

No.	Author	Research Title	Journal/Conference
1/	Panja Senadisai , Jirasek Trimetsoontorn and Wanno Fongsuwan	Model of Factors Influencing the Intention to Purchase Lactose-free Milk for the Population of Bangkok	Research Journal of Business Management 8 (3):284-293, 2014
2/	Marut Maneesatitya and Wanno Fongsuwan	Structural Equation Model of Variables Affecting Turnover Intentions on Bangkok's Information Technology Career Professional	Research Journal of Business Management 8 (4):453-463, 2014
3/	Surachet Pongchanchavalit and Wanno Fongsuwan	Structural Equation Model of Customer Perception of Service and Product Quality Factors that Affects Thai Information Technology Customer Loyalty	Research Journal of Business Management 8 (4):412-426, 2014
4/	Chiew Charn Sivakunakorn , Urasa Buatama and Wanno Fongsuwan	Efficiency of Waste Management in Phuket Province	Research Journal of Business Management 8 (3):294-299, 2014
5/	Naphatrada Thampradit and Wanno Fongsuwan	Strutural Equation Modeling of Relationship Factors Affecting Entrepreneurial Microfinance in Phuket, Thailand	Research Journal of Business Management, 2014
6/	Naphatrada Thampradit and Wanno Fongsuwan	Knowledge Management ,Responsibility and Organizational Factors that Affect Microfinance Support to Phuket, Thailand Entrepreneurs	Research Journal of Business Management, 2014
7/	Sittichai Meesrichan and Wanno Fongsuwan	An Analysis of Thai Commercial Banks Branch Expansion Factors Including Leadersho=ip,Location,Cost and Economics	Research Journal of Business Management 8 (4):552-565, 2014
8	Natthapat Teeranantawanichand and Wanno Fongsuwan	Foreign Real Estate Holdings in Thailand's Special Autonomous Systems (SAS) Bangkok and Pattaya: A StructuralEquation Model	Research Journal of Business Management 8 (4):538-551, 2014
9/	Chalernpol Nuchudom and Wanno Fongsuwan	Analysis of Bangkok's Metropolitan Administration (BMA) District Offices Using a Structural Equation Model	Research Journal of Business Management 8 (3):230-241, 2014
10/	Somboon Aueatchasai and Wanno Fongsuwan	ASEAN Biomass Energy a Thai Environmental Impact Analysis by use of a Structural Equation Model (SEM)	Research Journal of Business Management 8 (4):523-537, 2014
11/	Preecha Nobnorb and Wanno Fongsuwan	Factors Affecting Free Labor Movement Amongst Rubber Industry Workers Within the ASEAN Economic Communication-AEC	Research Journal of Business Management 8 (4):427-439, 2014
12/	Prapet Chongsanguan,Jirasek Trimetsoontorn,Wannoo Fongsuwan	Examing the relationshipp between sevice quality,perceived value.Customer satisfaction and purchase intantion: A marketing study of bangkok's metropolitan rapid transit systm,Thailand.	Journal for Global Business Advancement
13/	Prapet Chongsanguan,Jirasek Trimetsoontorn,Wannoo Fongsuwan	Hierarchical Model of Sevice Quality and its Effect on Customer's Perceived Image,Satisfaction and Behavioural Intentions: A study of Bangkok's Mass Rapid Transit Systems,Thailand	Journal for Global Business Advancement
14/	Karn Choaknumkit and Wanno Fongsuwan	Thailand's Provincial Electricity Authorlity (PEA) Electronic Customer Relationship	Research Journal of Business Management 8 (4):464-473, 2014

Model of Factors Influencing the Intention to Purchase Lactose-free Milk for the Population of Bangkok

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ABSTRACT

Milk is an important source of protein, fat, lactose, vitamins and minerals. The nutritional value of milk from various animals, such as the highly popular cow milk, contains many useful nutrients. However, milk consumption is restricted for some consumers because they are allergic to milk. Milk allergy can be found in children and adults alike. In children, allergy symptoms include diarrhea and vomiting while the symptoms in adults include flatulence, indigestion and stomach gas. These symptoms are a result of the body's inability to digest lactose in milk due to the lack of necessary enzymes that can digest milk. A study discovered that East Asian and North American populations have the highest rate of lactose intolerance of 80-100%, followed by the Middle Eastern population at 80%. The United Kingdom population has the lowest rate of lactose intolerance at 5-15%. Lactose-free milk for adults is not yet commercially available in Thailand. Therefore, the researchers are interested in studying the level of knowledge on lactose-free products and factors influencing the intention to purchase lactose-free milk for the population of Bangkok. The researchers hope that these findings will be used to develop a guideline for suitable marketing strategies of lactose-free milk in Thailand. These findings can also provide basic information for the government sector to formulate appropriate public health plans for populations with lactose intolerance. This research used both quantitative and qualitative approaches. The scope of the research was limited to consumers over 18 years in Bangkok with total study samples of 500 subjects. The quantitative techniques used were Path Analysis and Partial Least Square (PLS-Graph program) while the qualitative technique used was in-depth interview with individuals in the related fields of nutrition and food and beverage marketing. There were a total of 10 interviewees who were physicians, nutritionists and marketing experts. The research found that the factors influencing the intention to purchase lactose-free milk include consumer characteristics (age and health conditions), knowledge of lactose-free milk (consumer knowledge, public relations and brand reputation) and milk consumption behavior (milk quality and price acceptance).

Key words: Food and beverage business, purchase intention, management, consumer behavior

INTRODUCTION

Milk is an important source of nutrients such as proteins, fat, lactose, vitamins and minerals. People of all genders and ages can drink milk and they can choose from a large variety of available milk products such as milk powder, ready-to-drink milk, milk tablets and dairy products such as yogurt, drinking yogurt butter, cheese, ice cream, etc. Thailand has seen a gradual increase in local

dairy processing plants which include private and government-supported plants. Past governments have promoted dairy farming and supported the dairy processing industry, as well as introduced campaigns to promote milk drinking in schools. Such policies have significantly contributed to the advance of domestic dairy industry.

A major component of milk from mammals is lactose, a disaccharide which is formed from glucose and galactose molecules. The absorption of lactose into the small intestine wall requires the enzyme lactase. If the lactase enzyme is not present or present at reduced amounts, lactose cannot be digested and absorbed. The undigested sugar enters the large intestine and is fermented by bacteria. This produces various gasses within the intestines including hydrogen, carbon dioxide and methane causing various symptoms. Apart from the large amount of gas, the fermented sugar creates osmotic pressure. Scientifically, high osmotic pressure causes water to be drawn from low to high osmotic pressure areas which are usually the large intestines. The increased amount of water in the large intestines usually leads to diarrhea. This symptom of milk allergy is a result of the body's inability to digest lactose in milk because it lacks the lactase enzyme necessary for digestion (Casellas and Malagelada, 2003). A study by Itan *et al.* (2010) discovered that East Asian and North American populations have the highest rate of lactose intolerance, at 80-100%, followed by the Middle Eastern population at 80% and the United Kingdom population with the lowest rate of lactose intolerance at 5-15%. Thailand is part of the Asian populations that have a very high rate of lactose intolerance at 98% (Kretchmer, 1972). There has yet to be any lactose-free dairy products for adults available commercially in the country. At present, only lactose-free dairy products are available to children in the form of imported milk powder but there are no alternative dairy products for lactose intolerant adult consumers. Some consumers are unaware of the causes of milk allergy and do not know about the benefits of lactose free dairy products.

The researchers have, therefore, decided to conduct a research under titled "A model of factors influencing the intention to purchase lactose-free milk for the population of Bangkok" whose primary objectives are: (1) To study the level of knowledge about lactose-free products of consumers in Bangkok (2) To study the relationship between consumer's personal data and knowledge of dairy products and the purchase intention of lactose-free dairy products of consumers in Bangkok; and (3) To study the marketing factors of lactose-free dairy products influencing lactose-free dairy products purchase intention of consumers in Bangkok. The researchers believe that the findings of this research will reveal significant information on two aspects of this topic: (1) The level of knowledge about lactose-free dairy products among consumers in Bangkok; (2) The factors influencing the purchase intention of lactose-free milk products of target consumers in Bangkok. These data can be subsequently used to formulate marketing strategies for lactose-free dairy products in Thailand and can provide basic information to the government sector in planning health measures for people with lactose intolerance.

CONCEPTUAL DEVELOPMENT

Purchase intention/model factors: Ostrom and Lacobucci (1995) stated that consumer satisfaction and repeated purchase intention have different structures. There are two dimensions in consumer satisfaction, cognitive and affective while repeated purchase intention has the additional dimension of behavior. Normally, consumers will make a repeat purchase when the purchased product or service works well or has the required qualities. A study by Chen (2007) titled "Consumer attitude and repeated purchase intention of organic food in Taiwan: A case study of the

mitigating effect of food on personality" concluded that the purchase intention of consumer products are affected by many factors such as health or an individual's genetic makeup (Chantasophon and Leelawacharamas, 2007). The need for different minerals for nourishment differs with each individual's health, mood or incentive. This finding is congruent with Ajzen's Theory of Planned Behavior (TPB) which states that incentive will generate consumer's interest which will lead to data acknowledgement and understanding of the product as well as the benefits of its consumption. Product information and knowledge generate curiosity and the desire to try the product. Consumers will choose the product that satisfies the body's needs for nutrients (Chantasophon and Leelawacharamas, 2007). Price is also an influential as it must be reasonable and consistent with the provided service and quality. It is an important factor that has been widely used in management strategy (Barsky and Labagh, 1992).

Characteristic population: Published in the Journal of Food and Medicine, Volume 6, Issue 1/2542 was an article titled "On the Subject of Milk" which stated that the national nutrition plan mentioned that when the 2001 National Economic and Social Development Plan was introduced the government supported the food supplement program (milk) for the reason that people who disliked or lacked the opportunity to drink milk did not get enough calcium in their diet. Therefore, people of all genders and ages should regularly drink milk. Children need calcium to build bones while adults and the elderly need calcium to control or slow the degradation of bone mass. There are many types of milk such as low fat milk, fat free milk or lactose milk. It is, therefore, necessary for consumers to have knowledge about milk and its benefits in order to be able to choose the right type of milk for their individual characters. Different groups of consumers have different dairy needs and is influenced by different factors such as age, gender, race and health problems (Hodges, 2008). For these reasons, business operations should take consumer's differences into consideration and provide different types of products to suit the needs of each consumer group (Johnson and Fornell, 1991).

Milk knowledge: In the food business, managers must study the consumer needs and lifestyles in order to create a product that satisfies such needs. Since consumer needs constantly shift with the changing situation, the market always has a need for novel and unique products. The current trend in the field of food product development is functional foods. Consumers search for information or knowledge about the product its qualities and benefits; they are the influencing factors for purchase decision (Shafiq *et al.*, 2011). Consumers must be made aware of the benefits and safety of a product (Zhou and Wang, 2011). For consumers to have that awareness or knowledge of a food product, manufacturers must advertise the product through various media outlets to reach consumers (Satrawaha *et al.*, 2011). Television is an influential media for consumer's purchase decision. The type of milk we choose to drink is associated with the belief that drinking milk is good for one's health (Tarawanich, 1996). There have been promotion appeals to increase consumer's awareness on organic foods (Chen, 2007). The information provided to consumers depends on the level of education and the awareness of target consumers; different levels of education and awareness result in different styles of advertising (Saengwaree and Noiya, 2009). Another communication channel with consumers is the packaging design. Packaging design and improvement aiming to reach a wider base of target customers is the strategy used to maintain and increase customer bases. This strategy has been an important driving force in the growth of the

dairy products market (KTRC, 2006). A study by Klockner and Ohms (2009) found that the purchase intention of organic milk depends on the knowledge that consumers obtained from milk labels or packaging media which make the consumers aware of the benefits and different types of milk. Brand or business reputation also reflects the awareness of product distinction (Farquhar, 1990) and increases customer confidence (Randall, 1997).

Customer behavior: Today's consumers pay more attention to what they consume and focus more on nutritional and healthy consumption for body benefits. Therefore, food products should be nutritional for both healthy and ill persons (Sarkar, 2007a). For instance, the high nutritional value and convenience of consumption of soy milk makes purchase decision easy for consumers. In a study titled "Potential of acidophilus milk to lower cholesterol" it was shown that the presentation of the product must offer alternatives to suit customer needs and to increase its value (Satrawaha *et al.*, 2011). This is because different satisfaction levels are determined by customer behaviors (Yang *et al.*, 2011). Consumers will make repeated purchase when the product is different or has better qualities than previous products. Products with standard quality create trust and confidence in consumers which in turn influence their repeated purchase intention (Chung and Lee, 2003; Ha *et al.*, 2010; Kim *et al.*, 2010). Furthermore, differences in product qualities and price factor are important influencing factors in purchase intention. Product price should be reasonable (not too much different from competitors), consistent with the product quality as well as fair and transparent (Boniface *et al.*, 2012). These elements should provide a guideline for the development of price acceptance; product price should be the price that consumers are willing to pay (Fearne and Bates, 2003). Prices will vary with each society and different prices can be set for consumers of different social statuses (Zhu and Liu, 2011).

From the above conceptual review and development, the researchers have developed the following hypotheses for the present study:

- Hypothesis 1 (H₁):** Characteristic population influences milk knowledge
- Hypothesis 2 (H₂):** Characteristic population influences milk consumption behavior
- Hypothesis 3 (H₃):** Characteristic population influences purchase intention
- Hypothesis 4 (H₄):** Milk knowledge influences milk consumption behavior
- Hypothesis 5 (H₅):** Milk knowledge influences purchase intention
- Hypothesis 6 (H₆):** Milk consumption behavior influences purchase intention

METHODOLOGY

This research is a combined quantitative and qualitative research. The research population or unit of analysis consists of 500 samples of general consumers and consumers with knowledge of lactose-free milk in Bangkok.

Data collection: For quantitative research, data from questionnaires were collected from groups of general consumers and consumers with knowledge of lactose-free milk in Bangkok. The research's sample size was calculated for large and unknown ratio population and a sample population of 383 at the confidence level of 95% was determined. The researchers collected 500 questionnaires from participants of the focus groups at a seminar on lactose-free milk.

The questionnaires were created as a measurement tool that is consistent with the research's conceptual framework and operational definitions. The 5-point Likert Scale questionnaire was

reviewed by medical, nutritional and marketing specialists. Cronbach's α -coefficient was used to measure the internal consistency of the scale. The α -coefficient was found to be between 0.826-0.853 indicating high reliability of the questionnaire.

Quantitative measurement

Dependent variable

Purchase intention: A measurement tool in the form of a 5-point scale questionnaire was developed to measure consumer's needs, intention and recommendations (Ostrom and Lacobucci, 1995; Chen, 2007; Chantasophon and Leelawacharamas, 2007; Barsky and Labagh, 1992).

Independent variable

Characteristic population: A measurement tool in the form of a questionnaire was developed to measure gender, age and health (Hodges, 2008; Johnson and Fornell, 1991).

Milk knowledge: A measurement tool in the form of a 5-point scale questionnaire was developed to measure knowledge level, public relations activities, manufacturer reputation and packaging (Shafiq *et al.*, 2011; Zhou and Wang, 2011; Satrawaha *et al.*, 2011; Tarawanich, 1996; Chen, 2007; Saengwaree and Noiyai, 2009; KTRC, 2006; Klockner and Ohms, 2009; Farquhar, 1990; Randall, 1997).

Consumer behavior: A measurement tool in the form of a 5-Point scale questionnaire was developed to measure milk attributes, price acceptance and purchase convenience (Sarkar, 2007a; Satrawaha *et al.*, 2011; Yang *et al.*, 2011; Chung and Lee, 2003; Ha *et al.*, 2010; Wennstrom *et al.*, 2008; Kim *et al.*, 2010; Boniface *et al.*, 2012; Fearn and Bates, 2003; Zhu and Liu, 2011).

For qualitative research, the researchers conducted in-depth interviews with 10 specialists who are physicians, nurses, nutritionists and marketing specialists.

ANALYSIS AND RESULTS

The quantitative data were analyzed with the Partial Least Squares statistical tool. The hypotheses were validated with the PLS-Graph program (Chin, 2001). The analysis results were displayed as a model structure to determine manifest and latent variables. The measurement tools' validity and reliability were analyzed and their internal consistency was measured by Cronbach's α -coefficient. The α -coefficient was found to be between 0.826-0.853 which indicates high reliability level.

Reflective model structures were created for this research and tested for convergent validity and discriminant validity. The criteria for convergent validity are as follows: the loading value must be positive, the indicator loading values must be over 0.707 with a statistical significance of ($|t| \geq 1.96$) for all values (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Piriyaikul, 2010). The analysis results are shown in Table 1.

Characteristic population factors consisting of Health and Age had the loading values of 0.9433 and 0.8851 with a statistical significance of 95% ($t\text{-stat} > 1.96$) which indicate that a particular factor had influence over purchase intention.

Milk knowledge factors consisting of knowledge, public relations and reputation had the loading values of 0.8352, 0.7904 and 0.7693 with a statistical significance of 95 ($t\text{-stat} > 1.96$) which indicate that a particular factor had influence over purchase intention.

Table 1: Reflective statistical values indicating convergent validity of the latent variables

Construct/Item	Loading	t-stat
Characteristic population		
Health	0.9433	76.7107
Age	0.8851	24.9579
Milk knowledge		
Knowledge	0.8352	27.7030
Public relations	0.7904	18.5753
Producer reputation	0.7693	21.3351
Customer behavior		
Price acceptance	0.8860	43.2182
Milk qualification	0.7914	10.3754
Intention		
Requirement	0.8952	61.8200
Intention	0.8731	36.2081
Recommendation	0.7969	21.4153

Table 2: Statistical values for discriminant validity of model 5

Construct	CR	R ²	AVE	Cross construct correlation			
				Characteristic population	Milk knowledge	Consumption behavior	Purchase intention
Characteristic population	0.911		0.837	0.914			
Milk knowledge	0.841	0.212	0.638	0.460	0.799		
Consumption behavior	0.827	0.427	0.706	0.234	0.649	0.840	
Purchase intention	0.891	0.408	0.733	0.412	0.586	0.517	0.856

Statistically significant at $p = 0.05$, Diagonal numbers refer to \sqrt{AVE}

Customer behavior factors consisting of price acceptance and milk qualification had the loading values of 0.8860 and 0.7914 with a statistical significance of 95 ($t\text{-stat} > 1.96$) which indicate that a particular factor had influence over purchase intention.

Purchase intention factors consisting of requirement, intention and recommendation had the loading values of 0.8952, .8731 and 0.7969 with a statistical significance of 95 ($t\text{-stat} > 1.96$) which indicated that the particular factor had influence over purchase intention.

Discriminant validity: For reliability test of the measurement tools the Composite Reliability (CR) value should not be less than 0.60, the Average Variance Extract (AVE) should not be less than 0.50, the R^2 value should not be less than 0.20 and the \sqrt{AVE} in the interested columns must be higher than the cross construct correlation of all values in the same column in order to be considered reliable in all constructs (Lauro and Vinzi, 2004; Henseler *et al.*, 2009 cited in Wingwon and Priyakul, 2010) (Table 2).

Analysis results of the model of influencing factors on the purchase intention of lactose-free milk for the population of Bangkok are shown in Fig. 1.

The results of research hypotheses tests are shown in Table 3.

When the direct and indirect influences of these factors were considered it was found that Milk Knowledge was the most influential factor followed by customer behavior and characteristic population.

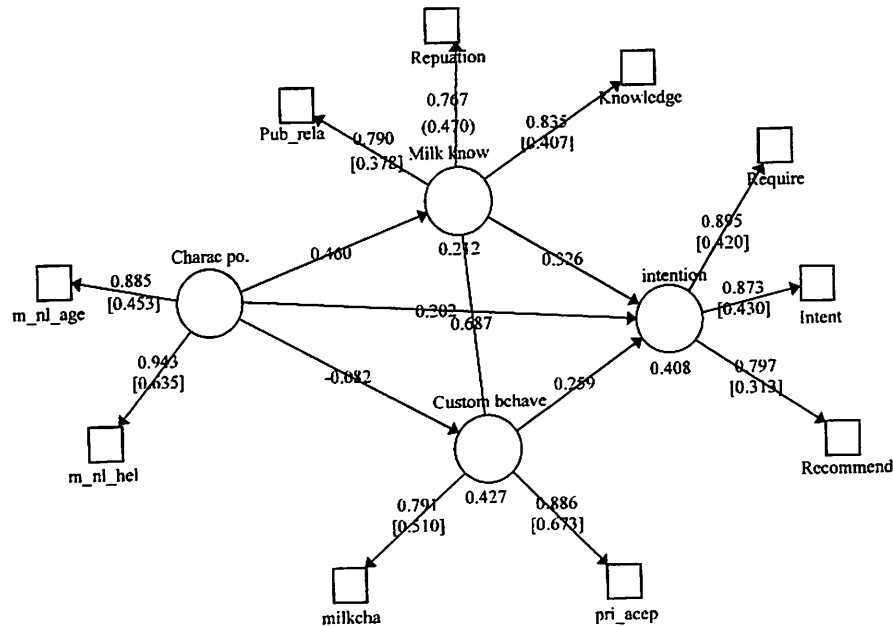


Fig. 1: Final model

Table 3: Research hypotheses test results

Hypothesis	Coefficient	t-stat	Results
H1: Characteristic population influences milk knowledge	0.460	8.3427	Supportive
H2: Characteristic population influences milk consumption behavior	-0.082	1.3427	Unsupportive
H3: Characteristic population influences milk purchase intention	0.202	2.7449	Supportive
H4: Milk knowledge influences milk consumption behavior	0.687	12.5095	Supportive
H5: Milk knowledge influences purchase intention	0.326	3.6862	Supportive
H6: Milk consumption behavior influences purchase intention	0.259	2.9163	Supportive

DISCUSSION AND APPLICATION

This section is the discussion of some interesting findings of the research titled "A model of factors influencing the intention to purchase lactose-free milk for the population of Bangkok".

Purchase intention of lactose-free milk. The analysis found that indicators of intention to purchase consist of need, intention and recommendation. All three indicators are the product and service outcome that can meet consumer need or create consumer satisfaction. The purchase intention of consumers is associated to knowledge, mood and behavior. All three dimensions are induced by different perception of each individual due to different personal characteristics and different environment. According to the Theory of Reasoned Action (TRA) introduced by Fishbein and Ajzen (1975), the perception of an individual can have influence over their purchase intention and the factors related to perception are the consumer's belief and cost.

Characteristic population: The indicators of this dimension are age and health. Different consumer's characteristics influence different needs for the product. For this reason, manufacturers must produce different products to satisfy different consumer needs by dividing them into groups. One of the variables related to purchasing decision is the individual's personal and demographic factors such as age, health problems, etc. (Hodges, 2008).

Milk knowledge: The indicators of this dimension are consumer knowledge, public relations and manufacturer reputation. The research findings are congruent with a food specialist's statement given at the 6th Annual World Food Technology and Innovation Forum held at Burlington Hotel in Dublin on 20-21 November 2007. Food production must take into consideration consumer's needs and lifestyles and produce products that satisfy such needs in order to create product distinction in the market. Today's trend in the development of food product is functional foods. However, manufacturers must be able to communicate product distinction to their consumers. It is the communication that is carried out to educate consumer because product knowledge influences purchase intention (Shafiq *et al.*, 2011). Consumer communication comes in different forms and combination (Satrawaha *et al.*, 2011) in order to provide accurate and suitable information to target groups. Advertising and news is a communication tool that can influence purchase intention (Tarawanich, 1996). Moreover, the brand or product reputation factor is related to product awareness that can create consumer confidence in a product or a service (Randall, 1997; Shafiq *et al.*, 2011). This finding is congruent with the research by Porncharoen and Porncharoen (2006) which found the main reason for consumer's reluctance to make internet purchases to be a lack of confidence in the product.

Consumer behavior: The indicators of this dimension consist of milk attributes and milk price because they are what consumers use to make the purchase decision that suits their different needs. This finding is congruent with the research by which found that consumers wanted to purchase products with benefits. For food products, they are be interested in healthy and nutritional foods (Sarkar, 2007b). The product must also be better than previous purchases and meet the existing standards in order to generate consumer confidence and make purchasing decision easier (Chung and Lee, 2003). The price must also be acceptable, reasonable and consistent with product quality (Boniface *et al.*, 2012).

CONCLUSION

It can be concluded from the research titled "A model of factors influencing the intention to purchase lactose-free milk for the population of Bangkok" that milk knowledge is most influential factor on the consumer's purchase intention of lactose free milk. This is because such knowledge educates consumers on the value and benefit of drinking lactose-free milk. It is also congruent with the consumer theory that consumers make a purchase and use the product to satisfy their different needs. Before making a purchase decision, consumers have their own practice of seeking product information and knowledge, evaluating existing alternatives as well as making purchase decision and post-purchase evaluation.

