi and PayTM, the e-wallet company.

Looking at the numbers, Airtel has 230 million customers; Vodafone has 185 million and Idea 162 million. That's seen as over 577 million potential payment bank customers between just three future payment banks. Indian Postal, with over 1.5 lakh post offices, many in semi-urban and rural areas, can serve several hundred million customers from its branches. PayTM is already having a customer base of 25 million e-wallet customers, who are all potential targets for its payment bank.

Together these 11 payment banks can easily double the base of banking customers and this figure is not even counting future entrants. Currently, India has over 1.2 billion bank accounts which are almost equal to the size of the country's population. This picture is of course, distorted by the multiple accounts that individuals and companies may hold in urban areas. There are large gaps in banking coverage not only in rural areas, but also in the cash economy of urban areas.

For bank customers, although there is availability of multiple options in terms of banks (public sector, private sector, cooperatives, etc), competition is still limited due to one fundamental factor: opening and changing bank accounts is such a hassle, especially with the new KYC (know your customer) norms, that few people change banks even if service is poor and charges and high fees. Inertia rules the banking sector, and this benefits the incumbents.

Payment banks will not only offer more interest on savings deposits, but also seamless payment options through mobiles, this will bring about revolution in the banking system. This option already exists for regular banking customers, but most customers also prefer to use mobile e-wallets for everyday payments on utility bills, taxi services, and small ticket e-commerce purchases. This is done by loading e-wallets with money shifted from bank accounts even though payments can also be made through credit and debit cards.

With the onset of payment banks, this process of shifting money from bank accounts to wallets will become truly seamless. This will motivate many customers to open payment bank accounts in addition to their regular bank accounts. They may segregate small-ticket payments from other bank payments by holding separate accounts. This will prove to be a key value proposition.

### **Can the new Payment banks also compliment the exiting banks?**

The upcoming payment banks that will start their operations over the next 8-12 months are poised to change the way Indian banking system works. The Indian market of payments is around \$15.5 trillion. According to a report by Bank of America mobile banking will rise steeply and in six to seven years may rise to 10% from the current level of 0.1% and the values may increase by more than 200 times, reaching a value of \$3.5 trillion.

Although large banks are confident of retaining their market share the smaller bankers have reasons to worry. The large players that have got payment bank licenses including Vodafone, Airtel, Reliance Industries etc. already have a large network and may be able to leverage that for attracting existing and new customers to use payment bank deposit account.

Experts believe that the existing banks have an edge over payment banks as unlike the latter they are allowed to lend too. If these traditional banks can tweak their business model suitably then it is believed the new generation banking system may not cause major disruptions since it's not an either or situation. The only prelude is that the existing Public Sector and private banks will have to bring about some changes in their technology platforms so as to provide similar facilities to their customers.

Moreover the deposit limits for payment banks is only Rs. 1 lakh and these banks have to invest these in government securities only.

The existing banks have also embarked upon the policy that 'if you cant beat them, join them'. The largest bank in India SBI has teamed up with Reliance Industries and Kotak Mahindra Banks has tied up with Airtel. This will enable the joint ventures to bring together the reach of telecom companies with expertise of traditional banks. Regular banks are hoping that by partnering with new payment banks they can tap some payment bank customers for regular banking services too. The experts feels that even a small percentage of this segment will have significant improvement in their customer base.

Some of the payment bank licensees are telecom firms with wide reach, others like Tech Mahindra, Paytm and NSDL have technology expertise and these firms feel that by collaborating with existing banks they may be also be able to tap some of the banks existing customers towards mobile payments.

The Department of Postal services which boasts of the largest postal network in the world commands high public sector status. It also accepts deposits from the public and has 2.6 lakh Postmans which easily help it to establish as a key player in the payments space. Thus the existing banks must try and attract the customer base to grow their loan books. Banks like SBI and Kotak are thus attempting to do this with partnerships and other banks like Union Bank of India is looking for partnerships with future payment banks license holders. Financial express feels that Payments banks will cover using the blue ocean strategy will bring more households into the financial ecosystem and banks must try and access these customers.

Dipak Gupta, joint managing director at Kotak Mahindra Bank feels “There is enough demand for banking products and services, and both the old and new can participate in fulfilling India’s banking needs.”

## CONCLUSION

In this paper the recently introduced concept of payment banks has been studied which essentially an upgraded version of mobile payment system already implemented successfully in African countries. Indian regulator expect this niche banking system to taste at least the same success that it has seen elsewhere. The study shows that there is immense potential for the new players in terms of volume and growth. However there are also a number of financial, social and infrastructure challenges that may pose hindrances in the smooth sailing of this concept. The large untapped rural population offers an immense opportunity to the bankers however the other low cost alternatives and hesitancy towards information technology will be obstacles for flourishing of this banking reform.

It is felt that the new payment banks may pose some serious challenges to the existing oligopoly of banking system. However, if these banks seriously pay attention for building the financial inclusion ecosystem, they will be able to compliment the prevailing banking system, which would be win-win situation for all.

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## **BOARD STRUCTURE AND FIRM FUTURE PROSPECT: FINANCIAL ANALYST PERSPECTIVE**

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### **ABSTRACT**

Agency Theory and Information Asymmetry is the new theory of finance which affects the stock market price reaction. There is no extensive study on the CEO power and Board Structure effect on Financial Analyst Perspective. Staggered boards (or classified boards) constitute one of the most controversial governance provisions. A fierce debate continues on the costs and benefits of staggered boards. We contribute to the debate by investigating how financial analysts view staggered boards. It has been argued that staggered boards promote managerial entrenchment and exacerbate the agency conflict. To the extent that staggered boards are detrimental and the detrimental effect is not efficiently priced in the market, financial analysts should assign less favorable recommendations to firms with staggered boards. Our empirical results bear out this hypothesis, even after controlling for other governance provisions. A propensity score matching analysis also confirms that staggered boards are viewed unfavorably by financial analysts. Finally, further analysis shows that staggered boards are not merely associated with, but likely bring about poor analyst recommendations.

*JEL Classification: G30, G34*

*Keywords: analyst recommendations, financial analysts, classified boards, staggered boards, corporate governance*

### **INTRODUCTION**

Agency Theory and Information Asymmetry is the new theory of finance which affects the stock market price reaction. Staggered boards or classified boards are one of the most contentious corporate governance provisions. On the one hand, staggered boards have been argued to promote managerial entrenchment, exacerbate agency problems, and lower firm value (Bebchuk and Cohen, 2005). They are also vilified by shareholder activists and institutional shareholders. Therefore, staggered boards are usually viewed in a negative light. Our study offers an interesting perspective to the debate on the costs and benefits of staggered boards. One benefit of a staggered board is that it allows managers to adopt long-term strategic policies that do not focus on short-term returns. It appears that staggered boards play a crucial role in mitigating managerial myopia.

Our primary objective is to determine how equity analysts view staggered boards. To the extent that managerial entrenchment hurts firm value but is not efficiently reflected in the current stock price, it should be incorporated into analyst recommendations. Recent studies by Bebchuk and Cohen (2005) and Faleye (2007) demonstrate that one critical mechanism that promotes managerial entrenchment is a staggered board (or classified board). There is also robust empirical evidence that staggered boards have far stronger effects on various corporate outcomes than do other corporate governance provisions (Bebchuk and Cohen, 2005; Jiraporn and Liu, 2008). We hypothesize that financial analysts take into account the managerial entrenchment engendered by staggered boards and adjust their recommendations accordingly.

Our results demonstrate that firms with staggered boards receive significantly less favorable recommendations from financial analysts. These results remain even after accounting for several firm-specific characteristics such as firm size, leverage, profitability, growth opportunities, R&D spending, performance volatility, and liquidity. The evidence suggests that financial analysts take into consideration managerial entrenchment. The adverse effect of staggered boards on equity analyst

recommendations is consistent with the notion that staggered boards promote managerial entrenchment, exacerbate the agency conflict, and ultimately hurt firm value (Bebchuk and Cohen, 2005; Faleye, 2007). Furthermore, this deleterious effect of staggered boards does not appear to have been efficiently incorporated into the stock price. For robustness, we employ propensity score matching to create a control group of firms without staggered boards based on twelve firm characteristics. The propensity score matching analysis confirms that staggered boards are viewed unfavorably by financial analysts. Our results make interesting contributions to the debate over the costs and benefits of staggered boards and should be of interest to a wide range of parties, including investors, shareholders, shareholder activists, institutional shareholders, financial analysts, as well as regulators.

## RELEVANT BACKGROUND AND PRIOR LITERATURE

### How do staggered boards promote managerial entrenchment?

In the U.S., boards of directors can be either unitary or staggered. In firms with a unitary board, all directors stand for election each year. In firms with a staggered or classified board, directors are divided into three classes, with one class of directors standing for election at each annual meeting of shareholders. Ordinarily, a classified board has three classes of directors, which in most states of incorporation is the maximum number of classes allowed by state corporate law (Bebchuk and Cohen, 2005).

Boards can be removed in one of the following two ways. First, a replacement can occur due to a stand-alone proxy fight brought about by a rival team that attempts to replace the incumbents but continue to run the firm as a stand-alone entity. Second, a board may be replaced as a consequence of a hostile takeover. Either way, the difficulty with which directors can be removed critically depended on whether the firm has a staggered board.

In a stand-alone proxy contest, staggered boards make it considerably more difficult to win control by requiring a rival team to prevail in two elections. In a hostile takeover, staggered boards protect incumbents from removal due to the interaction between incumbents and a board's power to adopt and maintain a poison pill.<sup>25</sup> Before the adoption of the poison pill defense, staggered boards were deemed only a mild defense mechanism as they did not impede the acquisition of a control block. The acceptance of the poison pill, however, has immensely strengthened the anti-takeover power of staggered boards.

### Prior literature

Two crucial studies by Bebchuk and Cohen (2005) and Bebchuk, Cohen and Ferrell (2009) show that, even after accounting for the effects of other governance provisions, staggered boards still exhibit a strong negative impact on firm value. In fact, the regression results reveal that the impact of staggered boards on firm value is *seven* times stronger than the effects of other governance provisions. Bebchuk and Cohen (2005) conclude that "staggered boards play a relatively large role compared to the average role of other provisions included in the GIM Index."<sup>26</sup> The effect of staggered boards on firm value is not only statistically significant but also economically significant. Having a staggered board is associated with Tobin's *q* that is lower by 17 percentage points (Bebchuk and Cohen, 2005).

Additional evidence on the effect of staggered boards is reported in several recent studies. For example, Faleye (2007) reports that staggered boards reduce the probability of forced CEO turnover, are associated with a lower sensitivity of CEO turnover to firm performance, and are correlated with a lower sensitivity of CEO compensation to changes in shareholder wealth. Masulis, Wang, and Xie (2007) demonstrate that announcement period returns are 0.57% to 0.91% lower for bidding firms with staggered boards. They attribute this finding to the self-serving behavior of acquiring firm managers, who themselves are insulated from the market for corporate control.

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<sup>25</sup> A poison pill is a rights plan that permits shareholders to dilute the value of the position of a bidder that acquires a large block – a board can practically prevent a hostile bidder from proceeding to purchase such a block (Bebchuk and Cohen, 2005).

<sup>26</sup> GIM stands for Gompers, Ishii, and Metrick (2003).

Jiraporn and Liu (2008) examine how capital structure decisions are influenced by the presence of a staggered board. The evidence reveals that even after controlling for the effects of other governance provisions, firms with staggered boards are significantly less leveraged than those with unitary boards. They argue that staggered boards promote managerial entrenchment, thereby allowing opportunistic managers to eschew the disciplinary mechanisms associated with debt financing. The regression results show that the impact of staggered boards on leverage is six to nine times stronger than the effects of other governance provisions included in Gompers et al.'s (2003) Index.

Jiraporn and Chintrakarn (2009) report that staggered boards make firms more likely to pay dividends. Among firms that pay dividends, staggered boards induce larger dividend payments. Jiraporn and Liu (2011) find that firms with staggered boards exercise less accounting discretion. In particular, staggered boards are associated with less income-inflating earnings management. Chintrakarn, Jiraporn, and Jiraporn (2013) show that staggered boards offer managers protection from the takeover market and thus induce them to live a quiet life, where they invest only in low-risk projects. Finally, Chintrakarn, Chatjuthamard, and Jiraporn (2013) examine the effect of staggered boards on human rights performance. It is documented that firms with staggered boards exhibit significantly better human rights performance. They attribute the results to the fact that staggered boards insulate managers from takeover threats and thus motivate them to focus more on investments that yield long-term benefits, such as investments in human rights promotion.