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Structural Equation Model of Variables Affecting Turnover Intentions on Bangkok's Information Technology Career Professionals

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ABSTRACT

This study concerns the modeling and analysis of Human Resource Management (HRM) and job satisfaction variables affecting Bangkok's information technology career professional's turnover intentions using both quantitative and qualitative research methods. From the trend of the growing information technology business in Thailand and as a result of human resource management, enterprise information technology business in Thailand has grown immensely. Quantitative research was conducted with 220 Bangkok career information technology professionals by the use of questionnaires and qualitative data was obtained from in-depth interviews of employees and management 10 senior level career professionals in the information technology business using simple random sampling (Purposive sampling) while using Partial Least Square (PLS-Graph) software to apply Structural Equations Modeling (SEM) analysis. Results showed the hypotheses had a significance level of $p \leq 0.01$, having a significant influence on human resource management and job satisfaction. Findings concluded that if an organization has good human resource management systems, the resultant factors will result in IT career professionals having greater work satisfaction resulting in higher retention rates amongst Bangkok IT professionals.

Key words: Human resource management, organizational commitment, job satisfaction, turnover intention

INTRODUCTION

Changes in technology have led to many societal changes. In particular, businesses involved in international trade have had to adjust their processes and models to better cope with this fast paced environment. Organizations involved in manufacturing along with their related administration, distribution and sales processes have been particularly exposed to these changes and have had to refocus their resources and processes to keep pace with this highly competitive global environment.

Human resource management is a key aspect of the business process and needs to adapt and become more flexible to keep up with the pace of these trends in globalization. Therefore, human resource departments need to develop programs and policies that better qualify the intellectual capital, resources and labor within their organizations, so they can better align these resources with current and future globalized world markets, including the ever widening labor pools and manufacturing markets.

As investors continue to gravitate to less expensive labor sources, labor demographics in countries such as Thailand are constantly changing. However, with the ever expanding global and regional trade alliances such as the ASEAN:AEC, synchronization of processes is leading to better and more efficient use of these resources. Capital flows and investment incentives can lead to development and implementation of advanced technologies which in turn leads to both higher production and quality at a lower cost.

Multi-Sided Platforms (MSPs) is a concept from the strategy field and has been developed under related and complementary concepts such as Two/Multi-Sided Markets/Networks/Platforms, Platform-Mediated Networks and Networked Businesses.

In 2006, sixty of the world's 100 largest companies (Forbes 2000 ranked by market value) earned more than 50% of their revenue from MSPs, as firms in electrical utilities, financial services, health care services/health maintenance organizations, media, semiconductors, software and services, technology hardware, telecommunications and transportation services industries (Eisenmann *et al.*, 2006).

The resulting flow of capital and high technology in both a skilled and unskilled manpower environment has a multi-sided or multi-dimensional aspect. The free enterprise system and current world situations relating to fair trade rules and tariff and tax reduction across borders is tightly linked to import/export abilities. The result is a worldwide employment mix in high technology areas such as aviation and industrial production where manpower and skills can be brought to bear with their labor force having the ability to both learn and use new technology.

Moreover, communication and telecommunications infrastructure further causes movement amongst both labor and production. Multinationals seek out areas in which to invest and in which they can gain higher productivity as well as a lower cost. This often results in the implementation of more efficient and more productive methods by the use of both contracting and sub-contracting to external sources (outsourcing). This, then results in labor seeking to move to where wages are potentially higher causing challenges within human resource development.

Thus, organizational leaders and human resource professionals must understand this dynamic environment in the era of globalization. Competition is intense and plays an important role in the business world. If the leaders do not understand the business impact of human resource management, they may have to revert to traditional forms of business organizations which in turn will result in the further erosion of business.

In an interview with the Charoen Pokphand Group CFO Adirek Sripratak, he suggested that the personnel in most organizations today are from the generation Y age group which is more integrated with the baby boomer executives and middle managers in the generation X age group. Age and gender also is part of the diversity and is easily seen in the organization. If you can manage such diversity, it will lead to better creativity and innovation that can enhance the organization's competitiveness and sustainable growth.

Diversity is not viewed as a difference in cultural or sexual differences, but instead the wide range of needs involved that HR needs to manage. So, to start promoting acceptance and respect for individual differences in the regulatory environment of the office, managers must not hinder or discriminate but instead should create a positive atmosphere in the workplace. Open spaces should be allowed in which individuals can sit and chat or confer on various issues. This, then includes the necessity for the provisioning of the necessary facilities in which staff can have the freedom to express their ideas without interruption from the hierarchy within the organization. This will then inspire the creation of new ideas and innovation.

There is also research that shows that organizations tend to be more successful if they admit larger proportions of women to become executive officers. This allows better decisions in marketing strategies as women are more likely to understand the behavior of consumers better than men. Apart from sex and age, executives need to understand the multicultural diversity due to the nature of free markets which oftentimes has the manufacturing base overseas.

Surendun Ramanathan senior consultant, Hewitt Associates (Thailand) Co., Ltd., a human resources consulting firm, gave the results of their poll on upgrading the salaries of organizations and staff turnover problems in the industry in 2010 and outlook for 2011.

The number of participating companies surveyed included more than 189 organizations spread throughout various businesses.

They found more than 26% indicated that business was better than ever and turnover rates of employees in 2010 were at an average of 8% which was below the previous year's 9.3%. However, in the retailer group, there was a higher employee turnover rate at 24.9%, followed by the financial services businesses at 12.2% and technology/IT groups at 12%.

According to the survey, metro area executives focused on reducing the turnover rate by providing opportunities for career advancement rather than higher pay. According to the interviewed employees, their resignation was in part or due to the following seven reasons:

- Job or workplace was not as expected
- Mismatch between job and person
- To little teaching and feedback
- To few growth and advancement opportunities
- Feeling devalued and unrecognized
- Stress from work and work-life imbalance
- Loss of trust and confidence in senior leaders (Branham, 2005)

This is consistent with the findings of Pricewaterhouse Coopers (PwC) which interviewed store employees who voluntarily resigned from the organization why they quit their jobs and found that the most important factor is the lack of growth opportunities followed by supervisors negligence and conflicts with supervisors as well as compensation and not enough challenges (Pricewaterhouse Coopers, 2008).

After a review of the literature and due to the reasons mentioned above, the researcher who is an executive in the information technology business in Thailand is interested in understanding human resource management and job satisfaction and organizational commitment that affect the intended staff turnover in the information technology business. Additionally, this study hopes to find ways to reduce staff turnover by the use of organizational innovation in organizations which helps management to identify key factors to strengthen and gain a competitive edge in the information technology business in Thailand.

CONCEPTUAL DEVELOPMENT

Human resource management: Human resource management uses aggressive strategies that are related to the ongoing management of the most valuable resources in the organization. The individuals who work together as teams as well as individually to achieve the goals of a business (Armstrong, 2006).

Strategic human resource management is rapidly changing with time and circumstances and therefore, needs to be developed and improved all the time. For this reason, different business types with various sizes need a department or agency to act in the management of human resources, particularly where the size of the department or agency is concerned.

At present, management and human resource development are increasingly more important in organizations, both in the private sector and in the public sector or government itself. Because changes occur within organizations and involve people, human resources is crucial to their development.

Thus, it can be said that the indicators of sustainable success of an organization is "the quality of people" in the organization. Before organizations became aware of the importance of human resource management, workers had only had been visible as just a means or tool for production.

However, the current 'worker' has been redefined as a development priority and renamed as "Human Resources" departments or agencies. Responsibilities for the role of individuals in organizations are changing. "Management and administration" has evolved to "strategic human resource management" which was once focused only on immediate changes whereas today, an emerging strategy has developed to build long-term and continuing strategies.

Human resource management consists of (1) Recruitment and selection, (2) Training and development, (3) Compensation and benefits and (4) Evaluation and supervision (Som, 2008; Sani, 2012).

A study by Abeysekera (2007) empirically evaluated six Human Resource (HR) practices which included realistic job information, job analysis, work family balance, career development, compensation and supervisor support and their likely impact on the Marketing Executive Intention to Leave (MEIL) in the Sri Lankan leasing companies. The study found that if you have strong human resource management practices, you can keep employees satisfied and reduces the resignation and turnover by organizational executives.

This corresponds with the study by Arumugam and Mojtahedzadeh (2011) concerning human resource management practices in the Malaysian industries and the many factors which are effective in improving performance. They are employee participation, training, job description, career planning system, compensation system, selection system and performance appraisal system. The job satisfaction plays a fundamental role in determining the performance.

This additionally corresponds with the Mudor and Tooksoon (2011) study which developed a conceptual framework about the relationship between human resource management and work and retirement satisfaction. The results showed that the human resource management has a positive relationship with job satisfaction and has a significant negative effect on the employee resignation. Results of practices in human resource management and job satisfaction predicted turnover of employees in the future.

More recent empirical study on HRM practices (Lee and Lee, 2007) uncovered six underlying HRM practices on business performance, namely training and development, teamwork, compensation/incentives, HR planning, performance appraisal and employee security which help improve a firms' business performance including employee's productivity, product quality and firm's flexibility. It can be concluded that human resource management has had a positive influence on the job satisfaction of employees (Mudor and Tooksoon, 2011; Kuo, 2011; Katou, 2012).

Job satisfaction: Satisfaction is a result from which a person feels that their task has been accomplished. Also, it is dependent on being interested in the values and standards of the job.

Factors that create job satisfaction and job success are the acceptance of the nature of the job (Gordon *et al.*, 1996; Sarhingrangsri and Polsarum, 2009; Poonkrajang, 2009).

Research by Pungbankhoah (2012) found that satisfaction in work correlated with participation, communication and centralization. The study by Robbins *et al.* (1997) said that job satisfaction is an individual's general attitude toward his work with various jobs that require interaction between co-workers and bosses. Factors conducive to job satisfaction include policy and organization, salary, relationships and control between supervisors and subordinates and working conditions, as well as feelings and emotions that gives the worker job satisfaction. This also includes achievement in the workplace as well as recognition of the social nature of the job responsibilities and career advancement opportunities (Van Dersal, 1968).

Studies by Chaichalermpong and Kessomboon (2007) found that if an employee is satisfied in the workplace, employees will not resign from the organization. Work satisfaction has to have negative influences to influence on the intention to leave the job (Vandenberg and Lance, 1992; Lumley *et al.*, 2011).

After a literature review and development of the above concepts, the following hypotheses were developed as depicted in the Fig. 1 conceptual framework below:

- **H1:** Human Resources Management (HRM) influences job satisfaction
- **H2:** Human Resources Management (HRM) influences turnover intention
- **H3:** Job Satisfaction influences turnover intention

Methodology: This study was conducted from a sample population of career professionals and information technology staff using both quantitative and qualitative research.

Data collection: Bangkok information technology career professionals were queried using quantitative research methods of which 220 responded (Hair *et al.*, 2006).

Questionnaire design: Questionnaires were constructed as a tool to measure concept definition and practice. This study first conducted Confirmatory Factor Analysis (CFA) and subsequently reliability analysis to measure Cronbach's alphas for this scale items to ensure internal consistency. Multi-item measures were developed based on Cronbach's alpha >0.68. This study then calculated Cronbach's alphas for each construct. As shown, the reliability measure ranged from 0.755-0.918 (Table 2). This is considered highly reliable. Items lower than 0.50 were cut off from the research.

The responses to the questions capturing focal constructs used a seven-point Likert scale (rating statements 1-7, 1 = strongly disagree and 7 = strongly agree). Qualitative research was conducted with in-depth interviews of 10 senior-level executives.

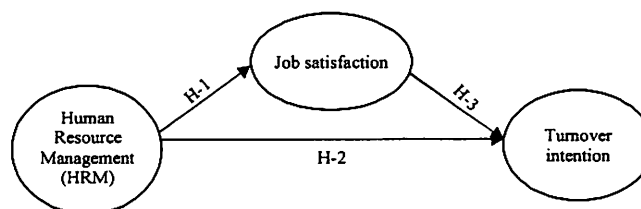


Fig. 1: Conceptual framework

Measurement

Dependent variable: Turnover intention analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of freedom to resign, alternative opportunities and absence and tardy behavior (Scott *et al.*, 2003; Yue *et al.*, 2011; Lewis, 2008).

Independent variables: Human Resources Management (HRM) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of recruitment/hiring, development/training, wages/benefits and evaluation/supervision (Katou, 2012; Lee and Lee, 2007).

Job satisfaction analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of job satisfaction and off the job satisfaction (Lumley *et al.*, 2011; Inkum *et al.*, 2009; Pungnirund, 2007).

RESULTS AND ANALYSIS

Quantitative research was conducted by using the Partial Least Squares (PLS) statistical method and hypothesis testing with PLS-graph software (Chin, 2001) which analyzes the display and model structure associated with the observed manifest variables with latent variables.

Verification of the accuracy and reliability of the measurements multi-item measures were developed based on Cronbach's alpha. This study then calculated Cronbach's alphas for each construct. As shown, the reliability measured ranged from 0.775-0.898 which is considered to have high reliability.

The study uses a loading value from 0.707 and a significant level of confidence at 95 percentage ($t\text{-stat} > 1.96$), showing which factors affect organizational performance (Lauro *et al.*, 2005; Henseler and Fassott, 2010; Piriyaikul, 2010). The results are shown in Table 1.

The above table shows that "human resource management which included recruitment /hiring, development/training, wages/benefits and evaluation/supervision variables" found that the loading is equal to 0.738, 0.853, 0.871 and 0.877, respectively. The data showed a significant level of confidence percentage of .95 ($t\text{-stat} > 1.96$) which validates high reliability which affects Turnover Intention.

"Job satisfaction variables" are job satisfaction (SatJob) and off the job satisfaction (Satof) found that the loading is equal to 0.960 and 0.947, respectively, with the loading ranging from 0.707 and a significant level of confidence percentage 0.95 ($t\text{-stat} > 1.96$) which considered such factors which affects turnover intention.

Therefore, the researcher took the variables 'Select' which is recruitment and hiring; 'Training' which is development and training; 'Compensation' which is wages and benefits; 'Appraisal' which is evaluation/supervision, 'SatJob' which is job satisfaction and finally; 'Satof' which is off the job satisfaction and used them in the structural equation analysis.

Classification accuracy verification: Discriminant validity has been tested on scale reliability, including Composite Reliability (CR) which should not be lower than 0.60, Average Variance Extract (AVE) should not be lower than 0.50 R^2 should not be lower than 0.20 (Table 2) and \sqrt{AVE} in the diagonal data should have a value higher than cross construct correlation of all values in the

Table 1: Convergent validity statistics in latent variable measurements in the reflective model

Construct/Item	Loading	t-stat
Human resource management		
Select: Recruitment/Hiring	0.738	9.932
Training: Development/Training	0.853	18.734
Compensation: Wages/Benefits	0.871	20.453
Appraisal: Evaluation/Supervision	0.877	22.107
Job satisfaction		
Satjob: Job satisfaction	0.960	33.873
Satof: Off the job satisfaction	0.947	38.687
Turnover intention		
Tud: Freedom to resign	0.945	12.910
Tus: Alternative opportunities	0.835	7.118

Table 2: Confirmatory Factor Analysis (CFA) of the independent variables of Leadership, management skill, organizational innovation and their affects on the dependent variable, organizational performance, CR: Composite Reliability, R²: Square of the correlation, AVE: Average Variance Extracted

Construct	CR	R ²	AVE	Cross construct correlation		
				Human resource management	Job satisfaction	Turnover intention
Human resource management	0.903		0.700	0.837		
Job satisfaction	0.953	0.578	0.910	0.760	0.954	
Turnover intention	0.885	0.223	0.795	-0.405	-0.466	0.892

Statistical significance level is at 0.05 and diagonal figures mean \sqrt{AVE} , CR: Composite reliability, AVE: Average variance extracted, R²: Square of the correlation

same column. The data validates that there was discriminant validity for each construct, without exception. (Lauro *et al.*, 2005; Henseler and Fassott, 2010; Wingworn and Piriyakul, 2010). Testing results of discriminate validity of this study was in accordance with all conditions shown in Table 2. Therefore, the scales of this study have been the scales with discriminant validity and reliability.

Figure 2 shows the study framework and the structural model of variables that influence the turnover intention within the Thai information technology industry. Variables included human resource management and job satisfaction and their influence on turnover intention of 220 surveyed career professionals. The samples were analyzed to answer the research hypotheses criteria of the following three assumptions (Table 3).

Furthermore, the structural analysis model framework was used to research the t-test coefficients and their relationship of each path of the t-test hypothesis with significance greater than 1.96. This explains the results obtained from analysis as shown in Table 1 and 2 as well as the test results presented in Table 3.

RESULTS AND DISCUSSION

The results of this study on the 'Structural equation model of variables affecting Turnover Intentions on Bangkok's Information Technology Career Professionals' concluded that Human Resource Management (HRM) has a positive influence on the job satisfaction of employees.

This corresponds with the study by Arumugam and Mojtahedzadeh (2011) concerning human resource management practices in the Malaysian industries and the many factors which are

Table 3: Hypothesis testing result of hypothetical research

Hypotheses	Coefficient	t-stat	Results
H1: Human Resources Management (HRM) influences job satisfaction	0.760	30.192	Supported
H2: Human Resources Management (HRM) influences turnover intention	-0.119	1.135	Not supported
H3: Job satisfaction influences turnover intention	-0.375	4.157	Supported

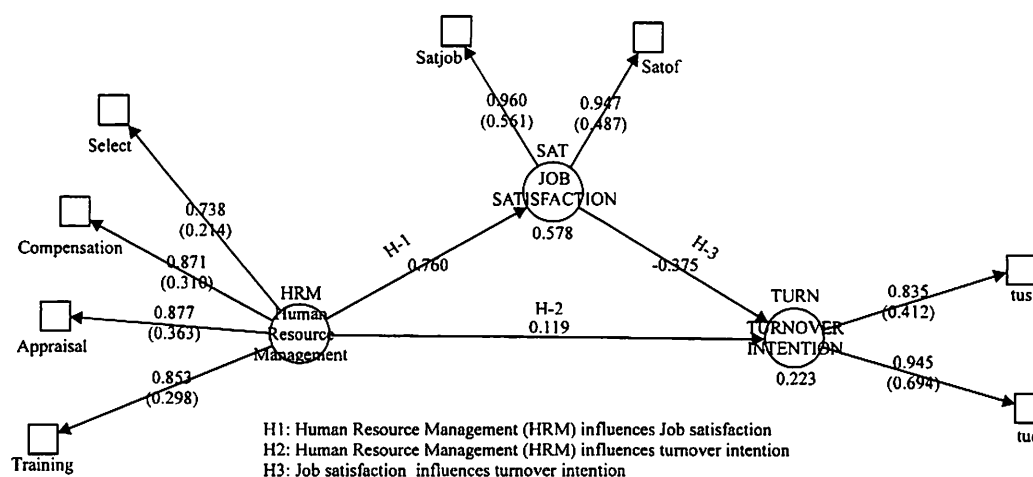


Fig. 2: Final model

effective in improving performance. They are as follows: Employee participation, training, job description, career planning system, compensation system, selection system and performance appraisal system. Job satisfaction plays a fundamental role in determining the performance.

This additionally corresponds with the Mudor and Tooksoon (2011) study which developed a conceptual framework about the relationship between human resource management and work and retirement satisfaction. The results showed that the human resource management has a positive relationship with job satisfaction and has a significant negative effect on the employee resignation. Results of practices in human resource management and job satisfaction predicted turnover of employees in the future.

More recent empirical study on HRM practices (Lee and Lee, 2007) uncovered six underlying HRM practices on business performance, namely training and development, teamwork, compensation/incentives, HR planning, performance appraisal and employee security which help improve a firms' business performance including employee's productivity, product quality and firm's flexibility. It can be concluded that human resource management has had a positive influence on the job satisfaction of employees (Mudor and Tooksoon, 2011; Kuo, 2011; Katou, 2012).

Negative job satisfaction increases the likelihood of employee turnover intentions (resignation). This is consistent with the study by Robbins *et al.* (1997) which stated that job satisfaction is an individual's general attitude toward his work with various jobs that require interaction between co-workers and bosses.

Factors conducive to job satisfaction include policy and organization, salary, relationships and control between supervisors and subordinates and working conditions, as well as feelings and emotions that gives the worker job satisfaction. This also includes achievement in the workplace as well as recognition of the social nature of the job responsibilities and career advancement opportunities (Van Dersal, 1968).

According to Van Dersal's definition of a 'great supervisor' (Van Dersal, 1968); "supervision is the art of working with a group of people over whom authority is exercised in such a way as to achieve their greatest combined effectiveness in getting work done. It is best performed in an atmosphere of good will and zestful cooperation on the part of all the people involved including of course, the supervisor. It is possibly one of the most difficult of all the arts, since it demands and ability to use successfully an almost intuitively those principles of human relations that have proven true with most people most of the time..."

Also, if employees are satisfied in practice, it will lead to an efficient operation. In contrast, if an employee is not satisfied with their work, adverse effects will occur to the unit. Employee performance is determined by satisfaction, operational conditions, salaries and benefits, promotion opportunities, relationships with colleagues and supervisors, policies and management, personal recognition, feeling successful and social relationships which will all affect the performance of the employees (Whittington and Galpin, 2010).

Research was undertaken by Chambers *et al.* (1998) in a study of 77 large and diverse U.S. corporations in which an examination was undertaken to find the philosophy of building people, determined that day to day practices and challenges of the work environment required top executives to focus on three main components, namely company recognition, good job and quality of lifestyle.

Organizations need to focus on 'talent management' as a means of organizational branding by causing the perception that the organization has good values and work culture. It is important that organizations are challenging, exciting, excellent performance and is a leader in the industry.

All of these will make employees take pride in the organization and make for more affective engagement as well as employee motivation. Also, if an organization contributes to employee pride and better quality production and collaborate with the individual to help with personal development, the resultant factor will be individuals wanting to continue being part of the organization. Individuals need to have greater control over themselves with less interference from their supervisors which contributes to a more challenging work environment with a sense of greater accomplishment. Employees will have also greater job satisfaction with their work and the results will be that employees remain longer.

This is also consistent with a study from Chaichalermpong and Kessomboon (2007) which found that if an employee is satisfied in the workplace, employees will not resign from the organization. The job satisfaction has a negative variable towards turnover intention.

CONCLUSION

The results of this study on the 'Structural Equation Model of variables affecting Turnover Intentions on Bangkok's Information Technology Career Professionals' concluded that Human Resource Management (HRM) has a positive influence on the job satisfaction of Thai IT career staff. This necessitates organizations needing to focus on 'talent management' as a means of organizational branding by causing the perception that the organization has good values and work culture. It is important that organizations are challenging, exciting, excellent performance and is a leader in the industry. This will result in a new generation of employees which are satisfied in their work and reduce turnover rates for groups of new workers while increasing organizational loyalty.

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Structural Equation Model of Customer Perception of Service and Product Quality Factors that Affects Thai Information Technology Customer Loyalty

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ABSTRACT

This study was conducted to study the factors that how service quality affects customer loyalty in the Thai Information Technology (IT) business. The researcher wishes to use their position within academia to conduct further analysis with quantitative data being obtained from 294 customers using IT products and services in the Bangkok metropolitan area and qualitative research being conducted with 10 executives by the use of purposive sampling. Analysis was conducted while using Partial Least Square (PLS-Graph) software to apply Structural Equations Modeling (SEM). Results showed the hypotheses affecting customer satisfaction had a significance level of $p \leq 0.05$, having a significant and direct influence on customer loyalty, product quality and product service. Other variables include customer perceived value, customer trust and customer satisfaction of their clients. A fact recognized by the assumption $p \leq 0.01$, respectively. Significant findings from this study found that customers who use the Thai information technology product and/or service, must be satisfied with the products and services if it is sold in conjunction with information technology services. Thus, the customer's perceived value and recognition of it is necessary to ensure customer satisfaction in the brand itself which translates into long-term customer retention and loyalty.

Key words: Customer loyalty, trust, customer perceived value, perceived product, service quality

INTRODUCTION

In Thailand, field software service and digital content over the past few decades are regarded as new branches for both the business sector and domestic consumption. Information Technology (IT) marketing consists of 3 components including the computer hardware market, data communication equipment market and software service. It was found these technology markets in 2011 had an overall value of 155.549 billion baht and was expected to grow in 2012 by 18.7% reaching a value of 182.327 billion baht.

In 2011, research showed that the computer hardware market share in the technology market had a 61% hold followed by communications and software/software services with 19.9 and 19.1%, respectively.

Computer hardware has a very high market share with much higher values due to smaller growth and share of competing technologies such as data communications transmission systems, wired (wireline/landline) and delivery systems and wireless (wireless) (NECTC, 2012).