Furthermore, staggered boards have become a subject of intense investor scrutiny. The Institutional Shareholder Services (ISS) recommends in its 2006 proxy voting guidelines that its membership vote against proposals to stagger a board or vote for proposals to repeal staggered board provisions. Additionally, ISS recommends withholding votes for directors who ignore shareholder resolutions to de-stagger a board. ISS also lowers its governance score for firms with staggered boards. Similarly, CalPERS, the largest public pension fund in the U.S., has targeted firms for shareholder votes to remove staggered boards from their corporate charters. Various mutual fund companies including TIAA-CREF and Fidelity Investments also call for voting against the adoption of and for the removal of staggered board provisions. No other governance provisions have attracted nearly as much controversy from investors as staggered boards, underscoring staggered boards' dominant role relative to other governance provisions.

Given the above discussion, it is obvious that staggered boards have a serious impact on several critical corporate outcomes, including overall firm value, capital structure, CEO compensation, CEO turnover and takeover gains. It also appears that the effect of staggered boards is large relative to the average effect of other corporate governance provisions. The significance of staggered boards cannot be overemphasized. Consequently, in this study, we narrowly concentrate on the role of staggered boards and investigate their impact on analyst recommendations.

## SAMPLE AND DATA

### Sample Selection

The original sample is compiled from the Investor Responsibility Research Center (IRRC). The IRRC reports data on corporate governance provisions for about 1,500 firms. The sample firms, mainly drawn from the S&P 500 and other large corporations, representing over 90% of total market capitalization on NYSE, AMEX, and NASDAQ. The IRRC collects data on 24 corporate governance provisions, one of which is staggered boards.<sup>27</sup> The sample is narrowed down further by dropping firms whose financial data do not exist in COMPUSTAT. Financial firms are excluded due to their unique accounting and financial characteristics. Data on analyst recommendations come from the IBES database. The final sample consists of 10,109 firm-year observations from 1993 to 2004. Table 1 shows the distribution of the sample firms.

### B. Summary Statistics

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<sup>27</sup> The IRRC reports data only for 1990, 1993, 1995, 1998, 2000, 2002, and 2004. Like several prior studies, we assume that governance provisions do not change during the interim years. Staggered boards, once adopted, are rarely eliminated. Hence, this assumption should be reasonable.

Table 2 shows the summary statistics for firm characteristics. We make comparisons between firms with unitary boards and those with staggered boards. The results in Table 2 reveal some significant differences between the two groups of firms. Firms with staggered boards show slight but surprisingly significantly poorer analyst recommendations than firms with unitary boards. Firms with staggered boards are also significantly smaller, significantly more profitable (as measured by the EBIT ratio), invest significantly less in R&D, exhibit a lower earnings/price ratio, show less variance of daily stock returns, and exhibit lower turnover.

## RESULTS

Table 3 shows the results of the regression analysis. The dependent is the analyst recommendation, which ranges from one to five, where one is the strong sell recommendation and five the strong buy. The control variables included are those documented in prior studies as relevant to analyst recommendations.<sup>28</sup> In Model 1, the only independent variable is the staggered board dummy variable. The coefficient of staggered boards is negative and significant. Model 2 includes the control variables. Still, the coefficient of staggered boards remains negative and significant.

For further insights, we run a Tobit regression in Model 3. It could be argued that analyst recommendations can range only from one to five. As a result, they can be viewed as a variable censored below one and above five. A Tobit regression would be more appropriate for a censored dependent variable. In Model 3, staggered boards continue to retain a negative coefficient. All of the results up to this point indicate that firms with staggered boards are given less favorable analyst recommendations. This is consistent with prior research, which reports that staggered boards reduce firm value. It appears, however, that the detrimental effect of staggered boards is not efficiently impounded into stock prices. Consequently, it is recognized by financial analysts, who recommend against staggered boards.

One possibility that could lead to a spurious relation between staggered boards and analyst recommendations is the omitted-variable bias. Certain unobservable firm characteristics not included in the model may influence the adoption of staggered boards and analyst recommendations at the same time, giving rise to a spurious correlation. One approach for alleviating this concern is through the use of a fixed-effects regression analysis. Essentially, a fixed-effects regression captures only the variation over time. It thus controls for any unobservable characteristics that remain constant over time. We execute a fixed-effects regression in Model 4. Again, staggered boards retain a negative and significant coefficient. All of the results so far indicate that staggered boards are detrimental and financial analysts recognize this detrimental effect on firm value and accordingly assign less favorable recommendations to firms with staggered boards.

We now turn to the issue of endogeneity. Part of this problem has been addressed by the fixed-effects model. An endogeneity bias could arise due to unobservable characteristics that are related both to staggered boards and analyst recommendations. The fixed-effects analysis already alleviates this concern. Another endogeneity bias, however, is due to reverse causality. Perhaps, the direction of causality is reverse, i.e. firms with poorer analyst recommendations adopt staggered boards. To address this concern, we execute a two-stage least squares (2SLS) analysis. We first identify the first year in which each firm appears in the sample. We then replace the value of staggered boards in each given year by the value of staggered boards in the earliest year. The idea is that the presence of

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<sup>28</sup> One control variable that requires an explanation is the index of other governance provisions. To control for other governance provisions, we construct an index of all other twenty-three management-favoring provisions reported by RiskMetrics. Essentially, we segregate the Governance Index into two components, namely, the staggered boards element and all the other provisions in the index. The Governance Index is created by adding one point for each management-favoring provision (among the set of twenty-four possible management-favoring provisions) that a firm has. Having a staggered board also adds one point to the index. We therefore define for each firm a parameter “Adjusted G-Index”, which is equal to the firm’s Governance Index minus the contribution of the firm’s staggered board if any (Bebchuk and Cohen, 2005).

staggered boards in the earliest year could not have resulted from analyst recommendations in any of the subsequent years, thereby mitigating reverse causality.

The 2SLS results are shown in Table 4. In Model 1, staggered boards in the earliest year shows a negative and significant coefficient. Model 2 is a Tobit regression. Again, the coefficient of staggered boards remains negative and significant. For robustness, we also use an alternative instrumental variable, namely the incidence of staggered boards in each industry (based on the first two digits of SIC). Changes in the likelihood of adoption of staggered boards at the industry level are not under any one firm's control and are therefore much more likely to be exogenous. We first regress staggered boards on the value of staggered boards in the earliest year and all the control variables. Then, in the second stage, we regress analyst recommendation on the value of staggered boards instrumented from the first stage. The second-stage regression is shown in Model 3. The coefficient of predicted (or instrumented) staggered boards is negative and significant, again confirming prior results. Finally, in Model 4, we execute a 2SLS fixed-effects model, which controls both for the omitted-variable bias as well as for reverse causality. The result remains consistent. The above robustness tests show that our results are robust, unlikely vulnerable to endogeneity. Staggered boards are not only associated with, but rather, bring about poorer analyst recommendations.

To further corroborate the results, we execute additional analysis based on propensity score matching. We use propensity score matching to identify a control group based on all the control variables in the regression analysis, twelve variables altogether. Hence, our treatment and control groups are nearly identical along all twelve dimensions, except one, i.e. staggered boards. The outcome variable is analyst recommendations. The results show that firms with staggered boards are given poorer analyst recommendations. Therefore, the propensity score matching analysis confirms our conclusion (results not shown but available upon request).

## CONCLUDING REMARKS

We contribute to the long-standing debate over the costs and benefits of staggered boards. Prior literature examines staggered boards from a number of perspectives. However, our study is the first to investigate how financial analysts view staggered boards. To the extent that staggered boards are detrimental to firm value and this detrimental effect is not efficiently priced in the market, financial analysts should assign less favorable recommendations to firms with staggered boards. Our empirical results are consistent with this hypothesis. We do indeed find that firms with staggered boards exhibit poorer analyst recommendations. This conclusion is robust to controlling for a large number of firm characteristics, including other corporate governance provisions. To mitigate endogeneity, we execute a fixed-effects regression analysis as well as a two-stage least squares (2SLS) analysis. All the robustness tests yield consistent result, suggesting that our results are unlikely susceptible to endogeneity. The direction of causality more likely runs from staggered boards to analyst recommendations than the other way around. Because staggered boards are one of the most controversial governance provisions, our results should be of interest in a number of parties, including investors, financial analysts, regulators, shareholder activists, as well as institutional shareholders.

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Table 1: Sample distribution by year

Year	Unitary	Staggered	Total	% Staggered
1993	199	309	508	60.83%
1994	205	334	539	61.97%
1995	228	367	595	61.68%
1996	237	371	608	61.02%
1997	232	363	595	61.01%
1998	383	511	894	57.16%
1999	356	507	863	58.75%
2000	383	529	912	58.00%
2001	370	513	883	58.10%
2002	489	710	1199	59.22%
2003	480	712	1192	59.73%
2004	530	791	1321	59.88%
Total	4,092	6017	10,109	59.88%

Table 2: Summary statistics and univariate comparison

Book/Price is the ratio of the book value to the market value of equity. Delaware Incorporated is equal to one if the firm is incorporated in Delaware and zero otherwise. The standard deviation of stock returns is the standard deviation of daily stock returns for each year. S&P 500 is a dummy variable equal to one if the firm is included in the S&P 500 Index and zero otherwise. Turnover is the traded volume for each stock. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels respectively

	Unitary	Staggered	Difference
	Mean (Median)	Mean (Median)	(t-statistics)
Number of Observations	4,092	6,017	
Analyst Recommendations	3.75 (3.78)	3.72 (3.74)	-3.31***
Total Assets	7,860 (1,263)	3,976 (1,352)	-7.13***
Debt Ratio	25.46% (23.87%)	25.81% (25.53%)	0.85
EBITDA/Total Assets	12.42% (13.10%)	13.05% (13.69%)	2.02**
Capital Expenditures/Total Assets	6.09% (4.65%)	6.13% (4.80%)	0.33
R&D/Total Assets	3.61% (0.00%)	2.72% (0.00%)	-7.14***
Earnings/Price	0.89 (1.87)	-4.60 (2.07)	-1.68*
Book/Price	0.27 (0.28)	0.29 (0.29)	0.72
Delaware Incorporated	0.57 (-)	0.57 (-)	-
St. Dev. of Stock Returns	2.61% (2.45%)	2.31% (2.11%)	-8.61***
S&P 500	0.31 (-)	0.30 (-)	-
Turnover	1,577 (984)	1,247 (858)	-9.00***

Table 3: The effect of staggered boards on analyst recommendations

	Model 1 (t- statistics)	Model 2 (t- statistics)	Model 3 (t- statistics)	Model 4 (t- statistics)
	OLS	OLS	Tobit	Fixed- Effects
Constant	2.7523*** (337.40)	2.6346*** (64.98)	2.6342*** (72.68)	2.4322*** (24.27)
Staggered Boards	-0.0342*** (-3.29)	-0.0218** (-2.21)	-0.0217** (-2.23)	-0.1120*** (-3.04)
Index of Other Governance Provisions	-	-0.0036* (-1.70)	-0.0036* (-1.68)	-0.0224*** (-3.86)
Log (Total Assets)	-	-0.0194*** (-4.05)	-0.0194*** (-4.19)	0.0069 (0.57)
Debt Ratio	-	-0.0744** (-2.31)	-0.0748*** (-2.72)	-0.0029 (-0.06)
EBITDA/Total Assets	-	0.5449*** (11.43)	0.5447*** (14.22)	0.7946*** (16.25)
Capital Expenditures/Total Assets	-	0.5837*** (6.30)	0.5844*** (6.27)	1.7061*** (16.05)
R&D/Total Assets	-	-0.0454 (-0.44)	-0.4526 (-0.47)	-0.2546 (-1.09)
Earnings/Price	-	0.0000 (1.11)	0.0000 (1.33)	-0.0000* (-1.65)
Book/Price	-	-0.0244** (-2.44)	-0.0244*** (-5.10)	-0.0142** (-2.11)
Delaware Incorporated	-	0.0539*** (5.52)	0.0539*** (5.51)	-0.0164 (-0.36)
St. Dev. of Stock Returns	-	-0.2243 (-0.36)	-0.2290 (-0.47)	4.3610*** (10.19)
S&P 500	-	0.0715*** (5.79)	0.0716*** (5.26)	-
Turnover	-	0.0000*** (6.57)	0.0000*** (8.50)	0.0000*** (3.89)
Year Dummies Included	No	Yes	Yes	Yes
Firm Fixed Effects	No	No	No	Yes
Adjusted R <sup>2</sup> or Pseudo R <sup>2</sup>	0.11%	12.12%	8.65%	5.64%