A research survey of technology households in 2011 surveyed a total population of approximately 62.4 million users. Of this survey population, 19.9 million (32%) used the computers and 14.8 million or 23.7% used the Internet. In towns and cities, computer users were 9.5 million (44.3%) and Internet users, 7.7 million (36%).

However, outside the towns and cities in rural Thailand, there were 10.5 million computer users or 25.5% and 7.1 million Internet users making up 17.2%. Compared to the previous year 2010, the percentage of both Internet and computer users had increased in all groups (National Statistical, 2011).

From the survey mentioned above, it can be extrapolated that as the technology markets continue to grow steadily, IT companies need to be highly competitive in order to wrest an advantage and seize market share. Information technology executives also need to seek new strategies in order to attract consumers.

Customer loyalty is also an overriding factor in this strategy with influencing variables including customer satisfaction, trust and brand recognition of products and services. This study hopes to help guide the strategies and the use of marketing tools for marketing executives. Results of this study can hopefully be used to help make decisions on marketing solutions and reduce the risk of investing in new products and services that will be offered to the next consumer.

CONCEPTUAL DEVELOPMENT

Customer loyalty: Customer loyalty includes products and services in addition to business customer retention which hopefully keeps customers from changing to competitor services. It is also a way to expand the business via., word-of-mouth from satisfied customers which supports and promotes the knowledge of the products and services. This benefits the business in the long run, in particular the development of relationships with customers and the help with product and service branding as well as customer loyalty.

Caruana (1999) stated that service loyalty is one of the most important structures in service marketing, due to its final effect on customers' repeated purchases and in fact, those loyal customers who purchase repeatedly are considered as the base of any business. Therefore, this research intends to study the relationship of these three concepts.

Additionally, a positive attitude will work in favor of the business and affects customer loyalty, customer satisfaction (Oliver, 1997; Chaudhuri and Holbrook, 2001), trust (Morgan and Hunt, 1994) and affects the relationship with customer loyalty.

The expected positive impact on customer satisfaction and the trust and loyalty of customer or consumers as a result from the evaluation after the consumption of goods or services. This can be explained by the concepts of consumer behavior which are the individual acts associated with the decision to purchase the goods or services to meet their needs (Solomon *et al.*, 2009).

The elements of psychological behavior include two types of external behavior or overt behavior which is an action that others can observe and measure while covert behavior are actions that occur within the individual such as feelings, attitudes, beliefs, perceptions, etc. (Sundel and Sundel, 2004).

Songsom and Trichun (2012) stated that customer loyalty is influenced by psychological factors or elements within the consumer and external factors outside the influence of the environment.

Customer satisfaction: In the global borderless world, information technology has changed the way information flows. Today, there is an enormous amount of news reflecting changes in social, cultural, political, technological and economic sectors. The demand for these sources and the resulting consumer behavioral changes require marketers to satisfy their customers.

Wallerstein (1995) said that customer satisfaction is a feeling that occurs with the achievement of the purpose and the psychological satisfaction is not visible but can be predicted in the presence or absence of observing the behavior of people.

There are many for the creation of customer satisfaction, these include the quality of products and services, reasonable price, product value, customer expectations and the accessibility of the facility.

Process satisfaction starts with concept development, market research and policy analysis, customer needs, planning and the unique needs of the goods and services market and sells products. Everything involved in the value chain should be a process to create high quality consistently, delivery and the communication channels direct to the customers. They must also provide customer service satisfaction and collect information and analyze it for use about customer satisfaction (Besterfield, 1994; Fecikova, 2004).

A study by Piriyakul *et al.* (2011) showed that customer satisfaction depended on corporate reputation and its affect on customer satisfaction in convenience stores and other retail outlets. Traditional larger stores had higher brand recognition due to their larger market share and influence and were recognized for their service quality, customer relationship management planning which resulted in higher customer satisfaction than traditional convenience stores and retailers around them.

Chang *et al.* (2010) investigated the relationship between service convenience and satisfaction. Results of the study revealed that service convenience have significantly high effect on customer satisfaction. Therefore, the higher the perception of access convenience, the more the customers are satisfied. Chang *et al.* (2010) also found that access convenience affects customer loyalty indirectly through perceived service value and satisfaction.

If customer satisfaction achieves the business goals (Anderson *et al.*, 1994; Yi, 1990) it will influence the overall quality, price and customer expectations (Anderson *et al.*, 1994; Fornell *et al.*, 1996) and individuals involved (Spreng *et al.*, 1996) as well as the survival of the organization. It is a positive relationship between expectations and satisfaction of the customer (Cadotte *et al.*, 1987; Churchill, Jr. and Surprenant, 1982).

Customer trust: Building trust with an organization is paramount in paving the way to corporate success. Trust is the key factor for everything we do every day; communications, business operations, trading, marketing and advertising which includes the results of the action.

Gayuranon (2009) found that trust is the belief that one person has with another person. That person will be loyal and not hurt or exploit the fundamentals that the relationship is based on. Furthermore, trust is the intention to do good things for each other and to cooperate in doing things wholeheartedly and be loyal to each other.

In order to understand why relationship marketing is applicable to the travel industry, the nature of the industry must be looked at. The service sector which travel agencies are a part of, is particularly suitable for relationship marketing for the following reasons:

- First, the product and services are intangible, therefore the customer is likely to associate the service provider with the actual product, making the customers' perception of their relationship with the company equal to the actual service (Claycomb and Martin, 2002)
- Secondly, it is difficult to evaluate services before making a purchase, meaning that the customer actually buys the offered promise of the service. If there is a good relationship between the two, leading to trust, the customer will be more inclined to buy that promise. Even more importantly, a good relationship will also allow the company to recover from eventual, unavoidable setbacks when it comes to living up to that promise (Claycomb and Martin, 2002)
- Next, there is a high level of interaction between the company and their customers and if that relationship is tense, it can adversely affect the quality and perception of the service received (Claycomb and Martin, 2002)
- Lastly, many services can actually be performed by the consumer and good customer relationships can make the consumer less likely to drop the service provider and do the actual work themselves (Claycomb and Martin, 2002)

The trust and the trust of our customers is a factor representing the relationship between the customer and the new generation of consumers, therefore trust is a major factor leading to competitive advantage and is what clients trust in an organization (Aqueveque and Ravasi, 2006).

Trust is the belief in the products and services that an organization provides as well as the client's respect and love of the company's product, brand and reputation (Carmeli and Cohen, 2001) which resulted in the CCB and towards the performance of the organization in the end. Lee *et al.* (2008) while trust in the organization was a result of direct impact on operations.

Customer perceived value: The competitive business environment today is filled with competitors and foreign those are competing in response to the demand of consumers to have better, faster and lower cost services and products.

Consumers today have the opportunity and the power to choose from a wide variety of competitors. Consumers have even higher expectations today about their product or service selection and want to feel satisfied about the benefits, value and the worth of the product or service which is referred to as Customer Value and Customer Satisfaction.

This results in modern businesses needing to focus on customer care regularly, regardless of whether the customer is small or big and keeping customers and building relationships with customers is priority in the relationship. Modern marketing principals thus emphasize profits through customer satisfaction (Farangthong, 2005).

Roig *et al.* (2006) stated that customer perceived value is considered or evaluated to compare between the interests of customers or received from the value of goods, services or relationships and perceived reduction in price and cost.

Customer perceived value enables organizations to improve and update their customer service (Sigala, 2006; Kang *et al.*, 2007). The perceived value of the product is the view that customers use in the evaluation of products/services and the purchase process must be effective for the purchase to occur (Woodruff, 1997; Eggert *et al.*, 2006).

The theory of 'consumption value' (Sheth *et al.*, 1991a, b) states that the multifaceted consumer choice to buy or not to buy, to choose one type of product or service over another and to choose one brand over another entails a variety of forms of value. Functional value pertains to whether a product is able to perform its functional, utilitarian, or physical purposes. Social value refers to an

image that is congruent with the norms of a consumer's friends or associates and/or with the social image the consumer wishes to project. Emotional value is related to various affective states which can be positive (for example, confidence or excitement) or negative (for example, fear or anger). Epistemic value is concerned with a desire for knowledge, whether this be motivated by intellectual curiosity or the seeking of novelty. Finally, conditional value reflects the fact that some market choices are contingent on the situation or set of circumstances faced by the consumers. According to Sheth *et al.* (1991a), this theory rests on three fundamental propositions (i) That market choice is a function of multiple values, (ii) That these forms of value make differential contributions in any given choice situation and (iii) That the forms of value are independent.

However, Roig *et al.* (2006) designed a scale of measurement of value known as PERVAL. This definition of customer value is a difference between total customer value that customer get from a product or service in organization and total customer cost incurred from assessing and using that product or service. This value can be perceived only by customers who use the product or receive the service.

Chen *et al.* (2012), studied the impact of service quality, finance and justice on customer satisfaction and found that the customer's perceived quality directly affects customer satisfaction through the perception of service quality and transparency and fairness of company service.

Product and service perception: Understanding brand quality does not have to come directly from knowledge about the brand but instead can come from understanding the properties of the product as a result of information perception or feeling towards the brand which has a direct influence on the loyalty to the brand. So, an understanding of the quality is different from satisfaction. The main goal of the service is to reduce the difference between what is expected and what is actually delivered, because a higher level of customer service management increases the burden on the provider while lower than the required level of service that may result in customer dissatisfaction.

Zeithaml *et al.* (1990) have given a definition that the perceived quality of the product/service is caused by the expectation of customers or clients using the service. Businesses using SERVQUAL to measure and manage service quality deploy a questionnaire that measures customer expectations of service quality in terms of these 5 dimensions and their perceptions of the service they receive. When customer expectations are greater than their perceptions of received delivery, service quality is deemed low. This is consistent with Gronroos (1988).

As a result of the evaluation process, customers compare their service expectations with the perception of the service actually received by the factors that indicate Service Quality. The researchers therefore took the concept of Parasuraman and applied it to assess and improve quality of service by using 22 questions to evaluate the service quality (SERVQUAL) instrument in all 5 main dimensions.

Early conceptualization of service quality was formed by Gronroos (1982, 1984), he defined service quality by technical or outcome (what consumer receive) and functional or process related (how consumer receive the service) dimensions (Fig. 1) (Gronroos, 1982, 1984, 1988). Image build up by technical and functional quality and effect of some other factors (marketing communication, word of mouth, tradition, ideology, customer needs and pricing). The Nordic model is based on disconfirmation paradigm by comparing perceived performance and expected service. This was the first attempt to measure quality of service. Grönroos model was general in nature and without offering any technique on measuring technical and functional quality.

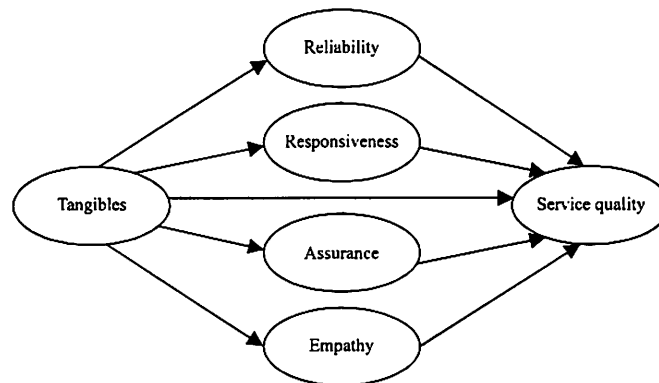


Fig. 1: Model for service quality (SERVQUAL)

Among general instruments, the most popular model used for evaluation of service quality is SERVQUAL, a well-known scale developed by Parasuraman *et al.* (1985, 1988). The attributes of Parasuraman *et al.* (1985), were: Tangibles, reliability, responsiveness, competency, courtesy, assurance, credibility, security, access and understanding. Parasuraman *et al.* (1988) later reduced these ten dimensions into five by using a factor analysis. These five dimensions are:

- **Tangibles:** Physical facilities, equipment and appearance of personnel
- **Reliability:** Ability to perform the promised service dependably and accurately
- **Responsiveness:** Willingness to help customers and provide prompt service
- **Assurance:** Knowledge and courtesy of employees and their ability to inspire trust and confidence. Including competence, courtesy, credibility and security
- **Empathy:** Caring and individualized attention that the firm provides to its customers. Including access, communication, understanding the customer

Service organizations are physical presences that can be seen and felt and are related to the delivery of services. Equipment providers must look beautiful, should provide modern equipment and technology, materials associated with the service have to be clean, service staff must have a professional personality and organizations should facilitate both service users and service providers (Parasuraman *et al.*, 1988).

Aydin and Ozer (2005) conducted a study on the analysis of causal factors influencing customer loyalty with GSM mobile phones in Turkey. They studied the relationships between corporate image, perceived service quality, trust and customer switching costs which are the major antecedents of customer loyalty and loyal customers may buy more, accept higher prices and have a positive word-of-mouth effect. Also they concluded that the cost of selling to new customers is much higher than the cost of selling to existing customers. Although, this fact is apparent to everyone, many companies are still losing customers at a formidable rate. In this context the main aim of this study is to examine the relationships between these factors and customer loyalty and the relationships among these factors in the Turkish GSM sector. Data was obtained from 1,662 mobile phone users in Turkey via questionnaire. The data was analyzed by Structural Equation Modeling (SEM) in order to test all the relationships between variables in the model.

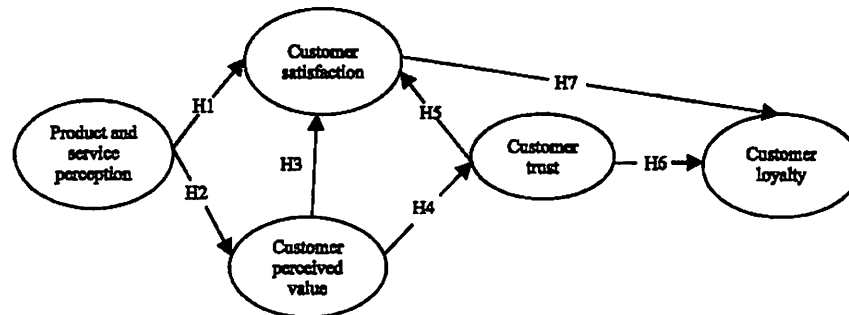


Fig. 2: Conceptual framework

Telecommunications technology is changing and highly competitive. Quality of service make customers feel confident and is important for entrepreneurs to build a loyal customer base. According to Chen *et al.* (2012), the perceived quality of the product/service has a direct influence on customer satisfaction (Fig. 2).

After a literature review and development of the above concepts, the following hypotheses were developed:

- H1: Product and service perception influences customer satisfaction
- H2: Product and service perception influences customer perceived value
- H3: Customer perceived value influences customer satisfaction
- H4: Customer perceived value influences customer trust
- H5: Customer trust influences customer satisfaction
- H6: Customer trust influences customer loyalty
- H7: Customer satisfaction influences customer loyalty

METHODOLOGY

This study was conducted from a sample population of product and service users from the Thai IT sector using both quantitative and qualitative research.

Data collection: Thailand Information Technology service and product customers were queried using quantitative research methods of which 294 responded (Hair *et al.*, 2006). Questionnaires were constructed as a tool to measure concept definition and practice. This research first conducted Confirmatory Factor Analysis (CFA) and subsequently reliability analysis to measure Cronbach's alphas for this scale items to ensure internal consistency. Multi-item measures were developed based on Cronbach's alpha >0.68. This study then calculated Cronbach's alphas for each construct. The reliability measure ranged from 0.523-0.840. This is considered highly reliable. Items lower than 0.50 were cut off from the study.

The responses to the questions capturing focal constructs used a seven-point Likert scale (rating statements 1-7: 1 = Strongly disagree and 7 = Strongly agree). Qualitative research was conducted with in-depth interviews of 10 senior-level executives from both Thai IT product and service businesses.

Measurement

Dependent variable: Customer Loyalty analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of customer behavior and customer attitude (Broyles, 2009; Chang *et al.*, 2010).

Independent variables

Product and service perception (perserv): Analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of dependability, ability to respond, confidence, care and physical (Zeithaml *et al.*, 1990).

Customer satisfaction (satisfaction): Analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of organization, salesman and products (Piriyakul *et al.*, 2011; Aldas-Manzano *et al.*, 2011; Payan *et al.*, 2010).

Customer trust (trust): Analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of brand and salesman (Guenzi *et al.*, 2009; Homburg *et al.*, 2002; Swan *et al.*, 1999; Liu and Wu, 2008).

Customer perceived value (pervalue): Analysis used a measurement instrument or questionnaires utilizing a 7-point likert scale (Likert, 1970) which were developed and constructed from scales enabling the measurement of social values, emotional values and functional values.

RESULTS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of manifest variable and latent variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001):

- According to the analysis results of scale validity and reliability, scale investigation has been conducted using internal consistency measurement coefficient alpha. (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient was found that alpha coefficients ranged from 0.523-0.840 which is considered to have high reliability
- In case of measure variables with reflective analysis, convergent validity has been conducted. Loading is used as consideration criteria and must be positive quantity and indicator loading has been more than 0.707 and all values have been statistically significant ($|t| > 1.96$) representing convergent validity of scales (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Piriyakul *et al.*, 2011) and analysis results as shown in Table 1

Table 1 shows that product and service perception which included dependability, ability to respond, confidence, care and physical variables found that the loading is equal to 0.934, 0.930, 0.902, 0.905 and 0.872, respectively. The data showed a significant level of confidence percentage of 0.95 ($t\text{-stat} > 1.96$) which validates high reliability which affects customer loyalty.

Table 1: Convergent validity statistics in latent variable measurements in the reflective model

Construct/item	Loading	t-stat
Perserv: Product and service perception		
Perserv_c: Dependability	0.934	43.174
Perserv_r: Ability to respond	0.930	38.162
Perserv_n: Confidence	0.902	27.909
Perserv_m: Care	0.905	39.167
Perserv_a: Physical	0.872	36.655
Pervalue: Customer perceived value		
Perceived_s: Social	0.917	42.896
Perceived_e: Emotional	0.936	47.832
Perceived_f: Functional	0.889	48.868
Satisfaction: Customer satisfaction		
Satisfaction_s: Products	0.917	57.288
Satisfaction_p salesman	0.922	45.712
Satisfaction_o organization	0.898	51.920
Trust: Customer trust		
Trust_s: Brand	0.914	39.084
Trust_o: Branding	0.936	57.607
Trust_p: Salesman	0.937	56.136
Loyalty: Customer loyalty		
Loyalty_b: Behavior	0.938	51.399
Loyalty_a: Attitude	0.956	39.704

Table 1 shows that customer perceived value which included, social values, emotional values and functional values variables found that the loading is equal to 0.917, 0.936 and 0.889, respectively. The data showed a significant level of confidence percentage of 0.95 ($t\text{-stat} > 1.96$) which validates high reliability which affects customer satisfaction and customer trust.

Table 1 shows that customer satisfaction which included products, salesman and organizations variables found that the loading is equal to 0.917, 0.922 and 0.898, respectively. The data showed a significant level of confidence percentage of 0.95 ($t\text{-stat} > 1.96$) which validates high reliability which affects customer trust and customer loyalty.

Table 1 shows that customer trust which included brand, branding and salesman variables found that the loading is equal to 0.917, 0.922 and 0.898, respectively. The data showed a significant level of confidence percentage of 0.95 ($t\text{-stat} > 1.96$) which validates high reliability which affects customer satisfaction.

Classification accuracy verification: Discriminant validity has been tested on scale reliability, including Composite Reliability (CR) which should not be lower than 0.707, Average Variance Extract (AVE) should not be lower than 0.50, R^2 should not be lower than 0.20 (Table 2) and \sqrt{AVE} in the diagonal data should have a value higher than cross construct correlation of all values in the same column. The data validates that there was discriminant validity for each construct, without exception. (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Wingworn and Piriyaikul, 2010). Testing results of discriminate validity of this research was in accordance with all conditions shown in Table 2 and 3, the analysis of confirmatory factors is shown in Fig. 3. Therefore the scales of this research have been the scales with discriminant validity and reliability.

Table 2: Confirmatory Factor Analysis (CFA) of the independent variables of service quality and E-CRM and their affects on the dependent variable on customer satisfaction

Construct	CR	R ²	AVE	Cross construct correlation				
				Perserv	Pervalue	Satisfaction	Trust	Loyalty
Perserv	0.960	-	0.826	0.908				
Pervalue	0.939	0.822	0.836	0.903	0.914			
Satisfaction	0.937	0.816	0.833	0.809	0.850	0.913		
Trust	0.950	0.769	0.864	0.903	0.877	0.898	0.930	
Loyalty	0.946	0.660	0.897	0.670	0.725	0.812	0.722	0.947

Statistically significant at 0.05 and diagonal figures mean \sqrt{AVE} , CR: Composite reliability, R²: Square of the correlation, AVE: Average variance extracted

Table 3: Hypothesis testing result of hypothetical research

Hypotheses	Coefficient	t-stat	Results
H1: Product and service perception influences customer satisfaction	-0.048	0.699	Not supported
H2: Product and service perception influences customer perceived value	0.904	67.793	Supported
H3: Customer perceived value influences customer satisfaction	0.300	3.686	Supported
H4: Customer perceived value influences customer trust	0.879	55.400	Supported
H5: Customer trust influences customer satisfaction	0.675	9.388	Supported
H6: Customer trust influences customer loyalty	-0.029	0.441	Not supported
H7: Customer satisfaction influences customer loyalty	0.839	10.622	Supported

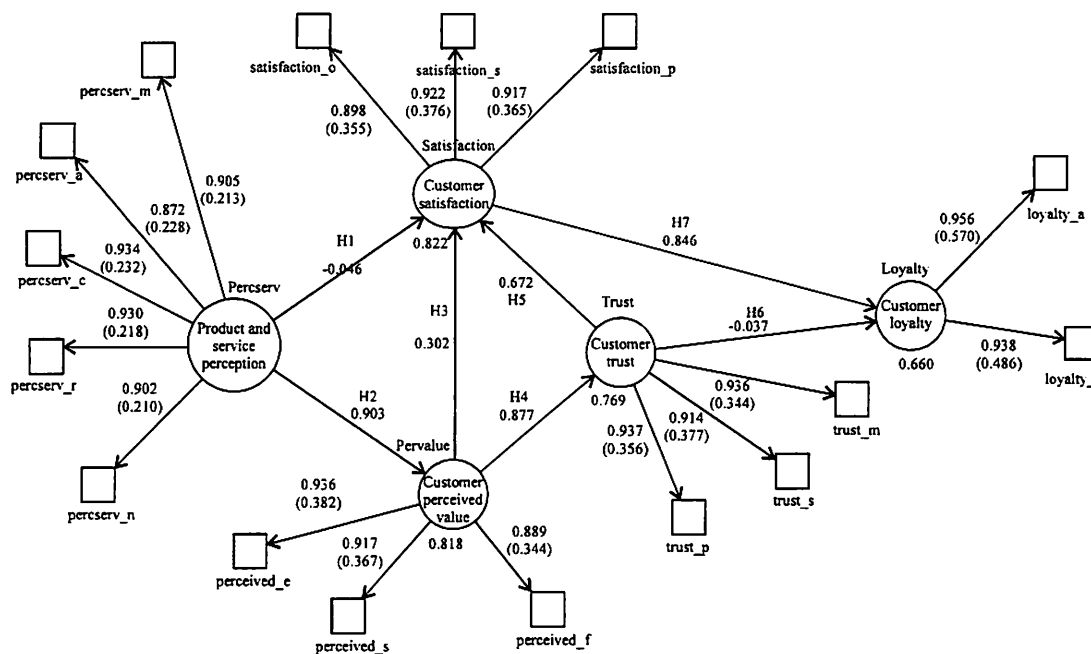


Fig. 3: Final model

DISCUSSION

The results of the research are from the "Structural equation model of customer perception of service and product quality factors that affects Thai information technology customer loyalty".

Factors were perceived quality of products and services, factors that indicate reliable service quality, responsibility, confidence, care and physical presence (Parasuraman *et al.*, 1988).

Quality is caused by the service expectation of customers or clients or the comparison between the expectations of customers in the product or service. A definition of this service quality is the perceived quality of the product/service is caused by the expectation of customers or clients using the service (Zeithaml *et al.*, 1990).

This is consistent with Aydin and Ozer (2005) analysis of causal factors influencing customer loyalty with GSM mobile phones in Turkey. They studied the relationships between corporate image, perceived service quality, trust and customer switching costs which are the major antecedents of customer loyalty and loyal customers may buy more, accept higher prices and have a positive word-of-mouth effect. Also they concluded that the cost of selling to new customers is much higher than the cost of selling to existing customers. Although, this fact is apparent to everyone, many companies are still losing customers at a formidable rate. In this context the main aim of this study is to examine the relationships between these factors and customer loyalty and the relationships among these factors in the Turkish GSM sector. Data was obtained from 1,662 mobile phone users in Turkey via questionnaire.

The data was analyzed by Structural Equation Modeling (SEM) in order to test all the relationships between variables in the model.

Telecommunications technology is changing and highly competitive. Quality of service makes customers feel confident and is important for entrepreneurs to build a loyal customer base. According to Chen *et al.* (2012), they found that the perceived quality of the product/service has a direct influence on customer satisfaction.

This results in modern businesses needing to focus on customer care regularly, regardless of whether the customer is small or big and keeping customers and building relationships with customers is priority in the relationship. Modern marketing principals thus emphasize profits through customer satisfaction (Farangthong, 2005).

The perceived value of the product is the view that customers use in the evaluation of products/services and the purchase process must be effective for the purchase to occur (Woodruff, 1997; Eggert *et al.*, 2006).

Studies by Chen *et al.* (2012), studied the impact of service quality, finance and justice on customer satisfaction and found that the customer's perceived quality directly affects customer satisfaction through the perception of service quality and transparency and fairness of company service.

Eggert and Ulaga (2002) found that perceived customer value has a direct positive influence on customer satisfaction which influences the 0.83 significance level of 1%, consistent with the findings of Kumar *et al.* (2003) and Lages *et al.* (2008) found that perceived value affects customer trust.

A study by Piriyaikul *et al.* (2011) showed that customer satisfaction depended on corporate reputation and its affect on customer satisfaction in convenience stores and other retail outlets. Traditional larger stores had higher brand recognition due to their larger market share and influence and were recognized for their service quality, customer relationship management planning which resulted in higher customer satisfaction than traditional convenience stores and retailers around them.

Chang *et al.* (2010) studied the relationship between service convenience and customer satisfaction in home delivery and found that customer satisfaction is positively correlated with different types of service convenience. It also suggests that the customers with different gender have significantly different views to quality elements of home delivery service.

If customer satisfaction is good, the resultant is organizations achieve their business goals by (Anderson *et al.*, 1994) influencing the overall quality, price and customer expectations (Anderson *et al.*, 1994; Fornell *et al.*, 1996).

Chang *et al.* (2010) investigated the relationship between service convenience and satisfaction. Results of the study revealed that service convenience have significantly high effect on customer satisfaction. Therefore, the higher the perception of access convenience, the more the customers are satisfied. Chang *et al.* (2010) also found that access convenience affects customer loyalty indirectly through perceived service value and satisfaction.

Both for individuals involved (Spreng *et al.*, 1996) as well as the survival of the organization, there must be a positive relationship between expectations and satisfaction of the customer (Cadotte *et al.*, 1987; Churchill, Jr. and Surprenant, 1982).

Customer trust is a factor that represents the relationship between the organization and the customer, emotional relationship, trust will occur when there is confidence, trust reduces uncertainty, risks and careful thought process in response to the brand. The trust of the customer will contribute to customer satisfaction or dissatisfaction.

This is consistent with the research of Raimondo, Miceli and Costabile, (nd) which found that customer satisfaction has an immediate and positive impact on customer loyalty in the long run which consisted of a loyal attitude and loyalty arising from customer behavior (Morgan and Hunt, 1994).

Songsom and Trichun (2012) stated that customer loyalty is influenced by psychological factors or elements within the consumer and external factors outside the influence of the environment.

CONCLUSION

Customer loyalty affects products and services in addition to the retention of business due the unwillingness of customers to change to another service or competitor. It is also useful in word-of-mouth marketing and additionally expands a customer base. When customers are loyal, they will support the business and encourage others that they know to use the products and services. Customer loyalty is beneficial to the business in the long run and every organization should try to discover the factors that keep customers loyal by implementing marketing strategies such as customer relationship management, building relationships using social media tool and retaining customers in the long run to maintain the existing customer base as long as possible.

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Efficiency of Waste Management in Phuket Province

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ABSTRACT

This research investigates the efficiency of waste management in Phuket. Qualitative research was conducted to the government agencies and quantitative research to a study group of 400 heads of households in Phuket. The research findings show that both the government and the people feel that there is still a low level of waste processing and waste transportation. The findings that were inconsistent between the public and private sectors include different ideas about waste disposal, technology utilization, people's participation in the decision making and evaluation. There are clear indicators that the government needs to establish better correlations with the people to create a more efficient waste management system.

Key words: Waste management, waste disposal behavior, technology utilization, people's participation

INTRODUCTION

A crucial crisis the world's natural resources and environment are facing is the rapid growth of world population. Annually the populations of developed countries grow an average 0.1% while those of developing countries reach a high average of 1.5% (www.ertc.deqp.go.th/ertc). The United Nations projects that by 2025 the world population will have increased to 7.9 billion (www.mythland.org/v3/thread-3646-1-1.html). The growing world population combined with new developments in science and technologies used in manufacturing processes have substantially increased the amount of waste that pollutes our natural environment and resources (Sivakumar and Sugirtharan, 2010; Ziadat and Mott, 2005).

In 2005 Thailand's waste generation was 14.3 million tons per annum. In 2010 it increased to approximately 15.2 million tons per annum, 6% of which was waste generated in Bangkok municipality, urban municipalities nationwide and rural sub-districts nationwide (Pollution Control Department, Ministry of Natural Resources and Environment, www.pcd.go.th/info/_/waste_wastethai48_53.html.) The Thai government has formulated policies and regulations to address the issue but has not been able to bring waste management under control (Sujaudhin *et al.*, 2008). There remain large amounts of undisposed waste, particularly in major cities and tourism destinations such as Bangkok and Phuket, whose rapid growth lead to increased volume of waste and subsequent waste management issues.

As the level of waste pollution increases, research on waste management has grown. Tchobanoglous *et al.* (1993) divided waste management into four primary steps: Storage, transportation, processing and disposal. Maity *et al.* (2011) and Phillips *et al.* (1999) studied waste

disposal behavior implementing the 3Rs: Reduce, Reuse and Recycle while Ayotamuno and Gobo (2004) and Ngowi (1997) categorized people's participation in waste management into four steps: Decision making, implementation, benefits and evaluation. McDonald and Smithers (1998) studied technology utilization in landfills, incineration and composting. This research aims to study the performance and opinion of the people in Phuket upon the government sector's waste management.

METHODOLOGY

This research is a combination of quantitative and qualitative studies. In the quantitative study a questionnaire was used to collect data from heads of households. This questionnaire was first assessed to get the Item Objective Congruence (IOC) value to identify the question with the IOC value greater than 0.60. Then the reliability of the selected questions was measured with Cronbach's Alpha Coefficient.

The main survey was conducted with a group of 400 participating heads of households in Phuket. Participants in the study group were chosen by stratified random sampling into three districts of Phuket Province then by simple random sampling. According to Stevens (1986) the size of the sample group is fitting for the analysis by LISREL.

An analysis using a Structural Equation Model (SEM) was also conducted on four factors namely, (1) Waste management, (2) Waste disposal behavior, (3) Technology utilization in waste management and (4) People's participation. The level of these factors was shown with the statistical analysis for percentage, mean and standard deviation.

The qualitative study utilized an in-depth interview to the key-informants in the administrative positions of the environmental offices of Phuket Municipality and the non-governmental organization. The content analysis was used to study the data (Bryman and Burgess, 1994) holistically and interpret them systematically.

WASTE MANAGEMENT BY GOVERNMENT

Qualitative research was conducted by analyzing data collected through observation and in-depth interviews the Director of the Regional Environment Office 15 Phuket, the executive committee of Phuket City Municipality and the president of Phuket Environment Protection Forum regarding, (1) Waste management, (2) Waste disposal behavior, (3) Technology utilization in waste management and (4) People's participation.

RESULTS

Waste management: Phuket waste management system is centralized and overseen by the Phuket Waste Management Committee led by the Phuket governor. The committee has chiefs of the local administrative organizations serving as directors and the chief of Phuket Provincial Office of natural resources and environment as secretary, overseeing waste management policies and the implementation of said policies as well as delegating waste collection, transportation, processing and disposal responsibilities to relevant departments.

Waste collection is a responsibility carried out by all 19 local administrative organizations through private contractors hired to collect waste from households, communities and businesses in the area. Phuket Province divides waste into four categories which are bio-degradable waste, sellable waste, general waste and hazardous waste. However, it has been found that the population has not followed these categories in their waste disposal habits, inhibiting effective waste disposal categorization.

Waste transportation is also a responsibility of all the local administrative organizations that has been contracted out to private companies. Collected waste is to be transported to Phuket City Municipality's central waste disposal facility, yet various problems have been encountered including a lack of garbage trucks with proper waste separating facilities, lack of funding to fix dilapidated garbage trucks that leak odorous waste fluids onto the roads or to buy new garbage trucks, as well as time constraints on each waste collection route.

While it is normally the government's role to educate the population and establish a waste processing facility in the community, waste processing in Phuket Province is still only in the beginning stages due to the fact that Phuket's economy is not conducive to the building of waste processing facilities. Currently only bio-degradable waste is being processed into ink or compost but at a very low level.

Phuket City Municipality is responsible for waste disposal. Its central waste disposal facility disposes of waste by 120 rai of landfill which has already reached full capacity; a 250-ton incinerator which is currently out of service; a 700-ton incinerator; an incinerator for medical waste from hospitals and a dump for other hazardous waste.

Waste disposal behavior: Waste disposal behavior comprises reducing, reusing and recycling. A lack of cooperation between the local government and the people has discouraged high levels of effective waste disposal behavior. The lack of co-ordination between various government organizations and low levels of awareness about proper waste disposal behavior among the people all contribute to this fact.

In Phuket waste reduction is encouraged through a campaign promoting the use of environmentally-friendly packaging. However, there are very few signboards or posters around Phuket promoting this campaign. Campaign activities tend to be simply an official campaign launch ceremony and the signing of various MOUs more than continuous implementation of the campaign strategies. This leads to a broken, disorganized waste management system that cannot be accurately evaluated which also means an inefficient waste management system caused by a lack of government interest.

The local government has encouraged reusing yet has not provided guidelines or examples that would describe how exactly reusing should be done effectively to yield lasting results. As for recycling, since Phuket does not have a recycling plant, the only recycling done is that through businesses buying old furniture and appliances that process the goods and sell them elsewhere.

Technology utilization in waste management: Technology utilization consists of landfills, incineration and composting.

Phuket has a 120-rai landfill which has already reached its full capacity and cannot be expanded. The only way forward is to dig up the old landfill and convert it to a plasma gasification landfill.

The incinerators in Phuket are currently managed by private companies working under the supervision of Phuket City Municipality to ensure the operation of the incinerators follow legal ordinances. While using incinerators is an acceptable method of technology utilization in waste management, it is not recommended that the size of Phuket's existing incinerators increase in direct correlation with the amount of generated waste. Instead, reducing the amount of waste, categorizing waste for efficient waste disposal and reusing waste as possible should be more encouraged.

Due to the fact that Phuket's economy is sustained less by agriculture than by tourism and related business, composting has not received much interest from the community.

People's participation: People's participation in waste management can be divided into four steps: Decision making, implementation, benefits and evaluation. People's participation in decision making starts from planning to overseeing private contractors to budgeting for waste management. Participation in implementation is involvement in the waste management practices under the responsibility of relevant government organizations. Sharing in the benefits an effective waste management system would have on the development of Phuket, improved tourism and better health of the population would constitute people's participation in benefits while people's participation in evaluation would include involvement in the monitoring of the entire waste management process through legal and local government ordinances as well as through unofficial channels such as community volunteers.

WASTE MANAGEMENT BY PEOPLE

Quantitative research was conducted by analyzing data collected from a study group of 400 heads of households in Phuket. Participants in the study group were chosen by stratified random sampling into three districts of Phuket Province then by simple random sampling.

Waste management is an important service the government must provide to the people from collection, transportation, processing and disposal.

Research findings show that the people feel that government organizations have performed at a high level in waste collection. Waste processing was seen to be performed at a second highest level as there are still few waste processing facilities in Phuket. Technology utilization in waste management such as landfills, incineration and composting had the third highest level of performance as there is still little awareness or understanding of these technologies among the people. Waste transportation was seen by the people as worst performing due to the people's dissatisfaction that local administrative organizations and their private contractors use substandard garbage trucks and even then still do not have an adequate number of trucks for efficient waste transportation.

The people view waste disposal behavior as an initiative that needs to start from the people to encourage waste reduction, reusing and recycling. For waste reduction, the people want to reduce waste generation, believing it to be as effective as reusing. Examples of this include using both sides of styro sheets and glass bottles for drinking water. However, the people gave the highest importance to recycling, exchanging their items or selling them for cash.

As for the technologies utilized in waste management, namely landfill, incineration and composting which are the responsibilities of the local administrative organizations, the people were aware most of landfill followed by composting. The people want the government to provide more knowledge and support for composting and production of bio extract that can be used to help reduce stench in landfills. Incineration had the least awareness among the people as they were lacking knowledge and understanding about it nor did they want more pollution.

People's participation in waste management is involvement in decision making, implementation, benefits and evaluation. The people gave the least importance to participation in decision making and evaluation, followed by benefits and gave the most importance to participation in implementation.

DISCUSSION

Results from both the quantitative and qualitative research conducted were consistent in finding that waste management in Phuket by waste collection from households and businesses which is the responsibility of all 19 local administrative organizations and the private contractors they hire, is on a high level of performance. Both the government and the people feel that there is still a low level of waste processing as there are still too few facilities. Waste transportation was seen to be the worst performing due to the people's dissatisfaction that local administrative organizations and their private contractors use substandard garbage trucks and do not have enough trucks to handle the large amount of garbage, leaving garbage waiting for collection and creating a stench. The government sector shares the same opinion as the people and attributes the cause of this problem to lack of budget.

In regards to technology utilization, both the government and the people feel that they do not want larger incinerators as they want to prevent higher levels of pollution. Both sectors also agree on the level of people's participation in implementation being at the highest level which also coincides with the research findings of Ngowi (1997). People's participation in benefits happens when an effective waste management system contributes to greater development and tourism for Phuket and better health for its people.

The research findings that were inconsistent between the government and the people include different ideas about waste disposal. The people feel they have very little knowledge or understanding about waste disposal processes while the government feels that it is the government's responsibility by law to provide this service and thus did not try to educate the public about waste disposal processes. The people also feel that they already are reducing and reusing waste at high levels while the government feels that the people still lack awareness in these matters as there is not enough promotion of the government's campaign to encourage the use of environmentally-friendly packaging, nor is there continuous implementation and evaluation. Recycling is seen by the people as performing at the highest level which is consistent with the findings of Kuruppuarachchi and Kalukottege (2005) and Ando and Gosselin (2005) while the government feels that recycling is performing at a low level as Phuket still lacks a recycling plant and recycling is done only through those businesses buying and selling used furniture and appliances.

In terms of technology utilization, the people want the local administrative organizations to use landfills more which is consistent with the findings of Maity *et al.* (2011), yet the government landfills are already at full capacity. The people also want the government to provide more knowledge about composting, yet the government does not give much importance to composting seeing that Phuket is a tourism economy more than an agricultural one.

The last finding that was inconsistent between the two sectors was on the topic of people's participation in the decision making and evaluation of Phuket's waste management system. It was found that the people have less participation in these matters than the government as the people do not have the opportunity to be involved in every step of the process.

CONCLUSION

Waste management in Phuket is largely the responsibility of the local administrative organizations. However, there are clear indicators that the government needs to establish better correlations with the people to create a more efficient waste management system. These indicators

include the fact that waste reduction has not been fully adopted as waste disposal behavior by the people, to which a contributing factor is lack of policies and support for continuous implementation from the government sector; the government needs to raise more awareness among the people about the technology utilization process in waste management and people's participation in the decision making and evaluation of Phuket's waste management is low as they lack opportunities to be involved in the process. The government needs to ensure that the people are provided opportunities to be involved as well as encourage the people to rethink their waste disposal behavior to reduce waste generation before it needs to be processed or disposed of by appropriate and environmentally-friendly technology utilization.

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Structural Equation Modeling of Relationship Factors Affecting Entrepreneurial Microfinance in Phuket, Thailand

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ABSTRACT

In globalized business, most entrepreneurs need to diversify sources of funding, especially given the internationalization of trade and finance. Entrepreneurs in particular are crucial to national and regional growth but they are most vulnerable to the difficulties and high costs in obtaining loans and small business funding. An exception however can be found in the Bangladesh Grameen Bank which opened its doors in 1983 to the impoverished peasants and poor using microcredit loans, of which 95% were to mostly women. With Thailand having over 99% of its businesses represented by small and medium-sized enterprises (SMEs), researchers decided to study the relationship factors that affect the credit support to these small entrepreneurs. In 2011, a Phuket Province census found that one in 7 households had an entrepreneurial business and they suffered from lack of loans. For qualitative research, the research survey consisted of 200 commercial bank executives that affect retail lending to the Phuket, Thailand's entrepreneurial island community. Factors having both a direct and an indirect influence having the highest positive factors within the organization included credit policy and strategy. Borrowers must additionally have knowledge management system which can take place in many forms. Bank organizational and internal factors researched also included policies, plans, strategies and loan terms which is determined by credit policy and retail lending or not. Additional factors in this determination are bank revenues, profits and brand image.

Key words: Microfinance, Grameen bank, SMEs financing

INTRODUCTION

Globalization is accelerating the economic integration of regional and global trading blocks, or more commonly known as Regional Free Trade Zones. Here is Asia, Association of South East Asian Nations (ASEAN) was established by the Bangkok Declaration on August 8, 1967, with 5 countries, including Indonesia, Malaysia, Philippines, Singapore and Thailand signing the original document. Membership has since been expanding and today ASEAN includes countries with Brunei Darussalam, Cambodia, Laos, Myanmar and Vietnam have been joined.

The 3 main objectives of the ASEAN declaration were to promote the economic, social and cultural development (Fig. 1) within the region. It was also established to maintain economic stability and regional security as well as to be used as a platform for disputes within the region. The three main pillars of the community are the ASEAN Security Community, Asian Economic Community (AEC) and ASEAN Socio-Cultural Community.

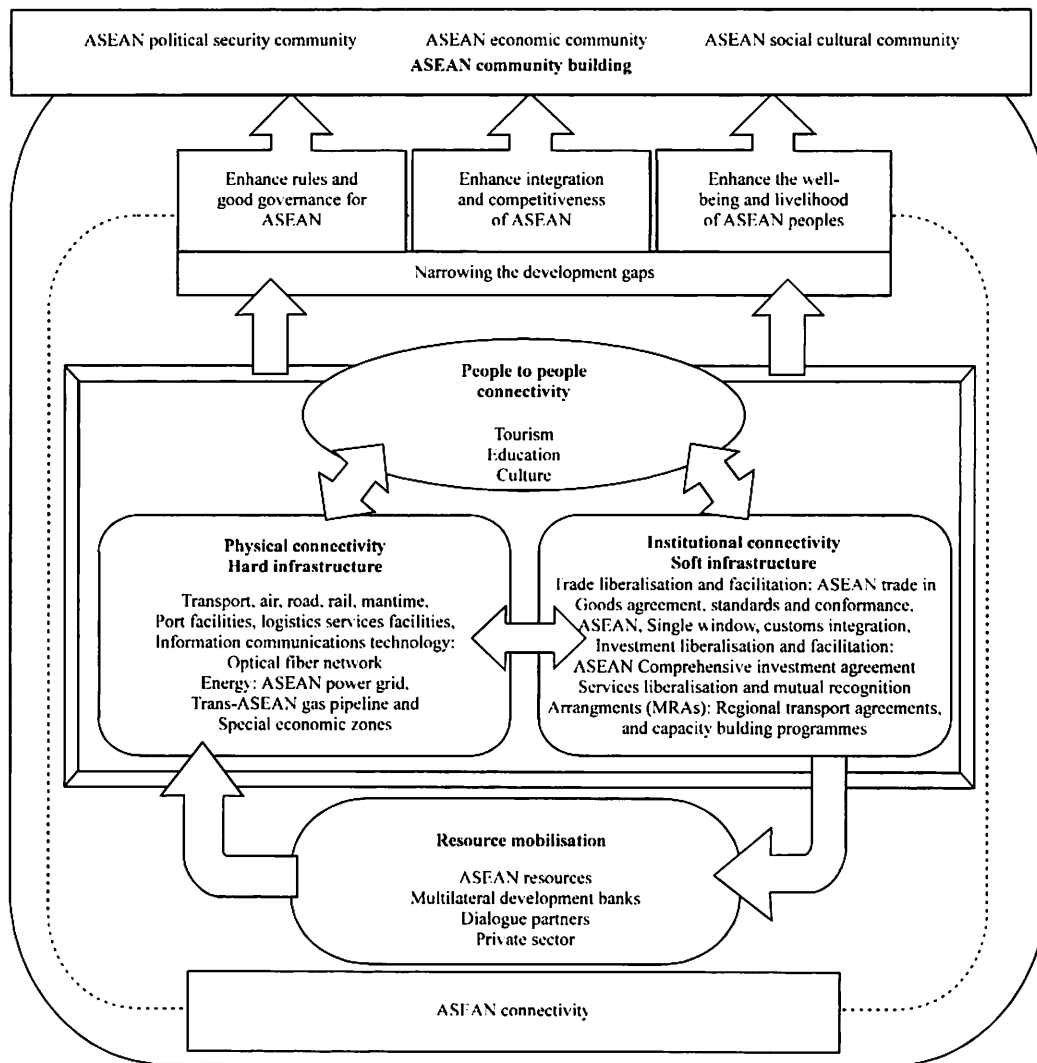


Fig. 1: Interaction between ASEAN connectivity and ASEAN community, Economic Research Institute for ASEAN and East Asia (ERIA)

In economic terms, the AEC also has three pillars that will be the driving force to the economic integration on 31 December 2015. These are a single market and single production base, greater freedom in the movement of capital and skilled labor and greater freedom in the movement of products (Chia, 2013).

The AEC Blueprint will transform ASEAN into a single market and production base, a highly competitive economic region, a region of equitable economic development and a region fully integrated into the global economy (ASEAN, 2009).

Free and open investment regimes are key elements to enhance ASEAN's competitiveness in attracting Foreign Direct Investment (FDI) as well as intra-ASEAN investment. Sustained inflows of new investments and reinvestments will promote and ensure dynamic development of ASEAN economies (Fig. 2).

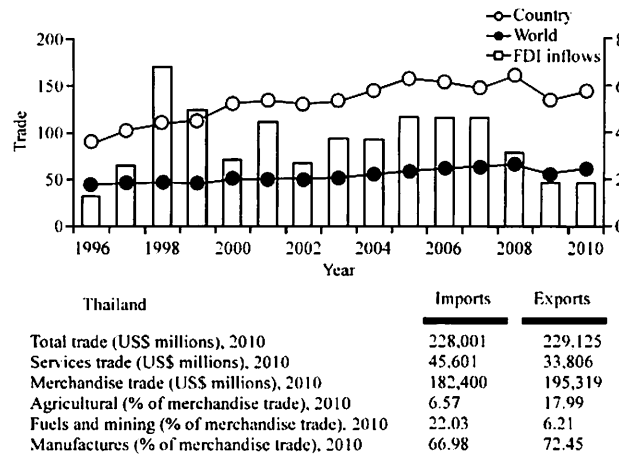


Fig. 2: Thailand's trade and FDI inflows, imports and exports (Lawrence *et al.*, 2012)

The AEC will establish ASEAN as a single market and production base making ASEAN more dynamic and competitive with new mechanisms and measures to strengthen the implementation of its existing economic initiatives, accelerating regional integration in the priority sectors, facilitating movement of business persons, skilled labor and talents and strengthening the institutional mechanisms of ASEAN. This will lead to the development of higher standards of living as well as increasing the region's living standard while reducing the social inequality gap.

Significant progress has already been made in identifying those Non Tariff Barriers (NTBs) that affect intra-regional trade the most. The identification process involved a number of important steps which led to the decision to focus on those NTBs that affect the most widely-traded products in the AEC region. These products included minerals, electrical appliances and machinery. In 1994 when these were initially identified, these products made up nearly 55% of Indonesia's imports, over 64% of Malaysia's imports, over 50% of the Philippines' imports and nearly 70% of Thailand's imports (ASEAN, 2014). It therefore is a great opportunity for Thailand and the nation's entrepreneurial businesses to adapt and take advantage of the reduction so the reduction in trade barriers benefits trade and investment fully.

With Thailand's goal of economic development and the spread of prosperity within the region, there must be a strategy focused on developing countries to generate economic growth. But entrepreneurial enterprises in Thailand entail mostly Small and Medium Enterprises (SMEs) and micro-enterprises which represent 99% of the total businesses. Of this, micro-entrepreneurs with employees up to 5 people with capital creation of up to 100,000 baht accounted for commercial registration (OSMEP, 2007) of which 66.95% of the total number, SMEs (OSMEP, 2010) are experiencing financial problems. Factors include lack of financial resources, lack of access to capital and lack of promotion marketing which all contribute to SMEs being unable to compete contributing to higher debt and losses.