Table 4: Endogenous tests for analyst recommendations and staggered boards

	Model 1 (t- statistics)	Model 2 (t-statistics)	Model 3 (t-statistics)	Model 4 (t-statistics)
	OLS	Tobit	2SLS	2 SLS Fixed- effects
Constant	2.6326*** (72.64)	2.6323*** (72.65)	2.6632*** (70.87)	2.6235*** (21.91)
Staggered Boards (Earliest Year)	-0.0192** (-1.97)	-0.0192** (-1.96)	-	-
Staggered Boards (Predicted)	-	-	-0.0636*** (-3.68)	-0.4574*** (-3.73)
Index of Other Governance Provisions	-0.0035 (-1.64)	-0.0035 (-1.64)	-0.0037* (-1.74)	-0.0310*** (-4.75)
Log (Total Assets)	-	-	-0.0197***	0.0107
Debt Ratio	0.0194*** (4.19)	-0.0194*** (-4.19)	-0.0746*** (-2.72)	-0.0062 (-0.13)
EBITDA/Total Assets	0.0742*** (2.70)	-0.0745*** (-2.71)	0.5432*** (14.16)	0.7911*** (16.09)
Capital Expenditures/Total Assets	0.5447*** (14.22)	0.5445*** (14.21)	0.5867*** (6.28)	1.6943*** (12.14)
R&D/Total Assets	0.5836*** (6.26)	0.5849*** (6.27)	-0.0595 (-0.61)	-0.2599 (-1.10)
Earnings/Price	-0.0446 (-0.46)	-0.0445 (-0.46)	0.0000 (1.20)	-0.0000 (-1.69)
Book/Price	0.0000 (1.35)	0.0000 (1.34)	-0.0243*** (-5.07)	-0.0126* (-1.90)
Delaware Incorporated	0.0244*** (5.11)	-0.0244*** (-5.11)	0.0544*** (5.55)	-0.0360 (-0.78)
St. Dev. of Stock Returns	0.0542*** (5.54)	0.0542*** (5.54)	-0.3519 (-0.72)	4.3184*** (10.03)
S&P 500	-0.2154 (-0.44)	-0.2201 (-0.45)	0.0709*** (5.21)	-
Turnover	0.0716*** (5.27)	0.0717*** (5.27)	0.0000*** (8.30)	0.0000*** (3.89)
Year Dummies Included	0.0000*** (8.49)	0.0000*** (8.50)	Yes	Yes
Firm Fixed Effects	No	No	No	Yes
Adjusted R <sup>2</sup> or Pseudo R <sup>2</sup>	11.91%	8.64%	11.76%	2.94%

## **PERCEIVED JUSTICE OF SERVICE RECOVERY AND CORPORATE IMAGE: EXAMINING SELF-COMPLAINING AND INVITED COMPLAINING BEHAVIOR**

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### **ABSTRACT**

Previous studies suggest service providers to encourage customers to voice when encountering service failure events. In responding to these suggestions, most studies investigated behavior of complainers and non-complainers to compare the different customers' evaluation and behavioral outcomes. This study introduce complaint invitation concept as the new organizational procedure for enhancing customers' perceived procedural justice. The study also proposes conceptual model of service recovery for invited complaint from dissatisfying customers who initially did not complain by themselves. Based on theory of justice, the model expects that customers who are invited to complain will have different evaluations of service recovery as comparing with normal complainer.

### **INTRODUCTION**

One of the key and primary goals of service business during and immediately after delivering service to the customer is to maximize customer satisfaction. Therefore, service providers regularly put their efforts to generate impressive customer experiences from service encounters. However, it is commonly accepted that service failure can happen any time and at any stage in service delivery process (Hart, Heskett, & Sasser Jr, 1989).

After the recognition of service failure, service providers put their efforts to address the unimpressive experience in service encounter of the customers (Gronroos, 1988). Many recovery actions are applied in order to alter the negative perceptions toward service providers (Schweikhart, Strasser, & Kennedy, 1992). In most cases, successful service recovery has significant impact on customer evaluations, including customer satisfaction (De Matos, Henrique, & Rossi, 2007; Duffy, Miller, & Bexley, 2006; Maxham III, 2001; Michael Ashton McCollough, 1995; Spreng, Harrell, & Mackoy, 1995; Tsai, Yang, & Cheng, 2014; Webster & Sundaram, 1998), word of mouth, and repurchase intention (Riscinto-Kozub, 2008; Webster & Sundaram, 1998). However, some contrasting evidence or opposite results of service recovery exist. Weng (2009) discovered that successful recovery has low impact on satisfaction and loyalty.

Successful service recovery primarily depends on whether service providers receive an opportunity from customers to redress service failure. The traditional method to recognize service failure is to be notified by customers who choose to complaint to the service providers. This can be implied that complainers support service providers by providing valuable information of the area that needed to be improved.

Unfortunately, not every customer who dissatisfies with the service chooses to complain with the service provider. The complaint behavior literature suggested that while only 5-10% of dissatisfying customers voice complaint to service provider, up to 90% who don't complain directly with service provider may choose to remain silence and continue patronage; some may choose to complain with third party; and the remaining may choose to spread negative word of mouth (Tax & Brown, 2012). Furthermore, there is evidence in complaining behavior research to suggest that complainers are more likely to be satisfied and intent to repurchase than the non-complainers (Kau & Loh, 2006).

It can be seen that while the majority of dissatisfying consumers choose not to complain with the service provider, most studies pay more attention to complaining behavior than non-complaining behavior (Ro & Mattila, 2015). Even though some studies has explored the differences between complainers and non-complainers, Voorhees, Brady, and Horowitz (2006) indicated that research

comparing different groups of complainers and non-complainers across important outcome variables are still rare.

With an attempt to fill the gaps, this research examines customer complaining behaviors of different groups of dissatisfied customers. While most of the studies in the literature have extensively focused on examining the behavior of complainers, this study also focuses on investigating dissatisfied customers who initially do not complain, but subsequently make a complaint after service provider invitations. Through comparing both groups of dissatisfied customers who are self-complained and invited complained, this study extends previous research in service failure and service recovery literature by incorporating complaining invitation process as an organization procedure for service failure recovery initiatives.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Perceived justice and Complaining Behavior

Theory of justice has been broadly used as theoretical base for service recovery studies (Azab, 2013; Chebat & Slusarczyk, 2005; Ha & Jang, 2009; Michael A McCollough & Bharadwaj, 1992; Patterson, Cowley, & Prasongsukarn, 2006; Smith, Bolton, & Wagner, 1999; Trimarco-Beta, 2007). Justice theory gives explanation of individual's reaction to different conflict situations (Blodgett, Hill, & Tax, 1997). Three dimensions of justice are generally categorized to procedural, interactional and distributive justice (McCull-Kennedy & Sparks, 2003).

As higher perceived justice could create higher customer satisfaction, recovery methods which could bring about high perceived justice are largely investigated (Ha & Jang, 2009; Ok, 2004; Park, 2012; Patterson et al., 2006; Tsai et al., 2014). Three forms of perceived justice could be derived by different factors. It is suggested that the greater perceived justice is the result of the higher recovery efforts (Ha & Jang, 2009) and physical recoveries (Park, 2012; Tsai et al., 2014).

With reference to service recovery context, procedural justice refers to perceived fairness that is used to consider the impact of the actual recovery process itself (as opposed to outcome) on customer satisfaction and service quality evaluations (Michael Ashton McCollough, 1995). Fair procedure could be perceived through accessibility, speed, process control, delay and flexibility of methods the service providers perform during service recovery process (del Río-Lanza, Vázquez-Casielles, & Díaz-Martín, 2009).

According to Gelbrich and Roschk (2010)'s meta-analysis study of organizational complaint, the authors defined organizational procedures as "policies, procedures, and structures a company has in place to provide a smooth complaint-handling process".

Gelbrich and Roschk (2010) reviewed that number of studies of procedural justice misunderstood customers' perception of procedural justice. Those studies claimed that they manipulate justice perception; whereas they did not, they just manipulated the level of an organizational response, for example prompt vs. slow complaint handling (Liao, 2007). In fact, it is impossible to manipulate justice perceptions directly. Hence, manipulating the level of an organizational response is a standard experimental design to trigger justice perceptions."

Karande, Magnini, and Tam (2007) introduced concept of recovery voice. Recovery voice concept explains that service provider asks customers who encountered service problem to identify what they want service provider can do to rectify the problem. Result of study reveals that when service provider offer recovery voice, customer perceive higher procedural justice.

With the same logic, the current study proposes that invited complaint which is an organizational procedure that invites dissatisfying customer to complain about service failure would increase customer's perceived procedural justice.

H1: Comparing with normal complainer, invited complainer who was invited by service provider to complain will post higher perceived procedural justice.

In justice theory, dependencies among justice dimensions are widely discussed. Folger (1987), for instance, argues that an unfair process decreases distributive justice. According to Gelbrich and Roschk (2010)'s study, the result shown the high correlations between the justice dimensions. Prasongsukarn and Patterson (2012) found that perceptions of procedural and interactional justice will

precede distributive justice and have an impact on consumers' evaluations of distributive justice. This is similar with Gelbrich and Roschk (2010)'s findings of influence of organizational procedure on all three dimensions of perceived justice.

Base on these rationales, the current study proposes that organizational procedure positively relates to perceived procedural justice and perceived procedural justice positively relates to interactional and distributive justice.

H2: Perceived procedural justice have an impact on consumers' evaluations of interactional justice.

H3: Perceived procedural justice have an impact on consumers' evaluations of distributive justice.

### **Mediating Role of Perceived Justice on Relationship of Types of Complaint and Customer Satisfaction**

As far as customer satisfaction is concerned, service providers keep developing the recovery strategies which could bring about the greater satisfaction. According to Michael Ashton McCollough (1995), procedural justice perception plays role as mediator of effects of service recovery process on satisfaction of service recovery evaluations. Permitting customer to play role in designing the recovery methods is one of the service providers' solution for recovering customer satisfaction. Dong, Evans, and Zou (2008) introduced customer participation strategy, which generally used in the successful service transaction, to the service failure study.

According to complaint invitation concept, the procedure is provided for customer to give feedback in service transaction and to participate in identifying service recovery strategies. It is expected that invited customers will perceive the complaint invitation procedure as their participation in improving firms' service quality. And this procedure will impact customer satisfaction through the mediation of perceived procedural justice.

H4: Results of the same service recovery, customers who are invited to complain will have higher level of satisfaction than normal complainer.

### **Service Recovery and Corporate Image**

Corporate image is defined as customers' perceptions of organization which is the outcome of experience or impression of organization. And these perceptions consequently contribute to a total picture of the organization (Andreassen, 2001). Corporate image is significant for company as the customers will perceive service or product quality according to their perceived image (Barich & Kotler, 1991). However, in service recovery literature, study of corporate image as dependent variable is very limited (De Matos et al., 2007; Mostafa, Lages, Shabbir, & Thwaites, 2015). Mostafa et al. (2015) initially examined the direct impact of procedural justice on corporate image. The results found the significant impact of perceived interactional justice on corporate image.

Even though the effects of perceived distributive justice and perceived procedural justice was not significant, the current study proposes that perceived procedural justice, resulted from complaint invitation process, would improve corporate image. The preliminary interviews of the links between invited complaint, procedural justice and corporate image shown that there are connections among these concepts.

H5: Results of the same service recovery, customers who are invited to complain will perceive higher corporate image than normal complainer.