In addition, micro-enterprises, which includes the vast majority of Thai businesses have no financial business plans, no financial or unreliable records or have no collateral to offer to secure a loan. Thus, they have difficulty accessing credit from financial institutions.

Usually however, short-term credit to micro-enterprises is very small and steps to a fast and hassle free loan should focus on a convenient source of credit with good and fast service, instead of the amount of the interest rate.

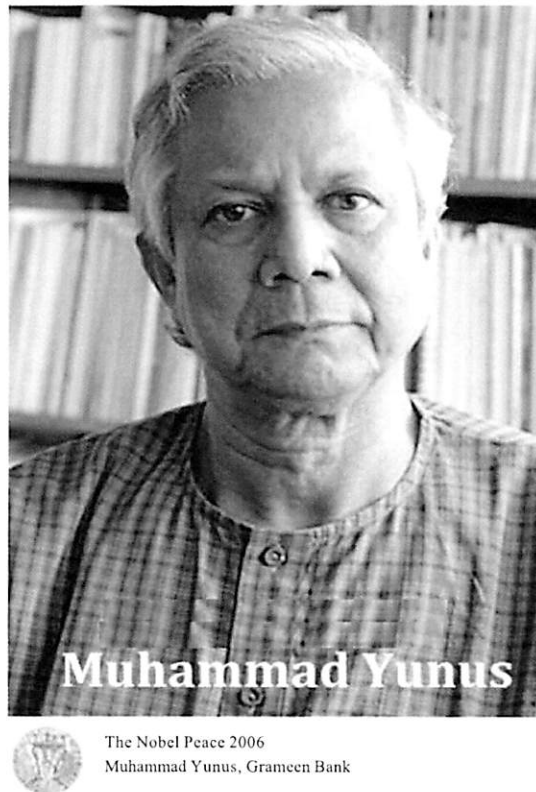


Fig. 3: Dr. Muhammad Yunus

Therefore, micro-enterprises using informal sources of credit, accounted for 44.44% of all micro-enterprise financing. These loans from informal money lenders occurred with relatively high interest rates (OSMEP, 2008) due to the quickness of getting money with minor procedural hassles and no need for personal guarantees. Growth in microenterprises seems to suffer from a variety of factors, of which lack of access to finance, infrastructure and markets and poor quality technology and regulatory barriers appear to be most common (World Bank, 2004; World Bank, 2007).

Microcredit as an alternative for small entrepreneurs, can help to solve the problems for the small businesses and entrepreneurs. Microcredit is a means of fighting poverty which in Bangladesh was realized when Muhammad Yunus (Fig. 3) in 1983 established the Grameen Bank which sought to realize his vision of self-support for the very poorest people by means of loans on easy terms. The bank has since been a source of inspiration for similar microcredit institutions in over one hundred countries.

The implementation of Grameen Bank principals alleviates poverty, contributes to the creation of jobs, creates income stability and creates a better life for their members. Banks in the traditional system have been reluctant to lend money to anyone unable to give some form or other of security. Grameen Bank, on the other hand, works on the assumption that even the poorest of the poor can manage their own financial affairs and development given suitable conditions. The instrument is microcredit, which is small long-term loans on easy terms.

Importance of SMEs to Thailand's economy	1997	2002
Number	799,033	1,639,427
(%)	99.5	99.7
Employment	4,057,595	4,990,217
Total enterprises (%)	76.4	69.0
GDP (%)	37.7*	38.9
Export (%)	38.5**	38.2

Fig. 4: Poonpatpibul and Limthammahisorn (2005) reports on manufacturing 1997 and the 2002-trade and service businesses census from the Thai National Statistical Office

By the time, Grameen Bank and Muhammad Yunus were co-awarded (The Norwegian Nobel Institute, 2006), more than seven million borrowers had been granted such loans. The average amount borrowed was 100 dollars and the repayment percentage was very high with over 95% of the loans going to women or groups of women. Experience showed that ensured the best security for the bank and the greatest beneficial effect for the borrowers' families.

In the effort of the poor to escape poverty, microcredit/microfinance has received considerable attention from economists and politicians which view these financing vehicles as a tool to alleviate poverty and stimulate economic growth by providing small loans to under privileged and poor individuals, organizations or groups.

Because small enterprises are essential to the local economy, it is essential that entrepreneurs are strengthened and be given the opportunity that enables them to improve their efficiency of doing business while both reducing unemployment and poverty (Walls *et al.*, 2001).

For Thailand today with more than 2 million small and medium-sized enterprises (SMEs) representing 99% of the total, microcredit is one tool in helping domestic micro-enterprises (Fig. 4).

One of the urgent measures in the Thai national plan is to solve credit access problems of SMEs. The Thai government has taken a major role in bestowing financial assistance to SMEs by setting target loans provided through the Specialized Financial Institutions (SFIs) and promoting loans provided by commercial banks. These measures intend to allow faster release of financial credit to SMEs and solve NPL problems. Besides, measures in the national master plan, the government has launched the Village Fund Project aiming to alleviate poverty problems particularly in rural areas and to boost economic recovery. This project provides working capital for people and small home industry in villages by an amount of one million baht per village. This however isn't enough as by the end of 2004, only a total of 224,000 million baht had been allocated to the villagers throughout the country. The proportions of allocated funds are 67% for agriculture, 17% for trading, 6% for emergency, 4% for industry and 4% for service (Poonpatpibul and Limthammahisorn, 2005). Therefore, microfinance must take on the larger role that government cannot fill.

In addition, Phuket as the largest island province in Thailand whose economy is centered marine and ocean tourism has become a large and growing source for potential business, employment and foreign tourism. The population has increased steadily with a higher standard of living and consumption rate compared to other regions. Therefore, it is necessary to have SMEs to meet the needs of consumers in Phuket. In 2011, a Phuket province census found that one in 7 households had an entrepreneurial business and the business operator suffered from lack of loans.

The researcher's objectives therefore were to study factors affecting the financing of entrepreneurial companies in Phuket. The purpose of the research was to assist in developing systems for entrepreneurial and small business funding which helps with the survival of small enterprises.

CONCEPTUAL DEVELOPMENT

Microfinance: Microfinance is the most useful and popular financial system in the world to face financial crisis of the poor people. It gives loan to those people whom the government or any commercial bank will not give loan facility. Both for rich and poor countries of the world, microfinance tries to improve access to loans and saving services for low-income, low-wealth people which is the fastest-growing and best-known tool to combat poverty (Islam *et al.*, 2012).

The terms microcredit and microfinance are often used interchangeably but there is a difference between them. Microcredit refers to the act of providing the loan. On the other hand microfinance is the act of providing these same borrowers with financial services, such as savings institutions and insurance policies (Sengupta and Aubuchon, 2008).

Research by Chiamchitrong (2010) evaluated the performance of annual sales or income and others including (McFadzean *et al.*, 2005) gross profit/gross margin, cash flows action and operating cash flow and net income (Wattanakul, 2002). Concerning the general public (Polsaram, 1998), organizational images are important.

Trainer (2002a) thesis concerning 'The Simpler Way', it was discussed how life and communities could be simplified with simpler lifestyles in small, highly self-sufficient local economies where individuals were more cooperative in creating a new economy, producing less than the present economy. These individuals should also exhibit different values, especially cooperation not competition and frugality and self-sufficiency not acquisitiveness and consuming. Additionally, Trainer (2002b) argued that there must be a new approach to poverty alleviation and the old 'neo-classical' approach doesn't work.

Wakoko (2003) found that African women's empowerment is due to both their indirect access to land (e.g., through hypergamy) and also, through direct access to other resources (e.g., employment, education and credit use). As such, the extent to which these resources empower women depends on the nature of women's experiences with them either as owners, users or when they are in control of them. Second, that a number of factors mediate the effects of each resource (including credit/savings), on women.

This is also consistent with the study of Hussain *et al.* (2001) which investigated the prospects of the implementation of a Grameen Bank/microcredit type banking system in the European socio-economic and cultural contexts.

Membership: Kiso (2008) noted that micro-finance institutions are different from banks in that their customers appear as members. With this 'membership', loans are made as group loans with shared responsibility to pay the debt, which also increases your ability to pay back debts to the lending financial institutions. Membership loans are mainly to females (Faridi, 2004) because the risk of lending to female is less than males (Hassan and Renteria-Guerrero, 1997). Endeavors which have existed for many years, increases the ability to obtain a loan and more credit because a bank can verify your past business relationships (Chiamchitrong, 2010; Nopwattanapong, 2007).

Responsibility: Factors contributing to the successful measurement of business organizations include not only operations and financial data, but also product quality, employee satisfaction, the environmental hazards on the environment and their impact on society which is "Corporate social responsibility-CSR".

CSR is defined by the European Commission as "the responsibility of enterprises for their impacts on society" The Commission encourages that enterprises "should have in place a process to integrate social, environmental, ethical human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders" (European Commission, 2011).

This is crucial for businesses and enterprises and they should take into account the strategic importance of social responsibility (Wongprasert, 2009) which includes the responsibility of businesses with its employees, the responsibility of a business to its creditors, the responsibility of the business to its investors and its overall Corporate Social Responsibility (CSR).

Harraf (2008) noted that microfinance help the poor to access capital when money is difficult or impossible to obtain. Microfinance also has a social benefit. This is consistent with the study of Hussain *et al.* (2001) who said that Grameen Bank helps and gives social development opportunities to the disadvantaged. If any members of the group are weak and need help, a supportive social network helps, cultivate good saving habits for the poor. The nature of the lending group should also help create a shared responsibility and make the funding a joint responsibility.

The lender should also be involved with training members of society and helping them with the knowledge to help each other (Valente, 2011) to achieve trust, credibility and the expectations of society, such as a standard product/service, development/extension and products/services. It is also necessary to provide opportunities for the disadvantaged. The lending group shares responsibility and is funded jointly and shares debted responsibility together while guaranteeing the network (Kiso, 2008; Iqbal, 2002; Wakoko, 2003).

Knowledge management: Marquardt (1996) quote, "Empowered workers are able to make decisions as good as, if not better than the decisions made by managers because the workers, in fact, possess the best information" is important to the concept of knowledge management. Knowledge has become more important for organizations than financial resources, market position, technology, or any other company asset. Individuals may come and go, but valuable knowledge cannot be lost or the company starves to death. It includes the acquisition, creation, storage, transfer and utilization of knowledge.

Marquardt (1996) also went on to state that involving the community as a part of the learning process brings many benefits, it may, for example prepare potential future workforce and enhance the company's image.

The top strategies for people empowerment and enablement in learning organizations:

- Institute personnel policies that reward learners.
- Create self-managed work teams
- Empower employees to learn and produce (information workers with knowledge about financial, technical and other data so that they can make wiser decisions)
- Encourage leaders to model and demonstrate learning
- Invite leaders to champion learning processes and projects
- Balance learning and development needs of the individual and organization

- Encourage and enhance customer participation in organization learning
- Provide education opportunities for community
- Build long-term learning partnerships with vendors and suppliers
- Maximize learning from alliances and joint ventures

In measuring business success, there are several other theories for measuring both quantitative and qualitative targets. One such theory was introduced in a 1992 Harvard Business Review article (Kaplan and Norton, 1992), in which David Norton and Robert Kaplan undertook a multi-company research project to study performance measurement in companies whose intangible assets played a central role in value creation according to Nolan Norton Institute in 1991. The researchers believed that if companies were to improve the management of their intangible assets, they had to integrate the measurement of intangible assets into their management systems. During the next 15 years, the original balanced scorecard (BSC) strategy performance management tool was adopted (Fig. 5) by thousands of private, public and nonprofit enterprises around the world, the researchers extended and broadened the concept into a management tool for describing, communicating and implementing strategy.

Organizational factors: Organizational factors within an organization can either strengthen or weaken the entity so they must seek opportunities and avoid obstacles that may occur (TPI, 2005) The organization's policies are the factors that make your business successful or not. The relevant policies in project planning (Katawut, 2012) which are related to organizational strategic planning and operations have different characteristics in microfinance compared to those of larger financial lending institutions.

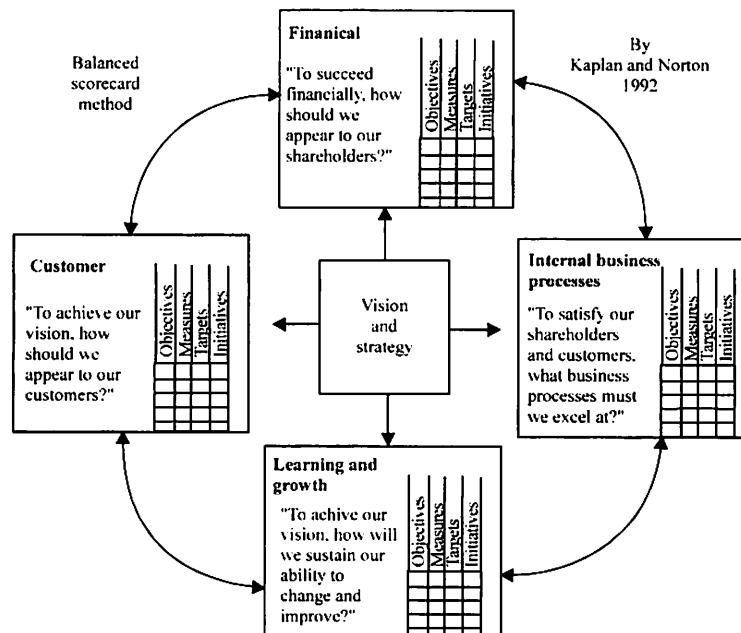


Fig. 5: Balanced scorecard method (Kaplan and Norton, 1992)

As a result, both policy and strategy related to loans are different from general lending institutions (Hadisumarto and Ismail, 2010), as well as the type of business lenders, the nature of the lender, the type of use which includes other factors and conditions such as the size of the credit limit, interest rate and payment rate.

After a literature review and development of the above concepts, the following hypotheses were developed. They have been presented in Fig. 1 and 2 for better visualization:

- **H1:** Membership influences microfinance
- **H2:** Membership influences responsibly
- **H3:** Membership influences knowledge management
- **H4:** Knowledge management influences microfinance
- **H5:** Responsibility influences microfinance
- **H6:** Organizational factors influences microfinance

METHODOLOGY

The sample population or unit of analysis for this research included bank executives in both the private and public sector.

Data collection: Questionnaires were constructed to be a tool to measure concept definition and practice and were compiled from the literature. The content and structural validity were determined by Item Objective Congruent (IOC) and by 5 experts in their related fields. The instrument or questionnaire used the 7-Point Likert Scale as the measurement scale. The conceptual framework for determining the internal consistency was measured by coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient:

- **Quantitative research:** Stratified sampling was used in the research as it offers significant improvement over simple random sampling as simple random sampling tends to have larger sampling errors and less precision than stratified samples of the same sample size. Stratified sampling is a probability sampling procedure in which the target population is first separated into mutually exclusive, homogeneous segments (strata) and then a simple random sample is selected from each segment (stratum). The samples selected from the various strata are then combined into a single sample. This sampling procedure is sometimes referred to as "quota random sampling"

The researchers adopted a survey research design in this study in which stratified sampling was applied to pick the sample size from commercial, private and public sector banks. Data was collected through questionnaires from 200 respondents. The same was analyzed using frequencies and percentages. A regression analysis was also conducted:

- **Qualitative research:** Qualitative research was conducted by collecting information from the management of individual banks to verify the models derived from quantitative research. With a sample of 10 individuals selected for sampling, by use of non-probability sampling techniques while using random sampling (purposive sampling)

Table 1: Statistic values presenting convergent validity of reflective scales of latent variables

Construct/Item	Loading	t-stat
Membership (member)		
Relationship (relation)	0.8174	31.6447
Creditability (credibility)	0.8354	27.8068
Experience (experience)	0.8555	39.5586
Responsibility (respond)		
Debt repayment (respond_debt)	0.9254	94.2767
Social development (respond_social)	0.9499	53.3349
Knowledge management (knowledge)		
Knowledge type (type)	0.9336	80.1726
Learning method (learn)	0.9434	101.0377
Organizational factors(org.factor)		
Departmental strategies (strategy)	0.9042	64.2169
Policies (policy)	0.9107	54.0073
Credit terms (condition)	0.9255	39.7367
Microfinance (micro-finance)		
Corporate image (image)	0.8575	25.1675
Profit (profit)	0.8809	38.3866
Revenue (revenue)	0.8967	56.9987

Measurement:

- **Dependent variable:** Microfinance (Micro-finance) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert,1972) and have been constructed with the scales developed enabling measurement of Corporate Image (image), Profit (profit) and Revenue (revenue) (Islam *et al.*, 2012; Chiamchittrong, 2010; McFadzean *et al.*, 2005; Wattanakul, 2002; Polsaram, 1998)
- **Independent variables:** Membership (Member) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert,1972) and have been constructed with three aspects (Table 1) including Relationship (relation), Creditability (credibility) and Experience (experience) (Kiso, 2008; Faridi, 2004; Hassan and Renteria-Guerrero, 1997; Chiamchittrong, 2010; Nopwattanapong, 2007)

Responsibility (Responsibility) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert,1972) and have been constructed with four aspects (Table 1) including Debt Repayment (respond_debt) and Social Responsibility (respond_social) (Wongprasert, 2009; Harraf, 2008; Hussain *et al.*, 2001; Valente, 2011; Iqbal, 2002; Wakoko, 2003; Kiso, 2008).

Knowledge management (Knowledge) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert,1972) and have been constructed with four aspects (Table 1) including Knowledge Type (type) and Learning Method (learn) (Marquardt, 1996; Kaplan and Norton, 1992; Wakoko, 2003; Loucks *et al.*, 2010).

Organizational factors (Organization factor) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert,1972) and have been constructed with four aspects (Table 1) including Departmental Strategies (strategy), Policies (policy) and Credit Terms (condition) (TPI, 2005; Katawut, 2012; Hadisumarto and Ismail, 2010; Iqbal, 2002; Kajimo-Shakantu and Evans, 2007).

RESEARCH ANALYSIS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of Manifest Variable and Latent Variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001).

According to the analysis result of scale validity and reliability, scale investigation has been conducted using internal consistency measurement coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient. It was found that alpha coefficients ranged from 0.524-0.937, which is considered to have high reliability.

In case of measure variables with reflective analysis, convergent validity has been conducted. Loading is used as consideration criteria and must be positive quantity and indicator loading has been more than 0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) quoted in Piriyakul (2010) and analysis results as shown in Table 1.

Membership (member) factors underlying the external variables influence on Creditability (creditability), Relationship (relation) and Experiences (experience) with loading values of 0.8174, 0.8354 and 0.8555, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$), which considers such factors highly reliable. These factors affect Microfinance.

Responsibility (responsibility) factors underlying the external variables influence on the responsibility for Debt Repayment (respond_debt) and Social Development (respond_social) with loading values of 0.9254 and 0.9499, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$), which considers such factors highly reliable. These factors affect Microfinance.

Knowledge management (knowledge) factors underlying the external variables influence on Knowledge Type (type) and Learning Method (learn) with loading values of 0.9336 and 0.9434, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$), which considers such factors highly reliable. These factors affect Microfinance.

Organizational factors (org.factor) factors underlying the external variables influence on Departmental Strategies (strategy), Policies (policy) and Credit Terms (condition) with loading values of 0.9042, 0.9107 and 0.9255, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$), which considers such factors highly reliable. These factors affect Microfinance.

Microfinance (micro-finance) factors underlying the external variables influence on Corporate Image (image), Profit (profit) and Revenue (revenue) with loading values of 0.8575, 0.8809 and 0.8967, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$), which considers such factors highly reliable.

The above reflective model in Table 1 shows the discriminant validity of the internal latent variables and the correlation of variables. It also depicts the scale reliability which has been analyzed from Composite Reliability (CR) as well as the Average Variance Extracted (AVE) and R^2 . The CR value should not go below 0.60 and the AVE values should also drop below 0.50 and R^2 values should not be under 0.20 (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) (Boontawan and Montree, 2010) (Table 2).

An analysis of structural equation modeling of relationship factors affecting entrepreneurial microfinance in Phuket, Thailand found that of the 6 assumptions, only hypothesis 1 and hypothesis 4 were not supported, which means Membership and Knowledge Management have no direct or positive effect on Microfinance of Phuket entrepreneurs (Table 3). Additional factors with an indirect or positive effect for micro financing of island entrepreneurs can be viewed in Fig. 6 and 7. The final model for the research appears in Fig. 6.

Table 2: Results of Confirmatory Factor Analysis (CFA) for measurement model

Construct	CR	R ²	AVE	Cross construct correlation					
				Membership	Responsibility	Knowledge management	Organizational factors	Microfinance	
Membership	0.876		0.699	0.836					
Responsibly	0.936	0.399	0.879	0.631	0.938				
Knowledge management	0.937	0.508	0.881	0.713	0.529	0.939			
Organizational factors	0.938		0.835	0.722	0.725	0.798	0.914		
Microfinance	0.910	0.653	0.772	0.576	0.692	0.632	0.787	0.879	

Statistical significance level is at 0.01 and diagonal figures mean \sqrt{AVE}

Table 3: Research hypotheses test results

Hypotheses	Coefficient	t-stat	Results
H ₁ : Membership influences microfinance	-0.070	0.8865	Not supported
H ₂ : Membership influences responsibly	0.631	12.4748	Supported
H ₃ : Membership influences knowledge management	0.713	19.5484	Supported
H ₄ : Knowledge management influences microfinance	0.076	0.8790	Not supported
H ₅ : Responsibly influences microfinance	0.279	3.1388	Supported
H ₆ : Organizational factors influences microfinance	0.574	5.8427	Supported

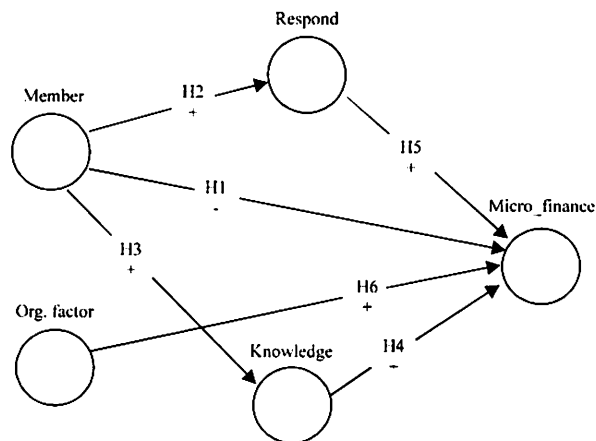


Fig. 6: Results model

The Hosmer-Lemeshow test (Table 4) is a statistical test for goodness of fit or logistic regression models. It is used frequently in risk prediction models. The test assesses whether or not the observed event rates match expected event rates in subgroups of the model population. The Hosmer-Lemeshow test specifically identifies subgroups as the deciles of fitted risk values. Models for which expected and observed event rates in subgroups are similar are called well calibrated.

Model validation or PLS fit index is a measure of the following GoF equation as follows (Piriyakul, 2010):

$$GoF = \sqrt{\text{Commun} \cdot R^2} \cdot R^2 = \frac{1}{J} \sum_j R^2 \left(\hat{\xi}_j, \hat{\xi}_{j(t_1 \rightarrow t_2)} \right) \quad (1)$$

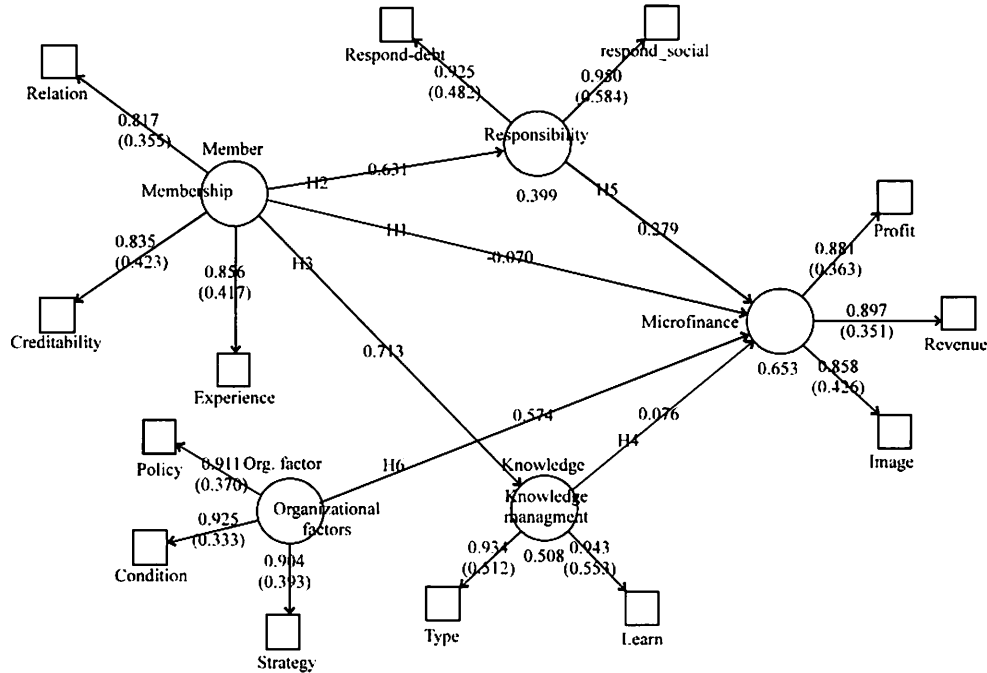


Fig. 7: Final model-analysis of factors that affect microfinance

Table 4: Influencing factors affecting the credit support to small entrepreneurs and the influence of the Hosmer-Lemeshow Goodness of Fit (GoF) test

Effects	Membership	Responsibility	Knowledge managment	Organizational factors
Direct	-0.070	0.279	0.076	0.574
Indirect	0.230	-	-	-
Total	0.160	0.279	0.076	0.574

Conclusion from the above calculation: Goodness of Fit (GoF) = $\sqrt{0.879 \times 0.833} = 0.955$ or 96%.