## **CONCEPTUAL FRAMEWORK**

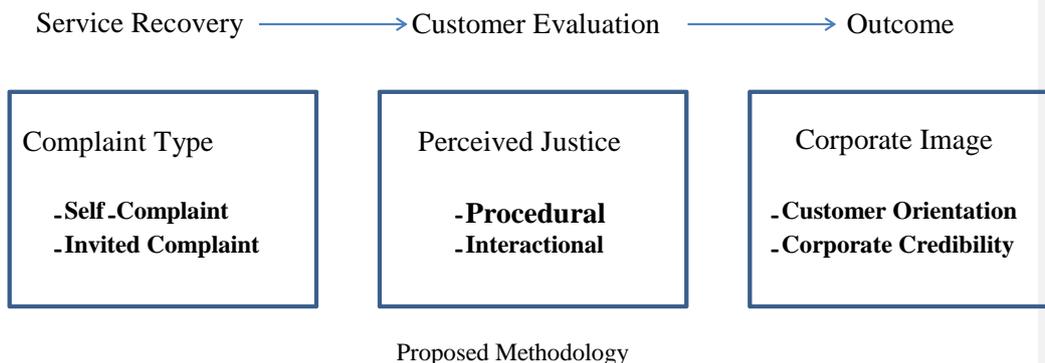
Voorhees et al. (2006) revealed 2 important factors that people do not choose complaint option when encountering service failure. These two important factors consist of time and effort to make complaint. Karande et al. (2007) introduce new concept of recovery voice. According to this concept, customers do not waste time nor put efforts to make complain because service providers will ask customers to identify what they want firms to resolve for service failure (it is invited complaint then?). A central assumption of this study is recovery voice concept would improve customers' perception of procedural justice. Similarly, Evanschitzky, Brock, and Blut (2011) also focused on customers'

complaint encouragement process to reduce customers' effort to raise complaint. This study set up complaint stimulation for customer who encountering service failure and manipulated complaint stimulation by providing high and low level of barrier to make complaint. The results of study show that effects of complaint barrier on customers' complaint intention vary across level of affective commitment.

The current study introduces the different procedure by removing all those physical complaining barriers. Customers do not need to put effort to submit complaint, as service provider offers the most convenient channel for complaints and also offer commitment to resolve service problem according to complaints. Another different concept initiated in this study is an attempt to identify whether there is any service failure in service transaction, from customer point of view. The introduced procedure is to approach the customers to rate how much they satisfy with service transaction; in case customers do not satisfy, they will be asked to reveal complaint intention. Those who do not intent to complain will be invited to make complaint for dissatisfying event of service failure. In other words, complaining behavior is classified as normal complainer and invited complainer.

Figure 1 demonstrates the conceptual model of service recovery of normal complainer and invited complainer. The model proposes that different types of complaining (invited complaint vs. self-complaint) will have different impact on two forms of justice (interactional justice, procedural justice). The model also proposes that perception of interactional justice and procedural justice positively relate to perceived corporate image.

Figure 1: Conceptual model of service recovery of normal complainer and invited complainer



### STUDY DESIGN

The current study removes all physical complaining barriers by inviting customer to voice their complaints in case they do not satisfy with service encounters. To test the research hypotheses, this study uses scenario experiment design which is extensively used in service failure and service recovery study (Evanschitzky et al., 2011; Karande et al., 2007; Mittal, Huppertz, & Khare, 2008; Prasongsukarn & Patterson, 2012).

Respondents first read the scenario and imagine they are in that scenario. Thereafter, respondents are asked to rate the level of satisfaction of service transaction according to the scenario. Satisfaction levels are ranged from 0-10. 0-3 were identified as “no satisfaction”, 4-5 were identified as “low satisfaction”, 6-7 were identified as “moderate satisfaction” and 8-10 were identified as “high satisfaction”. Respondents who rate no satisfaction and low satisfaction were then asked whether or not to make complaint with service provider. Respondents were then classified into two groups of complainer and non-complainer. In the next step, group of complainer and non-complainer will proceed of the different set of questions.

Non-complainers dealt with the scenario that one staff from service providers politely asks them to suggest what are the dissatisfying issues to cause the low or no satisfaction score. After that, the scenario assumed that the respondents identify service failure event that consistent with the scenario.

The scenario continues to service provider recovers the failure issues suggested by non-complained customer. Then respondents evaluate three dimensions of perceived justice and corporate images. The complainers will proceed to the complaining about service failure and receive service recovery. Then respondents evaluate three dimensions of perceived justice and corporate, just same as what non-complainer receive.

**Sample**

It is suggested by Calder, Phillips, and Tybout (1981) that theory application require group of respondents that can provide a rigorous test of the theory; since the scientific theories are universal in scope that any respondent group can provide the theory test. Homogeneity of respondents is required for theory falsification procedure; because (1) the homogeneous respondent can increase the precise prediction model, (2) decrease the false conclusion when there is covariation between the variables under study; and decrease the chance of Type II error from heterogeneous sample.

As the main goal of this study is to test theory, to provide homogeneity of respondents, this study plans to use undergraduate students. Not only homogeneity, undergraduate students also represent as bank customers in a real life. Therefore, the data will be collected from university students in Thailand.

**Construct and Measures**

Three dimensions of perceived justice were measured using 7-point Likert scale. The six items of procedural justice were adapted from Karande et al. (2007). Measurement items of distributive justice and interactional justice were adapted from Prasongsukarn and Patterson (2012). Corporate image measurement items are adapted from (Mostafa et al., 2015) and measured using 7-point Likert scale.

Constructs	Measurement Items
Distributive justice	(1) The outcome I received was fair. (2) I did not get what I deserved. (3) In resolving the problem, the service provider gave me what I needed (4) The outcome I received was not right
Procedural justice	(1) I was able to influence the process used to solve the problem (2) I was able to express my views and feelings in this situation. (3) I was able to influence the outcomes arrived at in this situation (4) The service provider was willing to adapt their complaint handling procedures to satisfy my needs. (5) The procedures used gave me more control over how well the service problem or failure was solved. (6) Overall, the procedures used by the associate were fair.
Interactional justice	(1) The employee were appropriately concerned about my problem (2) The employees did not put the proper effort into resolving my problem (3) The employees' communications with me were appropriate (4) The employee did not give me the courtesy I was due
Corporate image	(1) My perception about the service provider is positive. (2) I am satisfied with the a the company presents itself to the public (e.g. through advertising, corporate social responsibility) (3) I perceive the service provider as customer oriented

**DATA ANALYSIS**

To analyze the effects of complaining types on perceived justice and mediating effects of perceived justice on the link between type of complaint and corporate image, this study plans to use structural equation modeling (SEM).

## MANAGERIAL IMPLICATIONS

As it is suggested that most dissatisfied customers do not complaint with service providers, researchers suggest that manager should encourage customers to voice if they experience service failure. Many studies of non-complaining behavior reveal mixed findings of comparison between complainer and non-complainer. This study provides insight of non-complainer who are encouraged or invited by firms to raise complaints. In order to make invited complaint, customers may express feelings of how they are unimpressive with service provider. They may also release emotional state when encountering service failure. Additionally, they may identify what they want firms to address the problem for them, if they would like to.

Letting customers to release their feeling, emotional state of encountering service failure, allow service providers to understand and show empathy for their customers better. Ultimately, knowing how invited complainers really feel about service failures and how they perceive about complaint invitation channel will benefit manager to develop invited complaint procedure appropriately.

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# THE FACTORS AFFECTING THE ATTRIBUTE ATTITUDE ORGANIC PRODUCT; THE CASE STUDY OF ORGANIC PRODUCTS FOR BANGKOKIAN'S GEN-X AND GEN-Y

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## ABSTRACT

Thailand has double growth in organic market from 2009 till 2014, from five million to ten million US dollar implicating potential to grow in the industry. Accordingly, this study was conducted to understand the relationship between healthy lifestyle and attitude toward organic product. After thorough literature review, environmental concern, consumer knowledge, personal norm, and subjective norm were selected as influencing factors on attitude toward organic products. The 404 questionnaires were collected from Bangkokian defined as Gen-X and Gen-Y. The finding revealed that environmental concern, consumer knowledge, personal norm and subjective norm have statistically influence on attitude toward organic products. In addition, healthy lifestyle has relationship with the examined variable. Moreover, findings revealed no significant difference in attitude toward organic product between Gen-X and Gen-Y.

Keywords: Attitude, Organic Product, Healthy Lifestyle, Environmental Concern, Consumer Knowledge, Personal Norm, Subjective Norm

## INTRODUCTION

Safety food supply is major concern that is serious risk to the global food supply chain significantly. The food industry is required to boost production to catch up with the global demand in food. Therefore, it uses technology to boost agricultural and livestock production which can cause contaminated food, the primary cause to create massive scale of foodborne illness of which some enteric diseases caused the dead (Gary Ades *et al.*, 2012; WHO, 2015). Furthermore, people require sufficient nutrients for essential growth. Contaminated substance or chemical food or food containing excessive sugars, fats, and sodium cause people to get various diseases like obesity, heart disease, stroke, diabetes and some certain type of cancers (Denton, 2015). As a result, people seek out the alternative or functional food for consumption in daily life such as organic food and nutritious drink. Global organic market value has rapidly grown from market value at 15.2 billion US dollar in 1999 to that at 72 billion US dollar in 2013, recording 373% increase. The organic agricultural land has expanded dramatically too which 11 million hectares in 1999 to 43.1 million hectares in 2013. These reveal increasing trend of organic food consumption which is related to healthy lifestyle (Willer & Lernoud, 2015).

In Thailand, organic sale has twofold growth from year 2009 to 2014; five million US dollar and ten million US dollar respectively (Naewna News, 2014). Arkkarayu (2015) described the change in Thai people's consumption from the past decade in that they are more concerned about their health. Thus they seek food which provides safer and healthier like organic food and food containing low or no components of sugar and fat.

Given that increased market and concern on organic food in the global and Thailand context, it would be meaningful to study affecting factors that influence attitude toward organic foods in Bangkok. Few research have explored factors that affect attitude toward organic food in different areas.

This current research aimed at understanding factors affecting attitude's organic food of Bangkokian. Furthermore, this research investigated mean difference in Bangkokian's attitude between Generation X and Generation Y.

## LITERATURE REVIEW

### **Attitude toward Organic Product (ATOP)**

In the previous study of Chen and Yang (2009) and Al-Shaabab and Nguyen (2014), attitude is described as crucial psychological path of defying the favor or disfavor on the particular object. Furthermore, attitude is individual characteristic and is specified as “consumer’s tendency to engage in relationships with retailers of a particular product category” (Dolfsma, 2004). Generally, the belief on organic product is healthier than conventional product better preserving environmental. Accordingly, these two beliefs are key purchasing affecting factors on foods grown by organic system (Chen, 2009; Yang et al., 2014).

In addition, trust in and increased consumption organic products are arisen by the fact that organic products have better taste, healthier, and more environmental friendly than conventional product (Al-Swidi, Hafeez, & Shariff, 2014).

### **Healthy Lifestyle (HL)**

Lifestyle changes over the time in systematical ways. Consumer behavior seems to generate satisfaction to achieve primary value throughout life. The level of physical activities are driven by healthy lifestyle i.e. inherent food consumption, health concern, and living life balance. A healthy lifestyle is correlated with health consciousness that many people concern their health. It is interesting to observe the trend of people seeking for healthy lifestyle. When they do not have enough time to work out, they still try to eat organic food. That is, this group of people has healthy consciousness and it is correlated with healthy lifestyle (Chen, 2009).

### **Environmental Concern (EC)**

The environmental preservation behavior of the organic foods consumers brings about purchasing natural product and using public transportation (Yang et al., 2014). Organic food consumers seem to believe that organic food offers better health and safer from contaminated substance than conventional food. Thus they have positive attitude toward organic products (Chen, 2009).

### **Consumer Knowledge (CK)**

Consumer knowledge is the parameter of consumer decision making on product and services which express between experiences and information evaluation in the format of customized consumer (Yang et al, 2014; Cakarnis & D'Alessandro, 2002). The two major combinations of consumer knowledge are familiarity and expertise. Familiarity describes experience from consumer and expertise describes the capability to utilized product efficiency (Pillai, Brusco, Goldsmith, & Hofacker, 2015).