It can be concluded that the accuracy of the overall structural equation model and measurement equation is greater than 96%.

RESULTS AND DISCUSSION

The findings and influencing factors from the 'Structural Equation Modeling of Relationship Factors affecting Entrepreneurial Microfinance in Phuket, Thailand' revealed that:

- Organizational factors influencing variables consisted of strategies, policies and credit terms which can either strengthen or weaken the entity so they must seek opportunities and avoid obstacles that may occur (TPI, 2005). As a result, both policy and strategy related to loans are different from general lending institutions (Hadisumarto and Ismail, 2010), as well as the type of business lenders, the nature of the lender, the type of use which includes other factors and conditions such as the size of the credit limit, interest rate and payment rate. As an example, a loan or group of loans without collateral or sizelenders to the bank determines the different

conditions of the banks. As a result of the policy, plans and strategies of organizations need to analyze the factors within the organization to find the strengths or weaknesses of the organization that is able to seek business opportunities and avoid obstacles that may occur (TPI, 2005)

- Responsibility consists of the development of social responsibility and commitment to the community which is consistent with the research by Wongprasert (2009) which noted that a measure of the success of the organization, is not only the earnings but it must be responsive to the expectations of society, or in other words, have 'social responsibility'. It is a factor that can determine the survival and advancement of the business to sustainable growth in the future

This is consistent with the study of Hussain *et al.* (2001) who said that Grameen Bank helps gives social development opportunities to the disadvantaged and underprivileged. If any members of the group are weak and need help, a supportive social network helps cultivate good savings habits for the poor. The nature of the lending group should also help create a shared responsibility and make the funding a joint responsibility (Kiso, 2008; Wakoko, 2003).

Additionally, it was found that Membership factors don't have a direct and positive influence on support lending to households and small businesses. But it does have a positive and indirect effect through the variable Responsibility. Membership components included experience, credibility and relationships as the three factors are consecutive, because of the nature of loans to households and small businesses in such a group (Kiso, 2008).

So, the experience of the operator and the age of acquisition of the financial information that is collected for the same consideration to credit (Chiamchitrong, 2010; Nopwattanapong, 2007), because when more experienced, age of business represents a small, reliable and has good relationships with financial institutions.

Microfinance factors consisted of revenue, profits and image which is consistent with the theory of the business and the Balanced Score Card (BSC) did not measure the performance of management, particularly financial, which include gains on sales (Chiamchitrong, 2010), income (McFadzean *et al.*, 2005; Wattanakul, 2002) because revenues and net income, which is a measure of the ability to pay the debts of the business, should have a positive impact on the business opportunity to earn credit (Nopwattanapong, 2007). But the non-financial measures, such as new product development, product updates and the image of the organization is the image of the company. With mean to 3.08, the average of the highest in the 4 models (4 models include profitability, market share, growth rates of sales and brand image) (Polsaram, 1998).

CONCLUSION

The study of the 'Structural Equation Modeling of Relationship Factors affecting Entrepreneurial Microfinance in Phuket, Thailand' revealed that Organizational Factors had the greatest influence on the microfinance bank with the most important factor being various terms and lending conditions of the banks due to the differences of each institution.

This was followed by Responsibilities which included the development of social responsibility and commitment to the community. However, it was interesting to note that Knowledge Management did not influence support lending to households and small businesses. The organizations view themselves as offering assistance to people so that they can find their own way out of poverty-a "helping hand, not a hand out" (Valente, 2011), expecting their clients to repay their loans.

Support lending to households and small businesses provides opportunities for entrepreneurs who do not have access to capital. The microfinance lender can provide liquidity or capital that helps a business survive. With economies such as Thailand so dependent on small and medium sized businesses with over 1.7 million SMEs in 2002 employing nearly 5 million, it is easy to see how crucial microfinance is for the country's health and growth.

The microfinance system of Grameen Bank was a revolutionary tool to eradicate poverty of the rural people especially the women of Bangladesh. At present Grameen Bank is the largest microfinance bank in Bangladesh and probably the biggest microcredit organization in the world. It provides loans to asset-less and landless poor people whom no commercial bank will give a loan. With microcredit being the most useful and popular financial system in the world, shouldn't Phuket's island entrepreneurs and Thailand's SME's also enjoy the benefits of such an innovative and useful institutional process.

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Knowledge Management, Responsibility and Organizational Factors that Affect Microfinance Support to Phuket, Thailand Entrepreneurs

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ABSTRACT

The financial cost of entrepreneurial borrowing in Thailand, in particular Phuket, an island province with a large tourism and marine industry, is difficult and expensive. With the bank of Thailand's recent rule changes, licensed yearly bank loans of greater than 15% are now legal but the inability to get loans from legitimate sources still drives the small borrowers into the arms of loan sharks who charge as much as 20% a month. Still, these same licensed financial institutions continue to offer almost no lending services to very small business operators, particularly street vendors and wet market traders, because borrowers such as these lack financial and accounting track records and are high-risk. In Bangladesh, however, the Grameen Bank microfinance system implemented a revolutionary tool to eradicate poverty of the rural people and overcome the many obstacles to lending, becoming the largest microfinance bank in Bangladesh and probably the biggest microcredit organization in the world. It provides loans to asset-less and landless poor people whom no commercial bank will give a loan. This study is, therefore, focused on the mechanisms that affect the 37% of all loans made within Thailand, specifically those made to SMEs and various forms of entrepreneurs. The researchers, therefore, undertook this study focusing on influences of knowledge management, organizational factors and client responsibility that affect microfinance support. Phuket province was selected, as it has a significant tourism and marine industry largely made up of smaller, entrepreneurial enterprises.

Key words: Microfinance, Grameen Bank, SMEs financing

INTRODUCTION

In the competitive business world of today in which flexibility, speed and adaptability are essential for survival and progress, small and medium sized enterprises (SMEs) play an extremely important role in any country's economic development. And as a part of this economic development, SMEs in Thailand have contributed greatly to the economic vitality in many ways with SME's share of GDP reaching 39%. If farm income and agricultural processing are also included, this figure rises to 50% (OSMEP, 2003). Additionally, as a percentage of exports, the SME share of manufactured goods reached 38.2% of the total value of Thailand's exports. When employment is taken into consideration, Thai SMEs employ about 69% of the nation's workers (OSMEP, 2003). Thus, SMEs are vitally important to the Thai economy.

The term "SME" encompasses a broad spectrum of definitions. The definition varies from country to country. Generally, these guidelines are based upon either head count or sales or assets.

For example Egypt defines SMEs as having more than 5 and fewer than 50 employees (Pandya, 2012), whereas Vietnam considers SMEs to have between 10-300 employees (MoEA, 2006). Thailand on the other hand, defines Small to Medium sized Enterprises (SMEs) as those employing less than 200 employees, having investment capital of less than 100 million Baht and fixed assets of less than 100 million Baht (OSMEP, 2005).

However, the Inter-American Development Bank defines SMEs as having a maximum of 100 employees and less than \$3 million in revenue. In Europe, they are defined as having manpower fewer than 250 employees and United States define them with employees less than 500 (Natarajan and Wyrick, 2011). As general guidelines, the World Bank defines SMEs as those enterprises with a maximum of 300 employees, \$15 million in annual revenue and \$15 million in assets.

Research from Kachembere (2011) noted that SMEs are playing pivotal role in promoting grassroots economic growth and equitable sustainable development. It is not only the fact that high rates of economic growth contribute to economic and social development and poverty reduction. However, more it depends on the quality of growth. Quality of growth includes the composition of growth, its spread and distribution and most importantly the degree of sustainability. Hence, it becomes important to understand various factors responsible for quality growth through the route of SMEs.

The contribution of small and medium sized enterprises (SMEs) to the Thai economy in terms of business numbers, employment, income and economic growth increased rapidly from 1994-2008. Their total number increased from 438,805 in 1994 to 2,827,633 in 2008. By 2008, they represented over 99% of all business establishments in the country and were particularly dense in the trade and repairs, services and manufacturing sector. On average, they employed more than 7 million workers annually over the period 1994-2008, equivalent to more than 73% of total employment in the private sector 2 and contributed 37.9% of total GDP by 2008 (OSMEP, 2008).

SMEs are now generally recognized as being the most significant enterprises in accelerating Thai economic growth and development (Dhanani and Scholtes, 2002; Wiboonchutikula, 2002; Ha, 2006). SMEs also play important roles and functions in assisting large enterprises, particularly in the context of regional production networks (Regnier, 2000; Brimble *et al.*, 2002; Mephokee, 2003; OSMEP, 2007; OSMEP, 2008), by being key sources of goods, services, information and knowledge (Regnier, 2000). SMEs also contribute to regional development, poverty alleviation and economic empowerment for minorities and women (Harvie, 2008). SMEs are, therefore, the backbone of the Thai economy, contributing greatly to the social and economic development of the country (Brimble *et al.*, 2002; Huang, 2003; Sahakijpicharn, 2007).

The cost of success, however does not come cheap as recent news from the Thai Finance Ministry, indicates that the ministry will issue licenses to non-financial institutions that will allow them to make microloans with annual interest rates of more than 15%. The aim is to combat loan sharks and only microfinance loans ranging from B30,000-B100,000 (about \$1,000-\$3,300 USD) will qualify, because the government wants to offer individuals a working chance (Phuket News, 2013). Earlier in 2012, the director-general of Thailand's Fiscal Policy Office stated that "The United States has allowed underground lenders to register their businesses and Thailand might apply this model to solve problems related to our off-system money market" (The Nation, 2012). The bank of Thailand's deputy governor for financial institutions stability stated that he supported the plan as well (The Nation, 2012).

In one of the poorest countries of the world however, another method was created to bring micro financing to the poorest of the poor. This method and the legacy of Professor Muhammad Yunus are today the topics of countless articles, studies and research.

The beginning of Grameen Bank and Dr. Yunusbegan, the early 1970s when Professor Muhammad Yunus envisioned a means of alleviating poverty by circumventing, the major impediment to lending to the poorest in society the need for collateral. He tested this instinct in an experiment in 1976 when he lent about \$27-42 women about 62% each in an ordinary Bangladeshi village. To his pleasant surprise, all the borrowers repaid the loans, in the process convincing him that this success could be replicated across Bangladesh. Just 30 years later, Grameen Bank has more than 3.2 million borrowers (95% of whom are women), 1,178 branches, services in 41,000 villages and assets of more than \$3 billion (Mainsah *et al.*, 2004).

In keeping with Yunus's dislike of handouts, since its founding Grameen Bank's objective has been to promote financial independence among the poor. Yunus encourages all borrowers to become savers so that their local capital can be converted into new loans; since 1995, Grameen has funded 90% of its loans with interest income and deposits, aligning the interests of its borrowers and depositor shareholders. Grameen is proud of this record, as it represents a reversal of conventional financial institutions' traditional conversion of deposits from rural areas into loans for the urban, educated elite. Grameen distinguishes itself from such institutions by converting deposits made in villages into loans for women in villages (Yunus and Jolis, 1998).

A new study by the World Bank (Khandker and Samad, 2014) is distinctive because of its size (it covers more than 3,000 households in 87 villages) and longevity, interviews took place over 20 years. Bangladesh has well over 500 microfinance providers and the survey found that almost a third of rural households are members of more than one. Critics of microfinance argue that borrowing from multiple sources leads to over-indebtedness, trapping people in poverty.

The study found no evidence of that, however. Rather, borrowing, whether from one institution or several, increases personal expenditure, household assets, the labour supply and children's education. Moreover, loans do benefit women more than men as they are designed to.

A 10% increase in men's borrowing raises household spending by 0.04% and the male labour supply by 0.18% (though the figures are modest, they are significant). Borrowing by women pushes up household spending by one and a half times as much and the female labour supply by nearly three times as much (because even a tiny loan frees women to work who might otherwise be trapped in household chores). It also raises school enrolment rates by 8% points. And multiple credit institutions encourage households to diversify their income-earning activities. According to the study, the Bangladesh government should look at the study and stop interfering with Grameen's efforts to cut poverty.

For Thailand with more than 2 million small and medium-sized enterprises (SMEs) representing 99% of the total, microcredit is one tool in helping domestic micro-enterprises. In addition, Phuket as the largest island province in Thailand whose economy is centered around marine and ocean tourism which has become a large and growing source for potential business, employment and foreign tourism. The population has increased steadily with a higher standard of living and consumption rate compared to other regions. Therefore, it is necessary to have SMEs to meet the needs of consumers in Phuket.

In 2011, a Phuket province census found that 1 in 7 households had an entrepreneurial business and the business operator suffered from lack of loans. The researchers' objectives were to study factors affecting the financing of entrepreneurial companies in Phuket.

The purpose of the study was to assist in developing systems for entrepreneurial and small business funding which helps with the creation and survival of small enterprises.

CONCEPTUAL DEVELOPMENT

To measure the success of a business, two groups of factors need to be considered in the analysis. These include both quantitative targets and qualitative goals (OSMEP, 2008).

Quantitative targets: Include return on investment, stock market prices, return on sales, cash flow, dividends, payout and financial ratios. Many other scholars and institutions have undertaken research in these areas such as the (NESDB, 2002), who noted that the ratio of export profits of production and global or regional market share (Pongprasertchai, 2007; Shelton *et al.*, 2005; Meengern, 2008; Rujithamrongkul, 2005) is a measure of the success of the operation.

Qualitative goals: Include technology leadership, controlling costs, managing finances, leadership reputation and image, focusing on market share, social goals, being a leader in quality and service and focusing on the customer. As a result, customers have been satisfied (Pongprasertchai, 2007; Polsaram, 1998).

Knowledge management: Knowledge can be characterized as information in context, together with an understanding of how to use it. Examples would include knowledge about drainage in a street, derived from looking at a schematic and understanding how the placement of houses may or may not affect drainage (Mayo, 2001; Stewart, 1997).

Intellectual capital is to be defined as the non-financial and non-physical resources used by and within a company, it is knowledge which can be converted into profits (Sullivan, 1999). Intellectual management deals with the interactions between all resources, tangible and intangible to create maximum value (Sullivan, 1999).

Knowledge management is a method to assess intellectual capital. This is a task that needs to be analyzed as the potential in terms of the dissemination of knowledge to the user is great. To protect intellectual capital, users must seek opportunities to make better decisions about products and services through an increase in intellectual capital which adds value and flexibility (Chongvisal, 2010).

Trainer (2002) concerned, 'The Simpler Way', it was discussed how life and communities could be simplified with simpler lifestyles in small, highly self-sufficient local economies where individuals were more cooperative in creating a new economy, producing less than the present economy. These individuals should also exhibit different values, especially cooperation not competition and frugality and self-sufficiency not acquisitiveness and consuming. Additionally, Trainer (2002) argues that there must be a new approach to poverty alleviation and the old 'neo-classical' approach doesn't work.

Knowledge, of how consumers perceive alternative banks on important attributes, provides a foundation for understanding market structure. Market structure analysis can assist the bank in identifying potential opportunities in differentiation and in assessing the viability of low cost as a competitive advantage giving 'best value' to customers (Young, 1999) as well as, a way to learn in different ways (Loucks *et al.*, 2010). An example might be that lenders are required to provide training to the borrower, helping them know about the loan type so that it is used appropriately.

Responsibility: In modern business operations, entrepreneurs should not only aim for profit or return on investment alone. They need to take responsibility consisting of responsibility to employees, customers and creditors which is considered good investment and corporate social responsibility (Wongprasert, 2009). Social responsibility is a principle which takes under consideration four aspects; economic, legal, ethical and public charity (Saengsurathum, 2007). Therefore, the responsibility for the provision of loans or microcredit from Grameen Bank is that regardless of the subject's collateral, the bank will make a loan to a lender group (Iqbal, 2002) which is a different policy from banks. This is to add a shared responsibility to pay the debt or increase the ability to pay back debts to financial institutions which is a fundamental characteristic of the operation of Grameen Bank which gives social development opportunities to the disadvantaged. If any members of the group are weak and need help, a supportive social network acts as a safety net which provides assistance or social responsibility (Valente, 2011).

Organizational factors: SWOT analysis is an acronym for strengths, weaknesses, opportunities and strengths (Fig. 1) which is a powerful strategic management and planning tool. The technique is credited to Albert Humphrey who led a convention at the Stanford Research Institute in the 1960s and 1970s using data from Fortune 500 companies (Humphrey, 2005):

- Helps a firm to identify its core competencies
- Helps a firm to focus on the future given its past and present condition
- Enables a firm to make a U-turn of its weaknesses
- Helps a firm to build its strengths
- Points to the opportunities that a firm can maximize to reap maximum gains
- Is a source of strategic planning as well as marketing
- Helps the firm to redefine and set its overall objectives

Organizations can choose to act or not to act (Dye, 2012), so it can be seen that the Grameen Bank microfinance policies are different from banks.

In the 1980s, Dr. Salehuddin Ahmed, of the Bangladesh Rural Advancement Committee (BRAC), declared that "small is beautiful" but "big is necessary". He was referring to the beauty of the smallest of enterprises as an essential means for many of the world's poor, particularly women, to make a living. He said "if you walk with your hand in someone else's pocket, you must go where they go" (Coyle *et al.*, 2006).

Without determining the type of borrower certain types of financing consider the credit group (Iqbal, 2002) which provides the consideration for the loan which is a different manner from the general case (Kajimo-Shakantu and Evans, 2007) such as the history of savings of the loan which is the consideration or conditions that are oriented to the women involved (Iqbal, 2002) and so on.

From the above conceptual review and development, the researchers have developed the following five hypotheses for the present study (Fig. 2):

- H1 : Knowledge management influences responsibly
- H2 : Knowledge management influences microfinance
- H3 : Responsibility influences microfinance
- H4 : Organizational factors influences knowledge management.
- H5 : Organizational factors influences microfinance

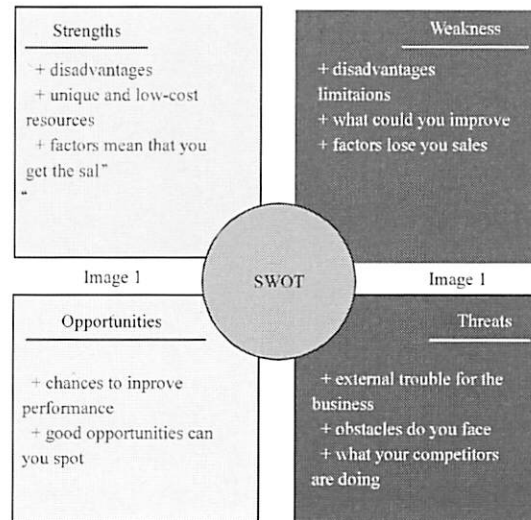


Fig. 1: SWOT analysis

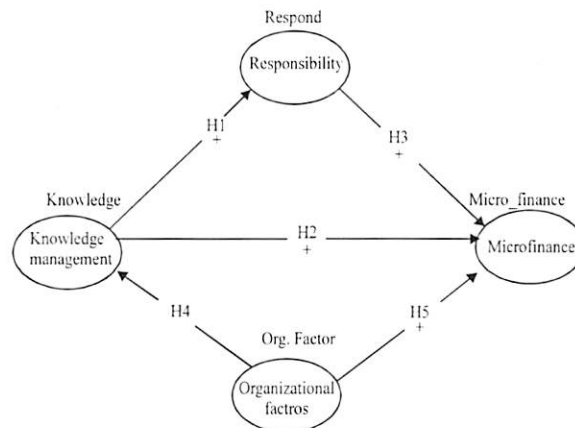


Fig. 2: Results model

METHODOLOGY

Data collection: The sample group for this study included 119 bank executives from both private and public banks from the island province of Phuket, Thailand using both quantitative and qualitative research methods.

Quantitative research: A sample is a set drawn from the population (Keller, 2009). As the non-probability sampling is applied, there is no specific method in determining sample size. But, it is not practical to collect data from the entire target population, so the researcher uses a sample instead (Field, 2005). "A minimum sample size of 100-200 is often recommended (Comrey, 1973, 1978; Gorsuch, 1983; Guildford, 1954; Hair *et al.*, 1979; Lindeman *et al.*, 1980; Loo, 1983). The recommendation for a minimum sample size of 100-200 observations is probably based on the argument that a correlation coefficient becomes an adequate estimator of the population correlation coefficient when sample sizes reach this level (Guadagnoli and Velicer, 1988).

As this study was to employ factor analysis and multiple regressions, the sample size was based on obtaining the minimum requirement for those techniques. As general rule, for factor analysis, the minimum is to have 5 times as many observations as there are variables to be analyzed (Hair *et al.*, 1998). Although a minimum ratio is 5:1 for multiple regression, the desired level is between 15-20 observations for each independent variable, while 200 is considered optimal (Hair *et al.*, 1998). The final sample size obtained was comprised of 119 respondents.

Qualitative research: Qualitative study was conducted by collecting information from the management of individual banks to verify the models derived from quantitative study. With a sample of 10 individuals selected for sampling by use of non-probability sampling techniques while using random sampling (purposive sampling).

Questionnaire design: For this study, the measurement instrument or questionnaires utilized was prepared from the literature. This questionnaire was used to investigate how and which variables affected micro financing of Phuket entrepreneurs. The 7-Point Likert Scale (Likert, 1932) was used for a post-study survey. The draft questionnaire was created with items which were later checked for their content validity by five experts in their respective fields based on the Item-Objective Congruence (IOC) index. The items with IOC index higher than 0.5 were acceptable. In order to test the proper reliability of the questionnaire, the questionnaire was piloted with 119 banking sector executives and calculated for proper reliability value by determining the internal consistency measured by coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient.

Measurement

Dependent variable microfinance: (Micro_finance) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1932) and have been constructed with the scales developed enabling measurement of corporate image, profit and income revenue (Office of Small and Medium Enterprises Promotion) (OSMEP, 2008; NESDB, 2002; Pongprasertchai, 2007; Shelton *et al.*, 2005; Meengern, 2008; Rujithamrongkul, 2005; Pongprasertchai, 2007; Polsaram, 1998).

Independent variables

Knowledge management: Knowledge analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1932) and have been constructed with four aspects (Table 1) including Learning Methods (type), Learning Method (learn) and Experiences (experience) (Chongvisal, 2010; Trainer, 2002; Young, 1999; Loucks *et al.*, 2010).

Responsibility (responsibility) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1932) and have been constructed with four aspects (Table 1) including Debt Repayment Responsibility (respond_debt) and Social Development Responsibility (respond_social) (Wongprasert, 2009; Saengsurathum, 2007; Iqbal, 2002; Valente, 2011).

Organizational factors (org. factor) a nalysis used a measurement instrument or questionnaires utilizing a 7-Point Likert Scale (Likert, 1932) and have been constructed with four aspects (Table 1) including Strategies (strategy), Policies (policy) and Credit Terms (condition) (Dye, 2012; Ahmed, 2009; Iqbal, 2002; Kajimo-Shakantu and Evans, 2007).

Table 1: Statistic values presenting convergent validity of reflective scales of latent variables

Construct/item	Loading	t-stat
Knowledge management		
Learning methods	0.9195	48.7838
Learning category	0.9001	46.2016
Experience	0.8039	18.1596
Responsibility		
Social development responsibility	0.9524	79.0567
Debt repayment responsibility	0.9123	30.4518
Organizational factors		
Policy	0.9270	70.7429
Credit terms	0.9162	26.7144
Strategies	0.9091	0.503548
Microfinance		
Profits	0.9132	52.1617
Income	0.8774	32.5589
Corporate image	0.8613	21.0502

ANALYSIS AND RESULTS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of manifest variable and latent variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001):

- According to the analysis result of scale validity and reliability, scale investigation has been conducted using internal consistency measurement coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient was found that alpha coefficients ranged from 0.888-0.933 which is considered to have high reliability
- In case of measure variables with reflective analysis, convergent validity has been conducted. Loading is used as consideration criteria and must be positive quantity and indicator loading has been more than 0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Piriyaikul, 2010) and analysis results as shown in Table 1

Knowledge management (knowledge) factors underlying the external variables influence on Learning methods (learn), Learning category (type) and Experience (experience), with loading values of 0.9195, 9001 and 0.8039, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$) which considers such factors highly reliable. These factors affect microfinance.