### **Personal Norm (PN)**

Yang et al (2014) defined personal norm as individual belief simply on which one is right or wrong. The stimulation of personal norm conduct from the feeling of moral principle that express from consumer own value system (Klößner & Ohms, 2009). Thus consumer’s attitude affects toward object seem to be judged by personal belief. Personal norm has significant impact on purchasing organic and non-organic products (Yang et al, 2014).

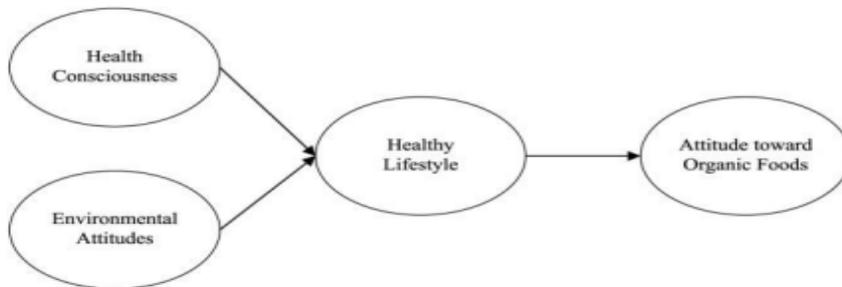
### **Subjective Norm (SN)**

The previous study by Yang et al (2014) revealed subjective norm as the social influence factor by individual or group behavior like related people and friend. Subjective norm explores the personal belief which people observe reference group when they do something certainty (Al-Swidi et al., 2014). As a result, subjective norms may influence organic food consumer attitude in positive way (Al-Swidi et al., 2014).

## RESEARCH FRAMEWORK AND METHODOLOGY

There are two theoretical frameworks that the conceptual framework of this current research is based on. First, one theoretical framework investigated the relationship between healthy lifestyle and attitude toward organic foods as seen in Figure 1.

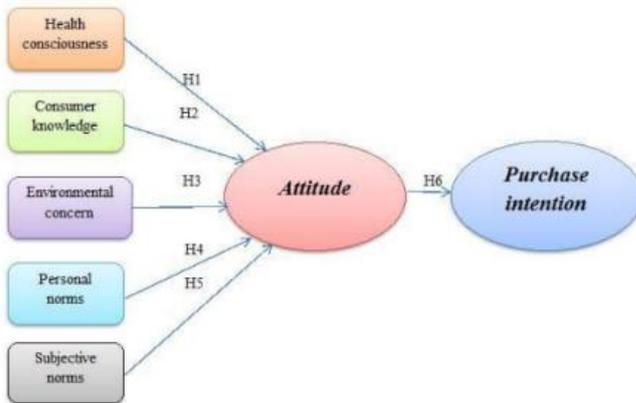
**Figure 1:** Theoretical Framework



**Source:** Attitude Toward Organic Foods Among Taiwanese as Related to Health Consciousness, Environmental Attitude, and The Mediating Effects of a Healthy Lifestyle.

The second theoretical framework investigated factors that affect attribute attitude toward organic food e.g. consumer knowledge, environmental concern, personal norm, and subjective norm as shown in Figure 2.

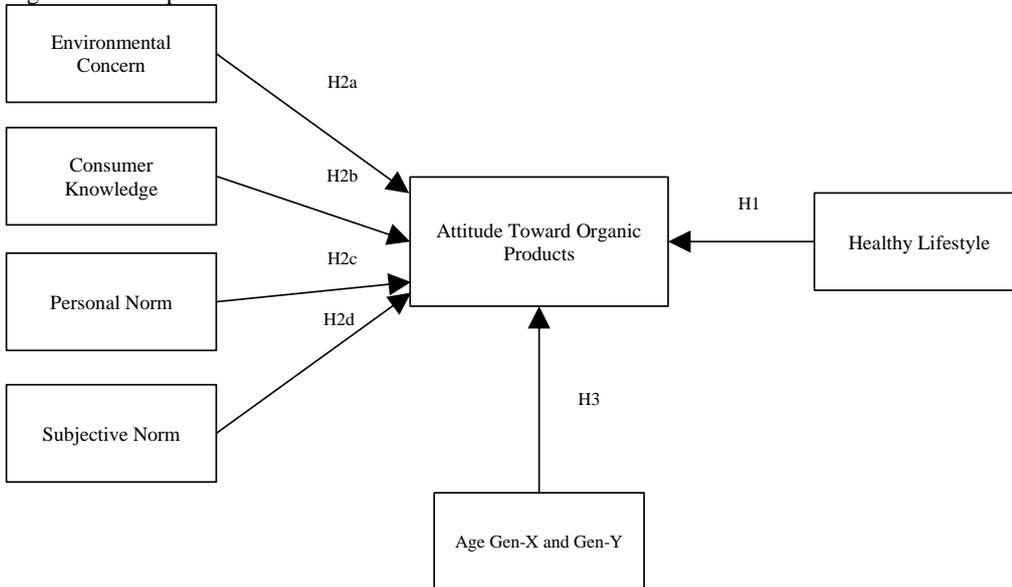
**Figure 2:** Theoretical Framework



**Source:** Consumer Attitude And Purchase Intention Towards Prganic Food.

Now the conceptual framework of this research is developed in Figure 3.

Figure 3: Conceptual Framework



Source: Developed by the researcher for this study.

This study examined six hypotheses to achieve the research objective.

H1: There is a statistically significant relationship between health lifestyle and attitude toward organic products.

H2a: Environmental concern explains unique variance of attitude toward organic products.

H2b: Consumer knowledge explains unique variance of attitude toward organic products.

H2c: Personal norm explains unique variance of attitude toward organic products

H2d: Subjective norm explains unique variance of attitude toward organic products

H3: There is statistically significant mean difference between Gen-X and Gen-Y for attitude toward organic products

### RESEARCH METHODOLOGY

A quantitative approach is used in this study to investigate the hypotheses. The convenience sampling research technique was used to collect data from the target population. Surveys is paper-based questionnaire. There were three statistical analyses conducted to test hypotheses. First, regression analysis was utilized in order to identify relationship between independent and dependent variable by linear equation (H2a, H2b, H2c, and H2d). And T-test was conducted to test mean difference between homogeneous group and dependent variable (H3). Moreover, Pearson correlation analysis was used to determine the relationship between independent and dependent variable (H1).

The Likert scale model is used in the surveys questionnaire. The Likert model is developed to measure attitude on a 6-point scale ranging from 1 which is 'strongly disagree' to 6 which is 'strongly agree'.

### Measurement of variable

The target respondents for this survey were Thais who live in Bangkok and aged between 18 – 50 years which is defined into two generations; Gen-X and Gen-Y.

### Population and Sample

Questionnaires were distributed randomly in Bangkok to 404 respondents selected by convenience sampling method.

### Reliability Test

The test is done when the target number of respondents reached 30, which was conducted by Cronbach's Alpha Coefficient. Typically, the reliability result has to be greater than 0.7 (Cronbach, 1951) in order to meet with the typical prerequisites of reliability of research instrument.

Table 1: Consistency of the scales test

<i>Variables</i>	<i>No of Items</i>	<i>Cronbach's Alpha</i>
<i>Healthy Life Style (HL)</i>	5	.713
<i>Environmental Concern (EC)</i>	4	.768
<i>Consumer Knowledge (CK)</i>	3	.919
<i>Personal Norm (PN)</i>	3	.909
<i>Subjective Norm (SN)</i>	3	.840
<i>Attitude Toward Organic Product (ATOP)</i>	6	.923

## RESULT AND DISCUSSION

### Data Analysis

Statistical application was used to analyze the data to define the relationship between variables and mean differentiate of two groups.

### Descriptive analysis

Descriptive analysis was utilized to describe the basic features of the collected data. All respondents 404 were living in Bangkok showing 100 %. Gen-X and Gen-Y show 47.5 % and 52.5 % respectively. Next is demographic data which reveal 54.2 % of male and 45.8 % of female. Occupation reveals that 86.6 % is private company officer, and 10.4 % is business owner. For the income per month, 4.2 % of respondent earned less than baht 15,000, and 39.4 % earned 15,001-30,000, and 29.5 % earned 30,001-45,000, and lastly 27 % earned more than 45,001 baht. Furthermore, descriptive analysis and correlation between all variables are revealed in Table 2.

Table 2: Descriptive analysis and Correlation Matrix

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>ATOP</i>	<i>EC</i>	<i>CK</i>	<i>PN</i>	<i>SN</i>
<i>ATOP</i>	4.6823	.84701	1				
<i>EC</i>	4.4158	.74452	.627**	1			
<i>CK</i>	4.5157	.99101	.748**	.744**	1		
<i>PN</i>	4.5033	1.04185	.825**	.648**	.827**	1	
<i>SN</i>	4.1518	1.05255	.688**	.479**	.591**	.729**	1

\*\*Correlation is significant at the 0.01 level (One-Tailed)

The correlation matrix revealed that two variables have correlation coefficients exceeding 0.8. First, there is positive and strong relationship between personal norm (PN) and attitude toward organic product (ATOP) at 0.825. Second, there is positive and strong relationship between personal norm (PN) and consumer knowledge (CK) at 0.827.

**Inferential Analysis**

Table 3: Result of Pearson Correlation

Variable			ATOP	HL
Attitude Toward Organic Product (ATOP)		Pearson Correlation	1	.622
		Sig (two - tailed)		.001**
Healthy Lifestyle (HL)		Pearson Correlation	.622	1
		Sig (two - tailed)	.001**	

\*\*Correlation is significant at the 0.01 level (two-tailed)

Table 3 shows that healthy life style has significant relationship with attitude toward organic product at p-value of .001 and the Pearson correlation value presents .622. Thus, Ho is rejected and Ha is failed to reject.

The result of regression analysis of independent and dependent variable is shown in Table 4.

Table 4: Result of Regression

Variable	Model 1	VIF
Attitude Toward Organic Product (ATOP)	1.137** (.001)	
Environmental Concern (EC)	.118** (.010)	2.262
Consumer Knowledge (CK)	.126** (.007)	4.149
Personal Norm (PN)	.406** (.001)	4.396
Subjective Norm (SN)	.151** (.001)	2.136
R <sup>2</sup>	.716	
Adjusted R <sup>2</sup>	.713	

Beta coefficients with standard errors in parenthesis, \*\* p ≤ .01

Model 1 reveals that four independent variables (environmental concern, consumer knowledge, personal norm, and subjective norm) have positive contribution to attitude toward organic product. All four corresponding regression coefficients of independent variables are significantly greater than zero ( $b = .118, p \leq .01$ ;  $b = .126, p \leq .01$ ;  $b = .406, p \leq .01$ ;  $b = .151, p \leq .01$ ). And environmental concern, consumer knowledge, personal norm, and subjective norm can explain variance of attitude toward organic product at 71.3 %. That means H2a, H2b, H2c, and H2d rejected  $H_0$  and this failed to reject  $H_a$ . The result showed consistency with previous studies which show that consumer knowledge and personal norm are factors for creating positive attitude toward organic products (Yang *et al.*, 2014). Moreover, the result was inconsistent with previous studies that environmental concern and subjective norm are distributors for creating positive attitude toward organic products (Yang *et al.*, 2014).

To test multicollinearity problem, variance inflation factors (VIF) was tested in Table 4. The result revealed the range of 2.136 – 4.396 which does not exceed the maximum value of 10 (Hair *et al.*, 1995). Thus, the multicollinearity is not the critical problem in this research.

An independent sample t-test was conducted to compare difference in attitude toward organic product of Gen-X and Gen-Y as shown in Table 5 and Table 6.

Table 5: Result of Group Statistics

Age	Mean	Standard Deviation
Gen-X (36-50)	4.6918	.76106
Gen-Y (18-35)	4.6737	.91967

Table 6: Result of T-test

F	Sig	t	df	Sig (2Tailed)
17.355	.01	.214	402	.830
		.216	398.83	.829

The result for Table 5 and 6 revealed that there is no a significant difference between the Gen-X that exercised ( $M = 4.6918$ ;  $SD = .76106$ ) and the Gen-Y with no exercise ( $M = 4.6737$ ;  $SD = .91967$ );  $t(398.83) = .216, p = .829$ ". Thus, this current research failed to reject  $H_0$ .

## CONCLUSIONS AND RECOMMENDATIONS

This research provided understanding attitude toward organic product of Bangkokian aged between 18 and 50. Obviously, the results of this study present no significant difference between Gen-X and Gen-Y. The results of this study confirm that environmental concern, consumer knowledge, personal norm, and subjective norm are determinants for positive attitude toward organic product. Moreover, liner regression result can explain that these four independent variables impact attitude toward organic product by 71.3%. Furthermore, this study reveals both consistent and inconsistent results with previous studies (Yang *et al.*, 2014; Chen, 2009).

Obviously, the empirical results of this study provided the benefit to the organic product industry and relevant industries in Thailand especially in Bangkok because the relevant party can improve strategic and sustainable development strategy due to findings from this study and to create benefit to each industry. For example, personal norm is the essential determinant to influence positive attitude toward organic product. When Bangkok people buy organic product which they will feel proud of themselves. So organic product producers or organizations can conduct business strategic planning more accurately and eliciting sustainable benefit and competitive advantage in the market ultimately. Interestingly, the mean of one determinant of subjective norm has higher mean than average mean of subjective norm (In appendix 2), Thus organic producer or organization can conduct strategy to enhance social pressure (e.g. society, social network, environmental and etc.) which can influence more positive attitude toward organic product. That will contribute sustainable benefit return to the organization effectively.

In conclusion, choosing media, advertising message will be accordance with the study result of environmental concern, consumer knowledge, personal norm, and subjective norm. Furthermore, organic product producer and organization are strongly suggested to define the evidence that organic

product is better than conventional product by persuading consumers to believe in organic product which would make them healthier and provide superior quality.

### RECOMMENDATIONS & IMPLICATION FOR FUTURE RESEARCH

This research is conducted only within the Bangkok boundary. Given that fast growing market of organic product in Thailand, it will be useful if future research covers across the country. And this research focused only two groups of age to examine difference of Gen-X and Gen-Y in attitude toward organic product thus, further study on expanded age groups will be interesting to see any significant difference among those groups.

This study can be the initiative information for future study to observe in the same field or across fields to define the determinants of attitude of the consumer to both organic related and unrelated product.

Lastly, there are more determinants that may influence on creating attitude toward organic product. Thus, the future study is recommended to conduct with those factors.

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**Appendix 1:** The Analysis of Demographic Factors by Using Frequency and Percentage

Variables		Frequency	Percentage (%)
Age	Gen-X (36-50)	192	47.5
	Gen-Y (18-35)	212	52.5
	Other	0	0
Do you live in Bangkok	Yes	404	100
	No	0	0
Gender	Male	219	54.2
	Female	185	45.8
Occupation	Private Company Officer	350	86.6
	Government Officer	0	0
	Business Owner	42	10.4
	Unemployment	0	0
	Other	12	3
Income per month	Less than baht 15,000	17	4.2
	15,001-30,000	159	39.4
	30,001-45,000	119	29.5
	More than baht 45,000	109	27

**Appendix 2.** Descriptive Statistics of variables

	Question	N	Mean	Std. Deviation	Source
Healthy Lifestyle	1: I prefer low-salt diet	404	4.196	1.1441	Mei-Fang Chen, 2009
	2: I do workout regularly	404	4.384	1.1846	
	3: I eat fruits and vegetables regularly	404	4.856	1.0302	
	4: I often go to health check-ups	404	3.975	1.3196	
	5: I attempt to balance work and personal life	404	4.809	.9482	
	<b>Mean Healthy Lifestyle</b>		<b>404</b>	<b>4.444</b>	
Environmental Concern	1: I am emphasis about environment	404	4.406	.7899	Mingyan Yang et al., 2014
	2: I prefer consuming recycle product	404	4.351	1.0685	
	3: I believe that organic food is more environmental friendly than conventional food	404	4.542	1.0357	
	4: I practice environmental conservation tasks	404	4.364	.8476	
	<b>Mean Environmental Concern</b>		<b>404</b>	<b>4.4158</b>	
	<b>Question</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Source</b>

Consumer Knowledge	1: My knowledge about organic food is sufficient	404	4.312	1.1301	Mingyan Yang et al., 2014
	2: My knowledge about organic food is based on previous experience such as purchasing/consuming/hearing/ from other/reading about it	404	4.611	1.1004	
	3: In overall, I have a positive experience/impression about organic food	404	4.624	1.0577	
	<b>Mean Consumer Knowledge</b>	<b>404</b>	<b>4.5157</b>	<b>.99101</b>	
Personal Norm	1: I feel I should choose organic food instead of conventional food	404	4.329	1.2133	Mingyan Yang et al., 2014
	2: I get a good conscience about myself if I choose organic food	404	4.604	1.1582	
	3: I believe that choosing organic food is a right decision	404	4.577	1.0921	
	<b>Mean Personal Norm</b>	<b>404</b>	<b>4.5033</b>	<b>1.04185</b>	
<b>Question</b>		<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Source</b>
Subjective Norm	1: When it comes to choosing organic food, I behave as other do.	404	3.819	1.3083	Mingyan Yang et al., 2014
	2: Due to the impact of social pressure (society, environment, social network etc.) I choose organic food	404	4.423	1.1625	
	3: Most people who related are who are important to me would like me to choose organic food.	404	4.213	1.1615	
	<b>Mean Subjective Norm</b>	<b>404</b>	<b>4.1518</b>	<b>1.05255</b>	
Attitude Toward Organic Product	1: Organic product are healthier	404	4.772	1.0366	Mei-Fang Chen, 2009
	2: Organic product have superior quality	404	4.785	.9739	
	3: Organic product are more tasty	404	4.334	1.0424	
	4: Organic product are more attractive	404	4.644	1.0899	
	5: Organic product have no harmful effects	404	4.681	1.0158	
	6: Organic product are popularity	404	4.879	.9926	
	<b>Mean Attitude Toward Organic Product</b>	<b>404</b>	<b>4.6823</b>	<b>.84701</b>	

## THE ANTECEDENTS OF BRAND SWITCHING IN COSMETIC PRODUCTS – A STUDY AMONG VIETNAMESE CONSUMERS

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### ABSTRACT

A strong brand not only needs to keep its customers through the improvement of product/service quality but also needs to retain them from outside attractions. Consequently, this study proposed a brand new conceptual framework of consumers' switching process which mainly focused on psychological and behavioral aspects of consumers. With the sample of 232 respondents, this cross-sectional study indicated the influence between satisfaction level and alternative attraction on brand switching with post-purchase consumer regret as a mediating factor as well as the negative relationship between consumer inertia and intentions of switching among consumers. Managerial implications were also discussed.

*Keywords:* brand switching, alternative attraction, customer satisfaction, consumer inertia, post-purchase consumer regret, cosmetic, branding, competitiveness.

### INTRODUCTION

Viet Nam is a potential market for cosmetic industry. According to the Chemical Cosmetic Association (2013), there are currently 430 cosmetic brands in Ho Chi Minh City. In addition, Vietnam is a huge potential market with the impressive growth rate of 30% per annum for the past few years. Moreover, the cosmetic industry is predicted to grow higher in future with average turnover of 10500 billion VND a year and annual sale increase of 30% (Taiwan External Trade Development Council, 2015). Those could be the reason why the Vietnamese cosmetic market has attracted a lot of the world's cosmetic leaders like Unilever, L'Oreal, Johnson & Johnson and P&G. The problem is that Vietnamese cosmetic brands currently only satisfy a small segment of market and seem not very competitive compared to foreign companies. Particularly, Vietnam only occupies 5% the market share after Thailand (30%), Indonesia (23%), Philippines (21%) and Singapore (7%). This poses a threat for the sustainable development of Vietnamese cosmetic companies in this fierce market. With the intensity of this market, the competitiveness among brands strongly increases and customers tend to choose more sophisticated products and to shift toward well-known brand names. With various choices, customers easily switch to another brand. In this situation, a conceptual framework about brand switching is significant to help firms predict why customers switch and why they do not.

Brand switching is an important topic in marketing literature. If firms know the purchasing habits of potential customers, the firms can try to poach the current of their competitors by offering them some inducements to switch (Fudenberg and Tirole, 2000). Additionally, a better understanding of the relationships between psychological and behavioral factors on customers' brand switching would assist marketing decision-makers seeking to improve marketing productivity (Kleppe et al., 2002). In the past, most research about brand switching were conducted by about using experiment method (e.g., Fraser and Bradford 1983; Carpenter and Lehmann 1985; Chance and French 1972; Ehrenberg 1965). There are very few research using quantitative methods to determine antecedents of brand switching behavior (Bansal and Taylor, 2004; Van Trijp et al., 1996).

This study was as an attempt to fill the above gap. We developed a conceptual model using quantitative method to investigate the impact of psychological and behavioral factors on brand switching intention in Vietnamese cosmetic industry. The research results provided a model explaining how people switch. Additionally, cosmetic firms, especially local ones, can use the results for their understanding about customer behaviors, thus discourage the deflection rate from their current customers.

## THEORETICAL BACKGROUND AND PROPOSED HYPOTHESES

### Brand switching

According to Keller (2001), brand switching is the behavior of customers to move from one brand to another. For an extended definition, Kumar and Charles (2011) identified that brand switching is the process in which consumer switches from the usage of one product to another product but of same category.

Brand switching behavior occurs as a result of two main motivations – extrinsic motives and intrinsic incentives (Mazursky, LaBarbera and Aiello, 1987). Extrinsic motives are outside factors that encourage customers to switch to competing brands such as sales promotion, advertising spending, etc. On the other hand, intrinsic incentives may include post-purchase consumer regret, variety seeking behavior, etc. If switching is due to intrinsic reasons, the probability of brand switching tends to be smaller than if it is attributed to extrinsic reasons. At the same time, however, the company can depend more on switching, which is attributed to intrinsic motives than on price reduction incentives if it attempts to acquire new potential customers.

Morgan and Dev (1994) proposed three types of variables that affect brand switching behavior in retail service market: (1) change in usage context or situation (called context variables); (2) variables such as marketing mix actions which are more or less directly controllable by the firm (called control variables) and (3) demographics and other background characteristics (called customer variables).

In this study, we focus on intrinsic values and customer variables - in particular, the psychological and behavioral factors that affect customers' intention to switch brand.

### Post-purchase Consumer Regret

Regret denotes an aversive cognitive emotion that people are motivated to avoid, suppress, deny, and regulate should they experience it (Zeelenberg and Pieters, 2006). Generally, it is considered as a painful experience when customers compare “what is” and “what might have been” (Sugden, 1985). In other words, regret feeling exists in situations when people say “If... then”. Regret is different from disappointment. When the “if” refers to a bad decision while the decision maker thought they could do better, the negative feeling which occurs is regret. When the “if” refers to situations beyond the control of decision maker and they cannot change anything due to external factors, the resulting sensation now is disappointment.

According to Decision Justification Theory (DJT), overall regret experience can include regret experience as a result of outcome plus regret experience due to process (Connolly and Zeelenberg, 2002). Based on this theory, Lee and Cotte (2009) developed a multidimensional construct to measure post-purchase consumer regret that also includes outcome regret and process regret. Within outcome regret, there are two main components: regret due to foregone alternatives and regret and due to a change in significance. Within process regret, it includes two main components as well: regret due to under-consideration and regret due to over-consideration.

### Outcome regret

#### Regret due to Foregone Alternatives

When an individual feels regretful because there are some other alternative options better than the current chosen one, it is called regret due to foregone alternatives (Lee and Cotte, 2009). This kind of regret is probably the most common perception of post-purchase regret.

#### 2.1.2. Regret due to a Change in Significance

Regret due to a change in significance is caused by a diminished usefulness in decision maker's perception after the products have been purchased (Lee and Cotte, 2009). When a customer purchases a product, it is because he or she needs it. The buying behavior is to satisfy the demand of customer at a certain point of time. However, the demand may fluctuate over time if there is an event happens and causes a change in demand of customer, which makes the product less attractive and no more useful in perceptions of customers (e.g., buying a birthday cake to give to a friend at the party but then the party was unexpectedly canceled).

### Process regret

#### Regret due to Under-Consideration

No matter what the outcome is, consumer may have regret experience due to lack of information. Based on previous literature review, there are two reasons that can result in this type of regret. The first reason is when customer failed to implement the decision process as they intended it (Pieters and Zeelenberg, 2005). The second one which leads to regret is when customers believed they lacked appropriate sources of information to make a good decision (Lee and Cotte, 2009).