Responsibility (responsibility) factors underlying the external variables influence on the responsibility for Social Development (respond_social) and Debt Repayment Responsibility (respond_debt) and with loading values of 0.9524 and 0.9123, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$) which considers such factors highly reliable. These factors affect microfinance.

Organizational factors (org. factor) factors underlying the external variables influence on Policies (policy), Credit Terms (condition) and Strategies (strategy), with loading values of 0.9270, 0.9162 and 0.9091, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$) which considers such factors highly reliable. These factors affect microfinance.

Microfinance (micro-finance) factors underlying the external variables influence on Profit (profit), Income (revenue) and corporate image (image), with loading values of 0.9132, 0.8774 and 0.8613, respectively. There was a significant level of 95% confidence ($t\text{-stat} > 1.96$) which considers such factors highly reliable affecting lending to entrepreneurs:

- The reflective model in Table 1 shows the discriminant validity of the internal latent variables and the correlation of variables. It also depicts the scale reliability which has been analyzed from Composite Reliability (CR) as well as the Average Variance Extracted (AVE) and R2. The CR value should not go below 0.60 and the AVE values should also drop below 0.50 and R2 values should not be under 0.20 (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Boontawan and Montree, 2010)
- Table 2 shows that the measurement of the study is a measurement of discriminant validity, indicating a high reliability

The samples were analyzed to assure the research hypotheses criteria of the following 5 assumptions (Table 3). Furthermore, the structural analysis model framework was used to study the t-test coefficients and their relationship of each path of the t-test hypotheses with significance greater than 1.96. This explains the results obtained from analysis as shown in Table 1, 2 and 3.

An analysis of knowledge management, responsibility and organizational factors that affect microfinance support to Phuket, Thailand entrepreneurs found that of the 5 assumptions, only hypothesis 2 (H2) was not supported. Knowledge management, therefore, has no direct and positive effect on microfinance which means at the statistically level of 0.01, it was insignificant. But the factors that influence indirectly through responsible factors responsible are shown in Fig. 2 and 3.

Table 2: Results of Confirmatory Factor Analysis (CFA) for measurement model

Construct	CR	R ²	AVE	Cross construct correlation			
				Knowledge management	Responsibility	Organizational factors	Micro-finance knowledge
Knowledge management	0.908	0.6744	0.767	0.876			
Responsibility	0.930	0.2546	0.870	0.505	0.933		
Organizational factors	0.941		0.842	0.821	0.687	0.918	
Microfinance	0.915	0.6119	0.782	0.637	0.622	0.772	0.884

Statistical significance level is at 0.01 and diagonal figures mean $\sqrt{\text{AVE}}$

Table 3: Research hypotheses test results

Hypothesis	Coefficient	t-stat	Results
H1: Knowledge management influences responsibility	0.505	6.7673	Supported
H2: Knowledge management influences microfinance	0.044	0.3124	Unsupported
H3: Responsibility influences microfinance	0.179	1.9819	Supported
H4: Organizational factors influences knowledge management	0.821	22.8581	Supported
H5: Organizational factors influences microfinance	0.613	4.0418	Supported

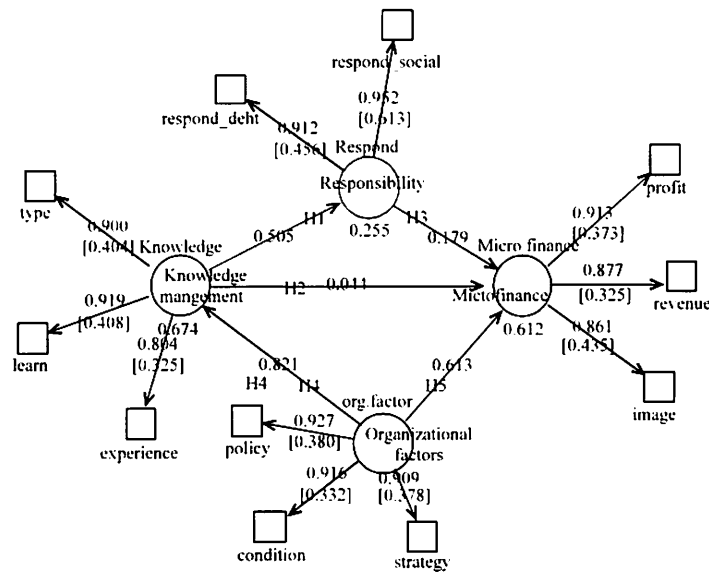


Fig. 3: Final model analysis of factors that affect microfinance

Table 4: Influencing factor affecting the credit support to small entrepreneurs and the influence of the Hosmer-Lemeshow Goodness of Fit (GoF) test

	Knowledge management	Responsibility	Organizational factors
Direct effects	0.044	0.179	0.613
Indirect effects	0.090	-	0.110
Total	0.134	0.179	0.723

The hosmer-lemeshow test (Table 4) is a statistical test for goodness of fit or logistic regression models. It is used frequently in risk prediction models. The test assesses whether or not the observed event rates match expected event rates in subgroups of the model population. The Hosmer-lemeshow test specifically identifies subgroups as the deciles of fitted risk values. Models for which expected and observed event rates in subgroups are similar are called well calibrated. Model Validation or PLS fit index is a measure of the following GoF equation as follows: (Piriyakul, 2010):

$$GoF = \sqrt{Commun \times R^2} \quad R^2 = \frac{1}{J} \sum_{j=1}^J R^2(\hat{\xi}_j, \hat{\xi}_{a, i_k \rightarrow i_n}) \quad (1)$$

Goodness of Fit (GoF) = $\sqrt{0.879 \times 0.833} = 0.955$ or 96%.

It can be concluded that the accuracy of the overall structural equation model and measurement equation is greater than 96%.

RESULTS AND DISCUSSION

The findings and influencing factors from the 'Knowledge Management, Responsibility and Organizational Factors that affect microfinance support to Phuket, Thailand entrepreneurs' revealed as follows:

Organizational factors: These will consist of policies, strategies and credit terms which contribute to the granting of loans (microfinance) to small business entrepreneurs. This is consistent with the research of (Dye, 2012) which stated that organizations can choose to act or not to act, so it can be seen that the Grameen Bank microfinance policies are different from banks.

Other case studies show that, if savings systems are flexible and suitable to their needs, women are capable of saving and repaying housing loans. The results also suggest that the accumulated group savings and the savings schemes themselves act as good collateral. However, despite of showing interest in involvement in the low-income sector, banks do not have a financially viable and workable business model to exploit this potential market (Kajimo-Shakantu and Evans, 2007).

Iqbal (2002) additionally examined the role of micro-credit on the liquidity constraints faced by poor landless and near-landless households in rural Bangladesh. The objective of the study was to examine whether collateral free interest bearing micro loans from the Grameen Bank could help households overcome such constraints and utilize their labor resources to rise above poverty. The findings indicated that the application of small amounts of credit offers scope to reduce poverty among the poorest households in Bangladesh, namely by having a strong significant effect on employment and income levels. Most interestingly, the results also demonstrate that the "unexpected" or "surprise" credit, that households receive, have a positive impact on both household labor use and household income.

Responsibility factors: These will consist of the development of social responsibility and commitment to the community which is a factor in affecting the granting loans to small entrepreneurs. This is consistent with other study that entrepreneurs need to be responsible in many areas such as with their customers, employees, investors, creditors and society (Wongprasert, 2009) which noted that a measure of the success of the organization is not only the earnings but it must be responsive to the expectations of society or in other words, have social responsibility. It is a factor that can determine the survival and advancement of the business to sustainable growth in the future.

Institutions which provide loans to entrepreneurs and small businesses to demonstrate their social responsibility aspects provide opportunities for access to capital (Valente, 2011) due to the current era of globalization.

Access to credit can enable the landless poor to acquire resources and utilize them towards an income-earning endeavor as they see fit (Iqbal, 2002). Hence, credit seems to be the key. Perotti (1996) found a positive and significant relationship between credit availability and the rate of economic growth. Chuta and Carl (1984) have also reported that credit and capital are the greatest assistance needs and perceived bottlenecks to rural entrepreneurs.

Knowledge management: A variable influencing entrepreneurial retail lending including learning methods, learning categories and experience. This is consistent with the study of Trainer (2002) which noted that economic development must be implemented to suit each community and each culture and will require the development of knowledge in various aspects in order to increase the competitiveness of the organization. (Tangkoonsonbati, 2006) also analyzed the market (Young, 1999) education about the allocation of funds knowledge about equivalent credits is important.

Microfinance: Microfinance in recent years (which in its wider dimension microcredit known as microfinance), has become a much favoured intervention for poverty alleviation in the developing

countries and least development countries. Therefore, it is not surprising that microfinance has emerged as one of the significant approaches to poverty alleviation (Ahmed, 2003).

The importance of earnings, revenues and brand image is also consistent with the study of the Office of Small and Medium Enterprises Promotion (OSMEP, 2008) which stated that the goal of the business in addition to quantity goals should also include the number of results in terms of profit and revenue (Shelton *et al.*, 2005; Rujithamrongkul, 2005; Meengern, 2008). Organizations also need qualitative goals which include leadership, reputation and public image including the credit institution helping the individual to find organizations where they can find social assistance.

CONCLUSION

This study indicated that the microfinance will create profit and revenue for the bank as well as helping the image of the bank's corporate social responsibility (Valente, 2011). The greatest influencing variables (both direct and indirect) on microfinance are organizational factors because organizational factors influence knowledge management and responsibility. Organizational factors elements include organizational policy, the lending conditions, corporate policies and strategies, all contributing to the direction of the organization itself.

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An Analysis of Thai Commercial Banks Branch Expansion Factors Including Leadership, Location, Cost and Economics

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ABSTRACT

A bank is a financial institution which deals in debts and credits. It accepts deposits, lends money and creates money. The global financial system is the worldwide framework of legal agreements, institutions and formal and informal economic actors that together facilitate international flows of financial capital for purposes of investment and trade financing. Effects of globalization make the movement of funds a requirement for many businesses, which includes Thai commercial banks' foreign investors. Foreign influence on Thai commercial banking has affected the management, style and size of the locations and branches. Additionally, scheduled branches openings are not happening due to various factors including external economic factors affecting the organization's performance, Return On Investment (ROI), amount of loan losses and the ratio of capital to risk-weighted assets of the bank. External factors included GNP (Gross National Production), export value and the savings/spending levels of local consumers. These economic factors will affect the organization's strategy and the commercial banks' strategic planning and staffing for expansion and influence location choice, branch cost and size. Consumer behavior, population density and demographics of the selected community are also external factors. Other factors include implemented transaction technologies and the potential for future expansion. Findings of this study concluded that the location and cost did not influence the branch expansion in Thailand, but it is a factor that is influenced by corporate leaders. Banks need to add branches and more service points.

Key words: Financial, banks, branch expansion, leadership, cost, economics

INTRODUCTION

A financial system is a major mechanism of a free economy because the financial system has an important role in the allocation of resources between sectors. The financial system is complex in structure and function throughout the world, it was created in purpose to facilitate the flow of funds from savers to investors. It includes many different types of institutions, financial intermediaries (banks, insurance companies and mutual funds) and financial markets (stock and bond markets). From people, who save to those who need to borrow funds, this causes investment, production and employment, which are factors driving a country's economic growth prospects. More importantly, it must be stable and be implemented smoothly. The financial system as a critical element appears in Fig. 1 (Watanagase, 2005).

Thailand's financial system is bank-based, with the power to drive the economy over the market-based economy and currently Thailand has 14 Thai commercial banks, which resulted from

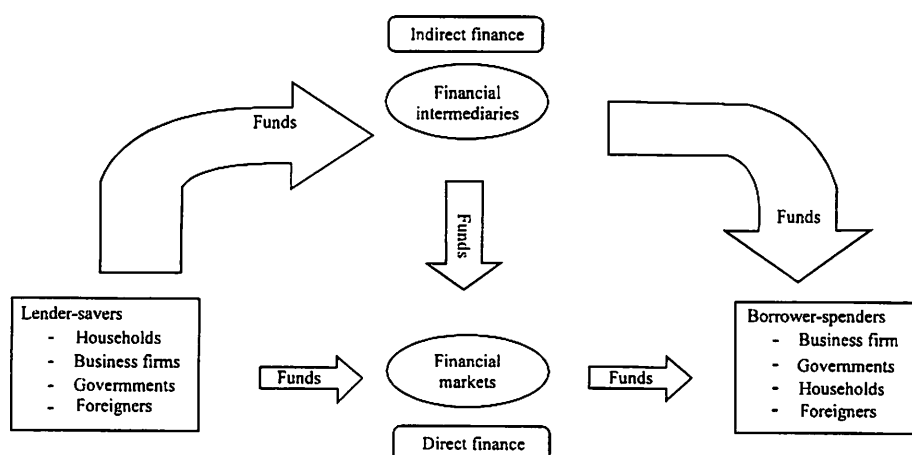


Fig. 1: Flow of funds through the financial system

the Asian economic crisis of 1997. Additionally, there are currently 15 registered foreign bank branches and one foreign bank subsidiary operating in Thailand. From 15 December 2011, these branches were allowed to form a subsidiary that would in turn be permitted to open up to 20 branches and have 20 ATM machines. The existing subsidiary would have the same rights.

Branches that are interested must have strong financial standing in Thailand, with good operating performance and expertise in international financial transactions. The parent bank must be licensed in a country that already has or has the potential to have, good relations with Thailand in the fields of finance, trade and investment. The parent must be supervised by a regulatory authority that has good relations with BOT. The Thailand branch must have a capital adequacy ratio of not less than 12%, a NPL ratio not exceeding 3.5% and have a good rating with BOT. The subsidiary when set up must have paid up capital of not less than 12 million Baht. Applications can be submitted within 2012.

BOT policy in 2013 was that it would not allow new foreign banks without a current branch in Thailand to register one. It is however, possible that this policy will change in 2014. The ASEAN free trade area that is due to come into effect in 2015 may also confer greater rights of investment upon ASEAN-based banks that may wish to establish a foreign banking presence in Thailand. But this may depend upon Thailand accepting such rights under the relevant ASEAN protocol.

It is generally accepted that although the 1997 financial crisis started from disequilibria in the currency market, it was the weaknesses within Thailand's financial system, previously masked by rapid economic growth that intensified the economic recession. Thailand has undertaken numerous policy measures to restore stability to the financial system such as closing of nonviable banks and finance companies, recapitalization of the financial institutions by both private and public initiatives, debt restructuring and resolution, asset liquidation and the consolidation of weak financial institutions with stronger ones. Complementary to these efforts, the Bank of Thailand has also engaged in dramatic internal reforms that resulted in the realignment of its organization structure with the new risk-based supervisory framework.

This resulted in changes to the existing shareholder structure which was predominantly Thai. Today, Thailand has opened its banking and financial system to foreigners. As a result, the operating policies of the banks, such as the number of bank branches, the branch formation,

branch staffing and limited services with smaller staffs such as five people have become common. Additionally, these smaller bank branches are located in non-traditional locations such as malls and are given limited customer support capability and instead are told to focus on getting customers and increasing market share. Full service operations such as loans are reserved for the larger, more traditional bank locations.

In addition, Thailand's Financial Sector Master Plan Handbook (BoT, 2006) stated that when consumers were asked about their knowledge of banking services, most respondents knew and understood basic financial services such as deposits, various types of loans, ATM card usage, money orders, fund transfers at tellers and life and non-life insurance. Yet they still lacked understanding of more complex financial services such as bonds, financial securities, promissory notes, telephone/internet fund transfers and financial advisory services. They also expected to have service branches convenient to their homes and place of work (BoT, 2006). So, if commercial banks want to increase market share, one factor affecting this increase is the number of locations and convenience for customers to support the demand and needs of the users.

With Thailand's entry into the ASEAN community, with a unified market and production base, the movement of goods, services, investment, capital and skilled labor has become freer and more open. Thailand's commercial banks need to accelerate their preparedness at providing quality, comprehensive and thorough preparations in both quantity and quality.

If a banking institution wants to open a new branch, it must comply with guidelines from the Bank of Thailand and submit them once a year. They must also request permission to open the branch from the Bank of Thailand and qualify in accordance with the rules and regulations. The plan must include the branches that are going to be established, their location, reasons for opening, when will the branch be open, clear financial data concerning both the bank and the branches and a map showing the location of the branch (Bank of Thailand).

However, data from the Bank of Thailand found that the bank branch expansion in Thailand between 2007 to July, 2012 happened at a slower pace than what was planned. Some commercial banks could not complete their proposed expansion as planned, thus leading to these researchers wishing to undertake more research about 'An analysis of Thai commercial banks branch expansion factors including leadership, location, cost and economics'.

The aim of this research was to study the composition and format in relation to the location, cost and economic factors influencing the expansion of bank branches across Thailand. The researchers expect these research results to be useful to policy makers in identifying problem areas in Thailand's commercial banking sector branch expansion efforts.

Additional knowledge is hopefully gained about the development and effectiveness of potential expansion of commercial banks. It can also help these commercial banks achieve their goals and increase their market share. Banking convenience also affects the financial results of banks.

With the start of the Asian Economic Community (AEC) in 2015 and the increase in financial liberalization with the freer movements of capital resources, banks must be ready and able to adjust their priorities and strategies accordingly.

CONCEPTUAL DEVELOPMENT

The Banking Companies Act of India defines Bank as, "A bank is a financial institution which accepts money from the public for the purpose of lending or investment repayable on demand or otherwise withdrawable by cheques, drafts or order or otherwise."

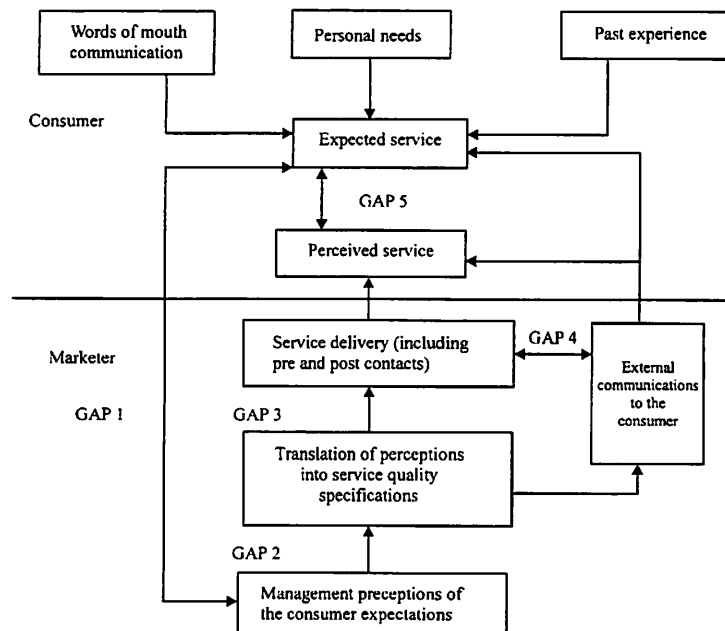


Fig. 2: Service satisfaction model

Table 1: Servqual dimensions

Dimensions	Definition	Items in scale
Reliability	Ability to perform the promised service dependably and accurately	4
Assurance	Knowledge and courtesy of employees and their ability to convey trust and confidence	5
Tangibles	Appearance of physical facilities, equipment, personnel and communication materials	4
Empathy	Provision of caring, individualized attention to customers	5
Responsiveness	Willingness to help customers and to provide prompt service	4

The widely accepted theory of business-related services by Parasuraman *et al.* (1985) and Parasuraman *et al.* (1991) demonstrated various factors. In their original formulation Parasuraman *et al.* (1985) identified ten components of service quality: (1) Reliability, (2) Responsiveness, (3) Competence, (4) Access, (5) Courtesy, (6) Communication, (7) Credibility, (8) Security, (9) Understanding/knowing the customer and (10) Tangibles (Fig. 2).

In their 1988 work, these components were collapsed into five dimensions: Reliability, assurance, tangibles, empathy and responsiveness, as defined in Table 1.

Kotler argued for broadening the field of marketing to cover not only commercial operations but also the operations of non-profit organizations and government agencies. He held that marketing can be applied not only to products, services and experiences, but also to causes, ideas, places and persons. Thus all organizations need the marketing skills of product, price, place and promotion (the 4Ps), if it is to be successful in attracting visitors customers or visitors. Philip Kotler and Gerald Zaltman created the field of social marketing, which applies marketing theory to influence behavior change that would benefit consumers, their peers and society as a whole. They developed the idea of 'demarketing' which organizations need to use to reduce overall or selective demand when demand is too high.

The marketing mix is a business tool used in marketing and by marketing professionals. In recent times however, the concept of 'four Cs' has been introduced as a more customer-driven replacement of the 'four Ps' (Needham, 1996). Additionally, there are two 'four Cs' theories today. One is Lauterborn's four Cs (consumer, cost, communication, convenience), while another is Shimizu's four Cs (commodity, cost, communication, channel) (Kumar and Bansal, 2013). This '4C' concept is more specific as it expands the view from the producer to the perspective of the consumer.

In the inaugural issue of the Journal of Values-Based Leadership (Bank of Thailand, 2008), ethicist McCuddy (2008) proposed three categories of leadership styles. On opposite ends of the spectrum are "selfishness" (where egocentrism and greed are common delineators) and "selflessness" (where altruism subsumes self-interest). A third category was cited: "self-fullness", a balancing of one's objectives with due regard for the interests of others, representing a more values-oriented, egalitarian approach to decision-making.

Branch expansion plans: The Bank of Thailand is the government authority which sets conditions for opening a bank branch and commercial banks must submit both annual as well as detailed expansion plans to the Bank of Thailand. The following items must be included in these reports:

- A profile of the branches that have been approved, but have not yet opened as well as the number of branches, the reason for not opening and plans for the next stage
- Details must be submitted on a yearly basis and include branch number, locations and implementation plan and time schedule
- Banks must inform the Bank of Thailand of the branch's name, branch code, branch location and opening date not less than 15 days before the opening of the branch

Since planning and scheduling by both the Bank of Thailand and the commercial banks is so regulated, it is easy to know the number of branches and the branches which will be opened in the future.

Organizational leadership: Hind *et al.* (2009) indicated that, whilst the qualities and skills of responsible leadership can be identified, a further mediating concept deemed to be "reflexive abilities" is posited as required to explain their translation into individual managerial behaviors. Corporate leaders influence organizational culture, strategic vision, strategic goals of the organization and leadership which can be adapted to changes (Kananurak, 2011; Harrison, 1995). Corporate responsibility for the environment includes leaders with the following qualities:

- Leaders must possess good attributes
- Leaders must give direction that meets the goals and targets of the organization
- Leaders must be able to target deliverables

This vision of leadership led to the formulation of corporate strategy (Kananurak, 2011; Harrison, 1995) with a focus on, who will create opportunities to increase revenue balanced with enhancing customer loyalty to the organization. They must provide customers with a more even value proposition (Persson, 2012) with strategies that better serve business opportunity (Hagen *et al.*, 2003), because different strategies will affect different organizations as well and affect the positioning of your company (Kalafatis *et al.*, 2000).

So, it is important that organizations need to define specific objectives and strategies (Chotipanich and Lertariyanun, 2011) and meet the needs of each customer group and banks need to prepare a database of information about each type of client (Edris, 1997) and provide an analysis of opportunities and threats to the organization.

This is to determine the market position of the bank (Zineldin, 1996) and to increase long term management efficiency (Moutinho *et al.*, 1997), so it is imperative that organizations need to determine a business plan in advance because otherwise, businesses may suffer due to the crisis of change.

Because organizations can build strength by planning (Kouzes and Posner, 1995) quoted in Tang *et al.*, 2010) and planning work, it requires planning, both short term, medium term and long term (Brock, 2000) and will need to be adaptable. The plan should be modified to suit the situation every 2-3 years (Sokol, 1992).

The team leader is also a factor that needs to be inspired to co-create the vision of the organization and work towards a common goal, including mutual empowerment. The team leader also needs to encourage team cooperation of the team which will be rewarded with a positive reaction helping to achieve the goals of the organization all together (Kouzes and Posner, 1995) quoted in Tang *et al.* (2010).