### **Regret due to Over-Consideration**

An individual can regret if they think that they put a lot of effort on the process of making decision. Unlike regret due to under-consideration that customer regrets because they think that if they put enough effort into the decision process, they could get a better choice, regret due to over-consideration is a customer's thought that even when they put less effort, the result was still the same (Lee and Cotte, 2009).

Regret usually occurs as a result of effort of customer to consider the chosen options against the rejected ones (Inma, Dyer, and Jia, 1997). If the comparison is poor (i.e. the rejected options are better than the chosen ones), people tend to feel regretful and responsible due to their poor choice. To avoid regretful feeling, people are more likely to switch to another option for the next time they make decision. Some previous research indicates that regret increase brand switching intention (Zeelenberg and Pieters, 1999; Krishen et al., 2011).

Based on the above reasoning, we proposed four hypotheses as follows:

H1: There is a positive interaction between regret due to foregone alternatives and brand switching intention.

H2: There is a positive interaction between regret due to a change in significance and brand switching intention.

H3: There is a positive interaction between regret due to under - consideration and brand switching intention.

H4: There is a positive interaction between regret due to over - consideration and brand switching intention.

### **Customer satisfaction**

In general, customer satisfaction can be understood from two main perspectives: transaction-specific and cumulative (overall) perspectives. The transaction-specific approach defines customer satisfaction as an evaluation contingent on the most recent transaction experience (Boulding et al., 1993). In contrast, the cumulative approach perceives customer satisfaction not as a specific evaluation at one time but a cumulative evaluation from past to present (Johnson and Fonell, 1991). The cumulative perspective is better because it captures an overall picture of customer satisfaction from past to present; thus, it reflects a more accuracy evaluation of a certain brand. This study adopts the cumulative approach and the definition of customer satisfaction as "a feeling of pleasure or disappointment when customers compare between the perceived quality of products or services with expectations" (Kotler and Keller, 2009).

According to Krishen et al. (2011), regret is a determinant of satisfaction and it decreases customer satisfaction. However, Zeelenberg (2013) indicated that in some situations, customers do not necessarily regret before forming their satisfaction about the chosen alternative. Therefore, regret seems to play a mediating role between satisfaction and intention formation. In this study, we adapted this perspective. Thus, four hypotheses are proposed as follows:

H5: There is a negative interaction between customer satisfaction and regret due to foregone alternatives.

H6: There is a negative interaction between customer satisfaction and regret due to a change in significance.

H7: There is a negative interaction between customer satisfaction and regret due to under-consideration.

H8: There is a negative interaction between customer satisfaction and regret due to over-consideration.

As customer satisfaction is one of predictors of brand switching (Ying-Feng Kuo et al., 2013; Bansal and Taylor, 2004), we proposed hypothesis 9 as follows:

H9: There is a negative interaction between customer satisfaction and brand switching intention.

#### **Alternative attraction**

Alternative attraction is the perception of customers about the likelihood of getting more satisfaction from other alternative product/service providers than from the current choice. When consumers perceive that other alternative providers sell products with lower price, higher quality or more attractive services or more impressive features than the brand they generally use, alternative attraction occurs (Keaveney, 1995; Ping, 1993).

In an intensely competitive market, alternative attraction take places most. In this situation, customers are easily influenced by offers and persuasions from other competing brands, providers and can easily switch to the most attractive one (Bansal and Taylor, 2004; Jones and Sasser, 1995; Keaveney, 1995). Therefore, we proposed hypothesis 10 as follows:

H10: There is a positive interaction between alternative attraction and brand switching intention.

Also, we proposed a positive relationship between alternative attraction and regret due to foregone alternatives because when customer perceives strong attraction from other brands, they feel regretful with their current choices. Therefore, hypothesis 11 could be stated as follows:

H11: There is a positive interaction between alternative attraction and regret due to foregone alternatives.

#### **Consumer inertia**

Inertia is the way when individuals believe they can confidently rely on a source of existing information to achieve objectives in a stable and reliable environment (Gulati, 1995). On another hand, Campbell (1997) defines inertia as a condition where “repeat purchases occur on the basis of situational cues rather than on strong partner commitment”. Inertia refers to a non-conscious form of human emotion, and it has been conceptualized as a single dimensional construct consisting of “passive service patronage without true loyalty” (Huang and Yu, 1999). With inertia, the customer does not think it is necessary to spend much time on the decision process in selecting another brand (Assael, 1998). It is also reported that the more customers visit an online store due to inertia, the higher chance that they will buy again products from that store (Ying-Feng Kuo et al., 2013). The tendency can be explained owing to the perception of least efforts required for shopping in a store and the familiar image of that store on minds of customers. Therefore, consumers with high inertia tend to perform repeat-purchase behavior more strongly and frequently (e.g. Liu et al., 2007; Solomon, 2007; White and Yanamandram, 2004; Ying-Feng Kuo et al., 2013). Whereas, in a situation with very low inertia, customers are likely to switch a lot between brands. Based on the above citations, hypothesis 12 is posited as follows:

H12: There is a negative interaction between consumer inertia and brand switching intention.

From above hypotheses, a research model was developed as follows (Figure 1).

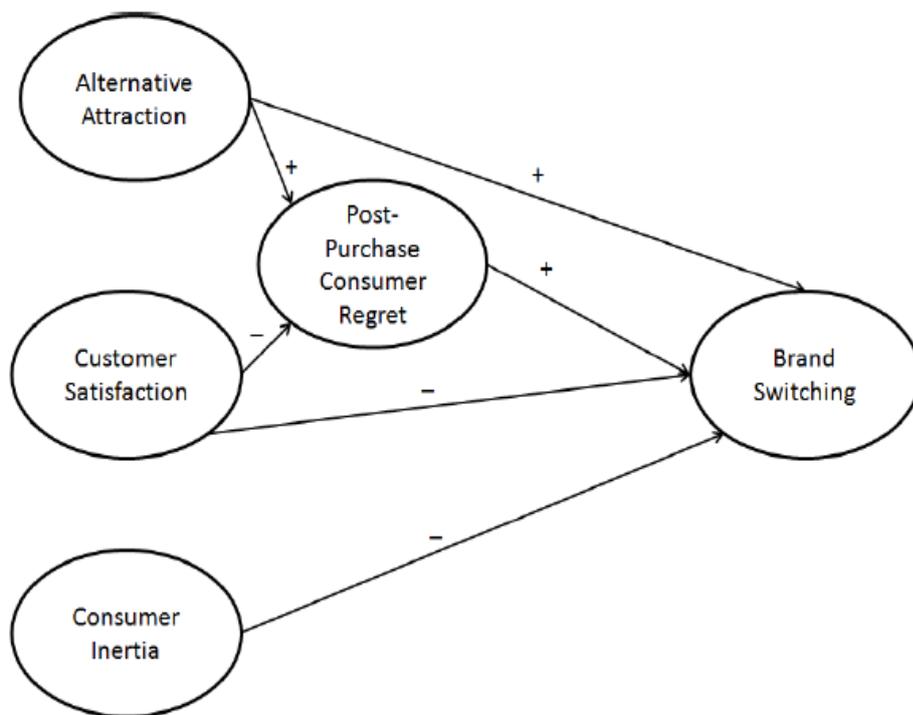


Figure 1. Research model

## METHODOLOGY

### Sampling

Convenience sampling was used as a method to collect data. Target population was Vietnamese women from 18 to 45 years old, currently living in Ho Chi Minh City and presently using a certain cosmetic brand. Since, the term “cosmetic” is too broad to help respondents think of a certain cosmetic products immediately, we chose skin care as a product representative. Lopaciuk and Loboda (2013) indicated that skin care occupies the highest global beauty retail sales by product category.

To get a high probability to approach these target respondents, questionnaires were delivered by both online and offline channels. Online channel included email, social networks, etc... With offline channel, questionnaires were printed and distributed to places with high population density such as shopping malls, parks, offices, etc...

There were total 270 questionnaires delivered. However, only 232 questionnaires were accepted (25% through online channel and 75% through offline channel) for further analysis because a small percentage of these questionnaires are invalid due to respondent’s refusals to answer, conflicts in answers and incomplete surveys. The response rate was 86%, which was considered good to conclude that data were not affected by non-response bias. Non-response bias occurs when response rate is about 15-20% in a mail survey (Bhattacharjee and Anol, 2012), which a majority of the targeted respondents fail to respond to a survey due to systematic reasons.

### Questionnaire design

There were three parts in the questionnaire: filter questions, scaled questions and demographic questions. Firstly, filter questions were to ensure that respondents had used or were using cosmetic. Secondly, in scaled questions, respondents were asked to rate their agreement with each statement on a 5-point Likert scale from (1) “Strongly disagree” to (5) “Strongly Agree”. There were five related measurement scales adapted in this study: Brand switching intention (Oliver and Swan’s, 1989), Post-

purchase Consumer Regret (Lee and Cotte, 2000), Customer satisfaction (Westbrook and Oliver, 1981), Alternative attraction from other brands (Bansal and Taylor, 2004; Ping, 1993), Consumer inertia (Anderson and Srinivasan, 2003; Liu et al., 2007). Items of each scale are shown in Appendix 1. Finally, demographic questions asked respondents about age, income, occupation, frequency of purchasing cosmetic.

### Data analysis method

This study used both SPSS and AMOS to analyze data. Specifically, for SPSS, descriptive statistics was used analyze demographic data of respondents, reliability test with Cronbach's alpha helped researchers evaluate the stability and consistency of results for each observed variable, exploratory factor analysis (EFA) was employed to describe variability among variables and group them into a number of unobserved variables called factors. For Amos, two operations that researcher used were Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM). CFA tested whether the data fit a hypothesized measurement model and SEM, a powerful multivariate analysis technique, was used to test hypotheses proposed.

### DATA ANALYSIS

Most of respondents were officers (74%) from 25 - 35 years old who earned more than 150\$ per month and had purchased cosmetics products more than 4 times in the last 6 months.

### Measurement model

#### Reliability test and EFA

This part included two test: Reliability test which was conducted by using coefficient alpha to examine the internal consistency of each measurement (Drost, 2011) and EFA which was used to test construct validity of scales in this study (Nunnally, 1978). After these tests, constructs with Cronbach's alpha higher than 0.5 and factor loadings greater than 0.3 would be kept for later steps of analysis (Table 1). The other ones would be eliminated from the model.

Table 1. Reliability test and EFA results

Variables	Reliability	Factor loading
<b>Brand switching</b>		
BS1	0.809	0.920
BS2	0.815	0.923
BS3	0.723	0.870
<b>Regret due to Foregone Alternatives</b>		
RE1	0.787	0.956
RE2	0.733	0.772
RE3	0.753	0.642
RE4	0.802	0.704
<b>Regret due to a Change in Significance</b>		
RE5	0.773	0.692
RE6	0.819	0.908
RE7	0.832	0.818
RE8	0.796	0.799
<b>Regret due to Under-Consideration</b>		
RE9	0.728	0.698
RE10	0.827	0.845
RE11	0.799	0.900
RE12	0.800	0.759
<b>Regret due to Over-Consideration</b>		
RE13	0.742	0.786
RE14	0.651	0.636
RE15	0.729	0.804

RE16	0.722	0.864
<b>Customer Satisfaction</b>		
SA1	0.854	0.851
SA2	0.862	0.889
SA3	0.863	0.940
<b>Alternative Attraction</b>		
AA1	0.790	0.847
AA2	0.813	0.873
AA3	0.817	0.877
<b>Consumer Inertia</b>		
CI1	0.576	0.784
CI2	0.618	0.778
CI3	0.496	0.535

A majority of items had high Item-Total Correlation, which showed that items of a certain measurement were highly correlated (see Table 1). Only item CI 3 had quite low correlation (0.496). However, because the deletion of CI 3 did not increase the Cronbach's alpha of Consumer Inertia, CI 3 was still kept for further analysis. Overall, the results of reliability test were considered acceptable. All factors also loaded very well in EFA.

### Correlation

Based on results from EFA, we computed the mean values of all items in the same factor and assigned these one to each factor respectively. The correlation analysis was then conducted and the outcome was demonstrated as below (Table 2):

Table 2. Correlation matrix

	1	2	3	4	5	6	7	8
1. Brand switching	1							
2. Regret due to Foregone Alternatives	0.613*	1						
3. Regret due to a Change in Significance	0.572*	0.674*	1					
4. Regret due to Under-Consideration	0.475*	0.683*	0.717*	1				
5. Regret due to Over-Consideration	0.239*	0.395*	0.411*	0.374*	1			
6. Customer Satisfaction	-0.482*	-0.530*	-0.475*	-0.478*	-0.170*	1		
7. Alternative Attraction	0.524*	0.437*	0.437	0.530*	0.315	-0.451*	1	
8. Consumer Inertia	-0.315*	-0.162*	-0.162*	-0.141*	0.031	0.402*	-0.81	1

Correlation Coefficient: Pearson Correlation

\* $p < 0.05$

Most of factors were correlated with each other except Consumer Inertia and Regret due to Over-Consideration as well as Consumer Inertia and Alternative Attraction (see Table 2). These results supported the conceptual framework proposed and provided foundations before running structural equation model.

### CFA

CFA provided a confirmatory test of measurement theory proposed in this study. In other words, CFA was conducted to test whether the measurement model fits with data. According to the result of CFA, all factor loadings were acceptable (from 0.336 to 0.834) and greater than the standard value of 0.3; see Table 3.

In addition, although the reliability test with Cronbach's alpha was used to test if data were reliable, it was still absolutely necessary to establish reliability when doing a CFA. Composite reliability was one measure used to test for this analysis. Composite reliability should be of 0.7 or greater to ensure that the dependability of overall study fits with Cronbach's alpha criteria. The results from Table 3 confirmed the reliability of this model because composite reliability of each construct was over 0.7.

Table 3. CFA results

Variables	Factor loading	Composite reliability	Average variance extracted
Brand switching	0.615 – 0.804	0.893	0.736
Regret due to Foregone Alternatives	0.601 – 0.777	0.895	0.681
Regret due to a Change in Significance	0.680 – 0.790	0.915	0.730
Regret due to Under-Consideration	0.595 – 0.780	0.907	0.710
Regret due to Over-Consideration	0.526 – 0.658	0.864	0.614
Customer Satisfaction	0.798 – 0.834	0.930	0.816
Alternative Attraction	0.730 – 0.774	0.903	0.756
Consumer Inertia	0.336 – 0.720	0.747	0.502

Moreover, items that belong to a single construct should share a high fraction of variance common, also known as convergent validity (Hair et al, 2010). If there are some issues with convergent validity of a construct, it means that observed variables do not well explain the latent variable. In CFA, the average variance extracted (AVE) was used to test the convergent validity of constructs. It was calculated as the mean variance extracted the items loading on a construct. Regarding to results of Table 3, all constructs had acceptable value of AVE (> 0.5). Therefore, these constructs ensured convergent validity of measurement model. Additionally, in order to ensure that one construct is distinct from others, discriminant validity was evaluated. After calculation, it was shown that all the AVEs were greater than R squared; and all the Maximum Shared Variances and the Average Shared Variance were smaller than the AVEs. This indicated each construct had a high degree of distinctness from other constructs in the model.

Finally, based on the fit indices, the measurement model fit was good. Thoroughly, Cmin/df = 1.720 (<2); TLI = 0.943 (>0.9); AGFI = 0.811 (>0.8); CFI = 0.951 (>0.95); RMSEA = 0.56 (<0.08).

### Structural model

CFA alone is incomplete to test the relationships between latent constructs further than simple correlations (Hair et al, 2010). Therefore, a further theory testing called Structural Equation Model (SEM) should be conducted to examine both the measurement model and the structural regression model.

### The first SEM

Results from the first SEM, excepting the relationship between Regret due to Under-Consideration/Regret due to Over-Consideration/Customer satisfaction and Brand Switching Intention, all of remaining hypotheses were supported with p-value less than 0.05. In addition, model fit of the first SEM was not quite good as fit indices were not consistent with acceptable threshold level. Thus, a revision for SEM should be conducted to make the fit of measurement model better.

Moreover, the modification indices suggested adding two additional paths to improve the measurement model fit: a covariance between Customer satisfaction and Alternative attraction and a covariance between Customer satisfaction and Consumer Inertia. According to Hair et al (2010), the researcher should use modification only improve model of those relationships that can be theoretically justified. In this situation, there was a strong justification for these adding paths. Firstly, when customer feel satisfied with their current brand, they may pay no attention to the attractions from other brands even these attractions may be strong. Secondly, customer tend to keep using products of a certain brand intuitively when they feel satisfied with benefits they can get from that brand; thus,

propose a correlation between customer satisfaction and their inertia. In conclusion, adding these two paths was appropriate to improve model fit.

H13: There is a negative interaction between customer satisfaction and alternative attraction

H14: There is a positive interaction between customer satisfaction and consumer inertia.

Based on above results, the revision of model included: (1) the elimination of the Regret due to Under-Consideration and Regret due to Over-Consideration as well as the relationships between Customer satisfaction and Brand Switching Intention in measurement model and (2) the suppleness of two more paths.

### The second SEM

After the revision of model, all of current fit index were well improved. Specifically, Cmin/df = 2.289(<3); TLI = 0.928 (>0.9); AGFI = 0.825 (>0.8); CFI = 0.939 (>0.9); RMSEA = 0.75 (<0.08). The results indicated an acceptable model fit.

Moreover, the correlations between Customer satisfaction and Alternative attraction, Customer satisfaction and Consumer Inertia with p values were all significant (<0.05). All of 7 remaining hypotheses were supported (Table 4).

Table 4. Hypotheses testing results (After two SEMs)

Hypotheses	Path	SEM results	Test results
H1	Regret due to Foregone Alternatives -> Brand Switching Intention	0.255(0.004)	<b>Supported</b>
H2	Regret due to a change in significance -> Brand Switching Intention	0.307***	<b>Supported</b>
H3	Regret due to Under-Consideration -> Brand Switching Intention	-0.143(0.053)	Not Supported
H4	Regret due to Over-Consideration -> Brand Switching Intention	-0.050(0.441)	Not Supported
H5	Customer satisfaction -> Regret due to Foregone Alternatives	-0.408***	<b>Supported</b>
H6	Customer satisfaction -> Regret due to a change in significance	-0.600***	<b>Supported</b>
H9	Customer satisfaction -> Brand Switching Intention	-0.047(0.665)	Not Supported
H10	Alternative attraction -> Brand Switching Intention	0.299***	<b>Supported</b>
H11	Alternative attraction -> Regret due to Foregone Alternatives	0.416***	<b>Supported</b>
H12	Consumer inertia -> Brand Switching Intention	-0.313***	<b>Supported</b>
H13 (new)	Customer satisfaction -> Alternative attraction	-0.327***	<b>Supported</b>
H14 (new)	Customer satisfaction -> Consumer Inertia	0.243***	<b>Supported</b>

\*\*\*: *p* value < 0.001

### DISCUSSION

The research proposed a conceptual model to empirically confirm the roles of customer satisfaction, alternative attraction, consumer inertia and post-purchase consumer regret in the causal relationship with brand switching intention. The model suggested the order of impact that when customers are attracted by other competing brands or they feel dissatisfied with current brand, they suffer a process called post-purchase outcome regret before acting the brand switching behavior. Although post-purchase regret may include outcome regret and process regret, it is proved that only outcome regret affects the intention of switch brand.

First, cosmetic firms should recognize that customers stay for some reasons: they feel satisfied with the current brands, they do not see the attractiveness from other brands and they are accustomed to buying products from the current brands so they tend to keep these patterns when decide to buy. However, with intense competition in the industry, customers are easily attracted by advertising, sales promotions, qualification from other brands. These pose challenges for firms that want to improve the loyalty of their customers. Our validated model implied that firms may use different tactics to limit switching behaviors among customers.

First, satisfaction is usually considered as a key driver of purchase intention. Customers with high satisfaction will keep buying products from current brand while dissatisfied customers are likely to switch brands. In defensive marketing strategies, firm managers should increase satisfaction of customer and reduce regret by improving product quality, discounting price in some occasions, catching up new trend of consumers, redesigning into new package and advertising programs and building strong network with customers.

One of the insights from our model is that even satisfied customers will switch brand if they think that they can get more benefits from other brands. Alternative attraction always proposes threats for firms want to keep their customers. The solution for this problem is to improve brand awareness and loyalty by building top-of-mind image in a specialized segment (e.g., Mascara for Maybeline, Skin care for The Face Shop). By narrowing segment, the alternative attraction is weakened as fewer competitors exist when targeted segment becomes narrower. Since there is a strong negative relationship between satisfaction and alternative attraction, another strategy to weaken the attraction of competitive products is to increase customers' satisfaction for the products.

Lastly, brand switching intention decreases when consumer inertia is strong. When people are accustomed of buying products from a certain brand, they tend to keep buying even that they are not highly satisfied with current brand and feel that other brands can do better. The justification is that customers do not want to change their daily patterns, they think that everything they have got is at an acceptable level; thus create a resistance to switch brand. The managerial implication is that cosmetic firms should think of strategies that make customer keep buying products in long-term and feel familiar with current brand. For example, membership card, loyalty programs, cumulative bonus points registered for each purchase can be of good help in these cases.

### **CONTRIBUTIONS, LIMITATIONS AND FUTURE RESEARCH**

The study contributed to the body of literature by proposing and validating a new research framework that explains the switching behavior of consumers in the field of cosmetic products. It is the first model that incorporates alternative attraction, and consumer inertia and post-purchase regret in a successful attempt to predict switching behavior.

In terms of practical contributions, the study provided customer insights to marketers in cosmetic products so that they can devise appropriate marketing strategies to change psychological factors of consumers (e.g., inertia, post-purchase regret) in a way that will nudge down customer switching intention. Or they can aim to weaken the effect of competitive attraction so that their customers will not be lured away. It is believed that the application of our research model is not only limited in the investigated industry (the cosmetic), but also in other similar markets.

Despite its contributions, this research has some limitations.

First of all, due to limitation of time and financial capacity, the sample size was not representative enough to generalize the results for the whole population. Future research should use representative sampling so that the results can be generalized.

Future research may consider extend the model to include other related behavioral variables such as variety seeking behavior, purchase history and materialism as potential determinants of brand switching intention. Another direction is to test the moderating impacts of resistance to change on switching intention. Since interactions are usually difficult to detect in field research, causal research could be used for research in the future.

APPENDIX 1. MEASUREMENT SCALES

Construct	Variables	Items
Brand Switching Intention	BS1	I will likely change from my “current brand” to another brand within the next 6 months.
	BS2	I will probably change from my “current brand” to another brand within the next 6 months.
	BS3	I will certainly change from my “current brand” to another brand within the next 6 months.
Regret due to Foregone Alternatives	RE1	I should have chosen something else than the one I bought.
	RE2	I regret the product choice that I made.
	RE3	I now realize how much better my other choices were.
	RE4	If I were to go back in time, I would choose something different to buy.
Regret due to a Change in Significance	RE5	I regret getting the product because it was not as important to me as I thought it would be.
	RE6	I wish I hadn’t bought the product because it is now useless to me.
	RE7	I regret my purchase because the product never served its purpose.
	RE8	I regret my purchase because I did not need the product.
Regret due to Under-Consideration	RE9	With more information, I feel that I could have made a better decision.
	RE10	I feel that I did not put enough consideration into buying the product.
	RE11	With more effort, I feel that I could have made a better decision.
	RE12	I regret not putting enough thought into my decision.
Regret due to Over-Consideration	RE13	I expended too much effort in making my decision.
	RE14	I wasted too much time in making my decision.
	RE15	I think I put too much thought in the buying process.
	RE16	I feel that too much time was invested in getting this product.
Customer satisfaction	SA1	I am satisfied with my decision to buy this product.
	SA2	My choice to buy this product was a wise one.
	SA3	I have truly enjoyed this product.
Alternative attraction	AA1	Many other brands are better than “my current brand” are available for my choice.
	AA2	I can obtain more satisfactory services from other brands than from “my current brand”.
	AA3	I can enjoy more benefits from other brands than from “my current brand”.
Consumer inertia	CI1	Unless I am very dissatisfied with “my current brand”, changing to a new one would be a bother.
	CI2	I will access “my current brand” very intuitively when I need to purchase.
	CI3	To my mind, the cost of time, money, and effort for switching to other brands is high.

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