Location: Selection of bank branch locations is largely based on competition and policies which must be consistent with sales strategies (Thompson, 1991) and the extent of product offerings, including location of the branches. Location is therefore, of paramount importance both to the banking organization as well as for the convenience of the customer, who opens the account which should be close to their home, work or their retail shopping.

In addition to the need for easy access to services, branches must be located near the customer (Kalafatis *et al.*, 2000), but this decision is influenced by other factors affecting the location decision. These include the community size and the number of established products and services in the area being considered for expansion (Canel and Das, 2002).

A clear model is necessary for the development of the manufacturing or production processes, as well as investment in internal human resources (Fulford, 2009) communications, customer awareness of the product or service will result in an increase in market share which increases the profitability of bank branches (Mullineaux and Pyles, 2010).

Costing: The cost of doing business is based on customer behavior. Factors that determine the behavior of clients include the client's income and past experiences as a customer.

Govender (2000) found that influencing factors are the size of the organization, materials and equipment, which affect the pricing and services for the banking business.

Research by Giokas (2008) noted that the size of the branch affects the sustainability of bank branches. The large branch has more efficient business operations while smaller branches have higher operational costs related to buildings, bank location as well as equipment installation. Small community banks with 8-10 employees can grow but they must have a strategic plan in a highly competitive market (Timmons, 1996).

Using technology for banking services will result in limitless administrative service ability (Tom, 2006) and affects the building of relationships with customers as well as creating a

competitive, low cost advantage (Durkin and Howcroft, 2003). Whether, a firm implements an electronic marketplace, internet EDI, Extended Enterprise Resource Planning (EERP) or other SCMS, choosing the right approach is a risky undertaking given the number of factors that influence the total costs and benefits (McLaren *et al.*, 2002). Technology contributes to investor confidence and is reflected by the service technology and tools (Reynolds and Wood, 2010).

Economic factors: Cheng *et al.* (2005) said that another factor to be analyzed in investing is the Return On Investment (ROI). In addition, for investors to open more branches, The Bank of Thailand criteria state that they must have a reasonable and satisfactory financial position with the ability to absorb the risks of opening new branches (BoT, 2006).

In addition to the internal factors mentioned above, there are also external factors including the economic environment, market influence, banking relationships with the customers (Ernst and Young Group, 2011).

For example, after the economic crisis in Asia, foreign banks had to expand and take on the risks of these risky markets (Ma, 2012) because when the economy is good, the consumer base is large and growing with higher spending leading to more investments and as this process increases, the need for more retail banking outlets increases, thus contributing to the growth in market share for the commercial institutions.

From the above conceptual review and development, the researchers have developed the following hypotheses for the present study:

- H1: Leadership influences branch expansion plans
- H2: Leadership influences location
- H3: Leadership influences cost
- H4: Location influences branch expansion plans
- H5: Location influences cost
- H6: Cost influences branch expansion plans
- H7: Economic factors influence branch expansion plans
- H8: Economic factors influence leadership

METHODOLOGY

Data collection: This study was conducted from a sample population of middle and senior level banking executives using both quantitative and qualitative research.

For this study, the measurement instrument or questionnaires utilized was prepared from the literature. Cronbach's α -coefficient was used to measure the internal consistency of the scale. The α -coefficient was found to be between 0.926-0.932 indicating high reliability of the questionnaire. The questionnaires were created as a measurement tool that is consistent with the research's conceptual framework and operational definitions. The 5-point (Likert, 1970a) questionnaire was utilized. The sample group was based on 220 cases (Yamane, 1973). This is considered highly reliable.

The responses to the questions capturing focal constructs used a 7-point Likert scale (rating statements 1-5; 1 = strongly disagree and 5 = strongly agree). Qualitative research was conducted with in-depth interviews of 10 senior-level executives, who were in positions that determined strategy for their respective commercial banks.

Measurement

Dependent variable

Branch expansion plans: The analytical measuring tool or questionnaire used a 5-point Likert scale as a measuring tool (Likert, 1970b) to measure number of branches and time to open (Bank of Thailand).

Independent variables

Leadership factors: The analytical measuring tool or questionnaire used a 5-point likert scale as a measuring tool (Likert, 1970a) to measure strategy, planning and team (Hind *et al.*, 2009; Kananurak, 2011; Harrison, 1995; Persson, 2012; Hagen *et al.*, 2003; Kalafatis *et al.*, 2000; Chotipanich and Lertariyanun, 2011; Edris, 1997; Zineldin, 1996; Moutinho *et al.*, 1997; Tang *et al.*, 2010; Brock, 2000; Sokol, 1992).

Location factors used an analytical measuring tool or questionnaire used a 5-point likert scale as a measuring tool (Likert, 1970b) to measure store format, customer awareness and population (Thompson, 1991; Kalafatis *et al.*, 2000; Canel and Das, 2002; Fulford, 2009; Mullineaux and Pyles, 2010).

Cost: The analytical measuring tool or questionnaire used a 5-point Likert scale as a measuring tool (Likert, 1970a) to measure size and equipment/technology (Govender, 2000; Giokas, 2008; Timmons, 1996; Tom, 2006; Durkin and Howcroft, 2003; McLaren *et al.*, 2002).

Economic factors: The analytical measuring tool or questionnaire used a 5-point likert scale as a measuring tool (Likert, 1970a) to measure bank performance and economic conditions (Cheng *et al.*, 2005; Ernst and Young Group, 2011; Bank of Thailand, 2008; Ma, 2012).

RESEARCH ANALYSIS AND RESULTS

Partial least squares has been applied for analysis of quantitative data by the researchers. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of manifest variable and latent variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001).

According to the analysis result of scale validity and reliability, scale investigation has been conducted using internal consistency measurement coefficient alpha. (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient was found that alpha coefficients ranged from 0.890-0.931, which is considered to have high reliability.

Reflective model structures were created for this research and tested for convergent validity and discriminant validity. The criteria for convergent validity are as follows; the loading value must be positive, the indicator loading values must be over 0.707 with a statistical significance of ($|t| \geq 1.96$) for all values (Lauro and Venzi, 2004; Henseler *et al.*, 2009 as cited in Boontawan and Montree (2010). The analysis results are shown in Table 2.

Leadership factors consisting of strategy, planning and team had the loading values of 0.8812, 0.8711 and 0.8818 with a statistical significance of 95% ($t\text{-stat} > 1.96$) which indicate that a particular factor had influence over the dependent variable bank expansion plans.

Location factors consisting of store format, customer awareness and population had the loading values of 0.8520, 0.8421 and 0.8624 with a statistical significance of 95 ($t\text{-stat} > 1.96$), which indicate that a particular factor had influence over the dependent variable bank expansion plans.

Table 2: Reflective statistical values indicating convergent validity of the latent variables

Construct/Item	Loading	t-stat
Leadership (Leadership)		
Strategy (Leader_strategy)	0.8812	33.2449
Planning (Leader_plan)	0.8711	25.5728
Team (Leader_team)	0.8818	30.8688
Location (Location)		
Store format (Location_form)	0.8520	37.2205
Customer awareness (Location_now)	0.8421	20.6460
Population (Location_population)	0.8624	39.9884
Cost (Cost)		
Size (cost_size)	0.8875	38.4830
Technology/equipment (cost_techno)	0.8970	28.4913
Economic factors (econ_factor)		
Bank performance (econ_in)	0.9110	58.1403
Economic conditions (econ_out)	0.9201	68.0468
Branch expansion plans (Performance branch)		
Number of branches (ser_a1)	0.7650	8.1331
Time to open (ser_a2)	0.8796	33.2926

Table 3: Results of Confirmatory Factor Analysis (CFA) for measurement model

Construct	CR	R ²	AVE	Cross construct correlation				
				Leadership	Location	Cost	Economic factors	Branch expansion plans
Leadership	0.910	0.4378	0.771	0.878				
Location	0.888	0.6371	0.726	0.798	0.852			
Cost	0.886	0.6516	0.796	0.726	0.792	0.892		
Economic factors	0.912		0.838	0.662	0.776	0.810	0.915	
Branch expansion plans	0.808	0.4542	0.679	0.654	0.572	0.553	0.553	0.824

Statistical significance level is at 0.05 and diagonal figures mean \sqrt{AVE} , CR: Composite reliability, AVE: Average variance extracted, R²: Square of the correlation

Cost factors consisting of size and technology/equipment had the loading values of 0.8875 and 0.8970 with a statistical significance of 95 (t-stat>1.96) which indicate that a particular factor had influence over the dependent variable bank expansion plans.

Economic factors consisting of bank performance and economic conditions had the loading values of 0.9110 and 0.9201 with a statistical significance of 95 (t-stat>1.96). Which indicate that a particular factor had influence over the dependent variable bank expansion plans.

Branch expansion plans consisting of number of branches and time to open had the loading values of 0.7650 and 0.8796 with a statistical significance of 95 (t-stat>1.96), which affects the intention to use the service.

Discriminant validity: Discriminant validity has been tested on scale reliability, including Composite Reliability (CR) which should not be lower than 0.60, Average Variance Extract (AVE) should not be lower than 0.50 and R² should not be lower than 0.20 and \sqrt{AVE} in the diagonal data should have a value higher than cross construct correlation of all values in the same column. The data validates that there was discriminant validity for each construct, without exception (Lauro and Venzi, 2004; Henseler *et al.*, 2009; Boontawan and Montree, 2010). Testing results of discriminate validity of this research was in accordance with all conditions shown in Table 3. Therefore, the scales of this study have been the scales with discriminant validity and reliability.

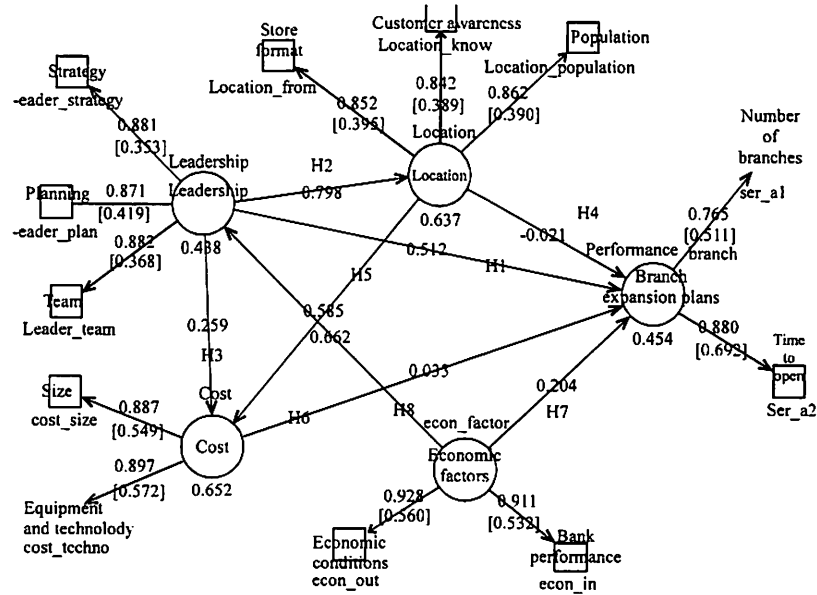


Fig. 3: Final model

Table 4: Research hypotheses test results

Hypothesis	Coefficient	t-stat	Results
H1: Leadership influences branch expansion plans	0.512	5.5534	Supported
H2: Leadership influences location	0.798	25.6200	Supported
H3: Leadership influences cost	0.259	4.1960	Supported
H4: Location influences branch expansion plans	-0.021	0.2035	Unsupported
H5: Location influences cost	0.585	10.3865	Supported
H6: Cost influences branch expansion plans	0.033	0.3113	Unsupported
H7: Economic factors influence branch expansion plans	0.204	2.1822	Supported
H8: Economic factors influence leadership	0.662	14.1597	Supported

Bank branch expansion analysis modeling of the variables that influence branch expansion found that of all the eight assumptions (Fig. 3), only hypotheses 4 and 6 were not supported, which means that location and cost do not influence branch expansion with Thai commercial banks. However, a factor that affects this decision is corporate leadership which determines strategy as well as economic factors.

Figure 3 shows the research framework and the structural model of independent variables that influence the dependent variable of branch expansion plans. Independent variables included leadership, location, cost and economic factors and their influence on 220 surveyed participants. The samples were analyzed to answer the research hypotheses criteria of the following eight assumptions (Table 3). Furthermore, the structural analysis model framework was used to research the t-test coefficients and their relationship of each path of the t-test hypothesis with significance greater than 1.96**. This explains the results obtained from analysis as shown in Table 1 and 2 as well as the test results presented in Table 4.

RESULTS DISCUSSION AND IMPLICATION

The findings from this study, 'An analysis of Thai commercial banks branch expansion factors including leadership, location, cost and economics' identified the following issues as discussed below:

- 'Leadership includes' strategic planning and team performance factors that affect the bank branch expansion rate in Thailand. This is consistent with the research of Hind *et al.* (2009) which noted that a potential leader will set the strategic direction for corporate business (Kalafatis *et al.*, 2000). The value created by marketing manifests itself in the effect of marketing actions on customer perceptions, behavior and ultimately the components of CLV, namely revenues, costs, risk and retention, as well as additional components of customer equity, such as customer acquisition (Persson, 2012). Leadership must plan for the short term, medium term and long term (Brock, 2000) and banks need to prepare a database of information about each type of client (Edris, 1997) and provide an analysis of opportunities and threats to the organization which is to determine the market position of the bank (Zineldin, 1996) and organizational leaders need to define and inspire their staff in order to have a positive attitude to work together to achieve the common goals (Tang *et al.*, 2010)
- 'Economic factors' are composed of both internal and external factors and affect Thai branch expansion. This is consistent with the research of Ma (2012) that after the economic crisis in Asia, foreign banks had to expand and take on the risks of these risky markets because when the economy is good, the consumer base is large and growing with higher spending, leading to more investments. As this process increases, the need for more retail banking outlets increases, thus contributing to the growth in market share for the commercial institutions

Banks wishing to open branches in Thailand must have a strong financial standing in Thailand as well as good operating performance and expertise in international financial transactions. The parent bank must be licensed in a country that already has or has the potential to have, good relations with Thailand in the fields of finance, trade and investment. The parent must be supervised by a regulatory authority that has good relations with the BOT.

- 'Location factors' are influenced by leadership and economic factors including banch/store format, customer awareness and population. This is consistent with the research of Moutinho *et al.* (1997), who noted that businesses need to focus marketing strategy on the needs of the customer so, if the consumer population requires more services, equipment and technology tools have to be available to support the bank branch. And banks have to develop a culture focused on the needs of the consumer. The existence of technological tools, including the recognition of marketing communications and the targeting of customer data, will result in an increase in market share and affect bank branch profitability (Mullineaux and Pyles, 2010)
- 'Cost factors' are influenced by leadership and economic factors as well as location. Location includes other components such as size and equipment/technology. This is consistent with the research of Giokas (2008) which noted that the size of the branch affects the sustainability of bank branches and large branches are efficient business operations. Small community banks with 8-10 employees can grow but they must have a strategic plan in a highly competitive market (Timmons, 1996). Using technology for banking services will result in limitless administrative service ability (Tom, 2006) and affects the building of relationships with customers as well as creating a competitive, low cost advantage (Durkin and Howcroft, 2003) which also creates confidence among the investors and service users (Reynolds and Wood, 2010)

- 'Branch expansion' plans includes number of branches and time to open. If a banking institution wants to open a new branch, it must comply with guidelines from the Bank of Thailand and submit a branch expansion plan once a year. They must also request permission to open the branch from the Bank of Thailand and qualify in accordance with the rules and regulations. The plan must include the number of branches that are going to be established, their location, reasons for opening, projected opening date, clear financial data concerning both the bank and the branches and a map showing the location of the branch

CONCLUSION

This study on 'An analysis of Thai commercial banks branch expansion factors including leadership, location, cost and economics' found that factors having both a direct and indirect influence on branch expansion included the ability of organizational leaders to determine strategies and execute planning. The competence of team performance within the organization is important as well. It was also determined that leadership branch expansion plans as well as the decision for site location and the amount budgeted for the establishment of the branch. External economic factors will affect the organization's strategy and the commercial banks' strategic planning and staffing for expansion and influence the location choice, branch cost and size. It also affects ROI and the amount of risky debt the bank is willing to take on. Consumer behavior, income, population density and demographics of the selected community are also external factors. Other factors include implemented transaction technologies and the potential for future expansion. It is therefore, wise and prudent for banks to move forward with their branch expansion plans leading to increased market share and future profitability from a larger consumer base.

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Foreign Real Estate Holdings in Thailand's Special Autonomous Systems (SAS) Bangkok and Pattaya: A Structural Equation Model

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ABSTRACT

This study was undertaken to study the factors that affects foreign leasing and ownership of real estate holdings in Thailand's 'Special Autonomous Systems' (SAS) located within the Bangkok metropolitan area as well as the coastal resort city of Pattaya situated along a 15 km stretch of the Gulf of Thailand's eastern shore. In 2012, Bangkok was once again ranked 1st as the 'World's Best City' while Pattaya has grown from a tiny fishing village 2 h southeast of Bangkok to what some estimate is a half million people during the height of the tourist season. As the regional air, transportation and logistics hub of Southeast Asia, Bangkok's role within the AEC can't be underestimated. Pattaya, whose average beachfront land has trebled in the past 10 years, has become the place to visit and live for both Thais and foreigners. Thai government authorities are projecting 10 million visitors for Pattaya in 2015, with US \$3.26 billion in tourism receipts. Additionally, between 2008-2013 Bangkok in some areas saw a 150% jump in commercial property values. Results of this study found that government policy has a direct and positive effect on the economy and investment as well as the types of foreign real estate holdings types. Additionally, the economy and investment had a direct and positive influence on foreign real estate holdings.

Key words: Real estate holdings, special autonomous system, Bangkok, pattaya

INTRODUCTION

Despite internal and ongoing political tensions and severe flooding in 2011, Thailand continues to maintain an open market-oriented economy and encourages foreign direct investment as a means of promoting economic development, employment and technology transfer. In recent decades, Thailand has been a major destination for foreign direct investment. Thailand continues to welcome investment from all countries and seeks to avoid dependence on any one country as a source of investment.

Understanding the history, attraction and strategic location of both Bangkok and Pattaya is important to understanding, why foreigners have been a key to these areas spectacular growth in foreign real estate holdings. Along with this, are factors concerning the economy and investment as well as government policy impacting foreign FDI with Bangkok in 2012 being ranked first in the Travel and Leisure magazine's online survey of the world's best cities (Fig. 1) (TLM, 2013).

According to the Chonburi Provincial Administration Organization, which oversees tourism development in Pattaya, in 2015 Pattaya is projected to have 10 million international and domestic visitors with a US \$3.26 billion infusion into the local economy. Historically, figures from Thailand's

WINNERS & LOSERS

Significant changes in land prices in Bangkok and its vicinities (2008-13)



Rank	Location	Price (baht/square wah)		Change %
		2008	2013	
Top 5 locations with the largest price increases				
①	Sukhumvit, Time Square	600,000	1,500,000	150
②	Wireless Road	650,000	1,400,000	115.4
③	Sukhumvit, Ekamai and Sukhumvit 21 (Asok)	400,000	850,000	112.5
④	Siam Square	800,000	1,600,000	100
⑤	Phahon Yothin (upper)	350,000	700,000	100
Top 3 locations with the largest price decreases				
①	Liap Khlong 13 Road, Km 5	3,000	2,500	-16.7
②	Opposite Bang Sai Royal Folk Arts and Craft Center	5,000	4,600	-6
③	Nong Chok	11,500	11,000	-4.3

Source: Agency for Real Estate Affairs

POSTgraphics

Fig. 1: Bangkok land prices 2008-2013, Source: Agency for Real Estate Affairs 2014

Ministry of tourism and sports, Pattaya received 8.3 million arrivals in 2010, which was a 93% jump over 2009. For the period January-June 2011, there were 724,273 Thai and 3,070,635 foreign visitors to Pattaya (WPC, 2012).

Pattaya city has been administered under a special autonomous system since 1978. It has a status comparable to a municipality and is separately administered by the mayor of Pattaya city, who is responsible for making policies, organizing public services and supervising all employees of Pattaya city administration.

Bangkok was given special status in 1972, when it became a province but retained its powers as a thesaban (municipality). Pattaya was given special status in 1978 as a distinct urban area due to its status as a tourist destination. Until 1998, Bangkok and Pattaya commanded like thesaban, weak authoritative competences due to central control. The Decentralization Act of 1999 gave thesaban and tambon and hence, also Bangkok and Pattaya, specific policy competences with relatively large budgets (TCP, 2007). These policy competences extend beyond the largely infrastructure-oriented tasks and projects of the changwat with Bangkok reflecting the aggregate changwat and municipal competences-but without residual powers or control over institutional set-up or police. Pattaya, reflecting only the municipal increase rather than the aggregate provincial and municipal powers of Bangkok is somewhat weaker than that of the Bangkok municipality (TCP, 2007).

Thailand however is still a developing country with Foreign Direct Investment (FDI) a crucial component of this growth but the continuing political crisis has depressed the average increase in Greater Bangkok land prices in 2014. This has been due to government spending delays according to Thailand's Agency for Real Estate Affairs (AREA), which stated that growth in land prices for Bangkok and the vicinity in 2014 are only estimated at 3% or lower, which is the lowest since 2010 (AREA, 2014).

With the military coup d'état in late May 2014, direct investment in Thailand was stated by the vice-chairman of the Joint Foreign Chambers of Commerce in Thailand as having the potential to "take a big hit" (Bangkok Post, 2014a). Additional data released by Thailand's Board of Investment (BoI) only one day after the coup seemed to support this sentiment indicating that of the 399 projects submitted for investment incentives in the first four months of 2014, the figures were down 42% year-on-year, with total investment value falling 44.8% to 270 billion baht due to the many months long political standoff. Additionally, investments from Japan, Thailand's top foreign investor, fell 41% from 216 projects last year, with investment value also sliding 55% from 150 billion baht (Bangkok Post, 2014a).

This is in contrast to land prices rising every year since 2000 in Bangkok. Between 2008-2013 Bangkok in some areas saw a 150% jump in commercial property values (AREA, 2014). During the past 10 years, the lowest increase was in chaotic 2009 (2.9%) while the average yearly increase during 2004-2013 was 4.4% Bangkok Post (2014b). Additionally, for 2014, AREA forecasts that the value of project launches in Bangkok and its suburbs will drop by 30-40% from last year's Bt385 billion. In the Bangkok metro area, only 30 residential projects totaling 4,438 units worth Bt15.63 billion were launched in December 2013. That was a decline from November 2013 of 30% in terms of projects, 73% in terms of units and 69% in terms of value, according to a survey by the Agency for Real Estate Affairs (The Nation, 2014).

The highest land prices in 2013 were once again in Siam Center, Chidlom and Phloenchit (all land in the Siam Center area is leasehold) at 1.65 million baht per square wah (4 square meters). These three locations were followed by Siam Square (1.6 million baht per 4 square meters), where all land is leasehold. The lowest land prices in Greater Bangkok were along Liap Khlong 13 Road at 5 km in the Lam Luk Ka area of Pathum Thani (2,500 baht per sq wah), a location quite far from the capital with insufficient facilities and roads. Among 10 locations along current and future mass transit lines, the highest increase in average land prices last year was along the Blue Line between Bang Sue and Tha Phra at 12.8%. The average increase in the 10 locations was 8.9% (Bangkok Post, 2014b).

Additionally, according to Thailand's Home Builder Association, along with the healthy growth in land prices was the additional supply of 705,000 new condominiums in 2013 into the market, the highest record ever in the industry's history (Thai PBS, 2013). According to Bank of Thailand statistics, condo prices in Q1 2013 soared by 9.39%, while townhouses prices rose by 6.86%, after rising by similar amounts for the past several years. Total transactions by value, including land and buildings, surged 35.3% in Q1 2013 as total outstanding property credits rose by 13.3% (Forbes, 2013).

As can be seen from this study's data, the motivation for a high potential return on a real estate transaction investment in both Bangkok and Pattaya has been large, but political turmoil and risk has entered into the equation. The mechanism however, in which these transactions take place by foreigners in Thailand take on various forms due to the uniqueness of Thailand's laws. This can include purchasing, renting, nominees, investment or corporate. Relevant factors include economy

and investment, which are variables related to the cost and difficulty of investing. This also includes the economic situation, including interest rates, which is related to the Return On Investment (ROI) and patterns of international investment. Other factors include government policy, promotion and governmental support which also include financing, taxes and legal transparency. The above factors all affect the desire and intent to hold real estate in Thailand by foreigners.

This intent can take many indirect forms however, as land ownership in general for non-Thai businesses and citizens are not permitted to own land in Thailand unless the land is on government-approved industrial estates. Under the 1999 amendment to the Land Code Act, foreigners who invest a minimum of 40 million Baht (approximately US\$1.3 million) are permitted to buy up to 1,600 square meters (1 rai) of land for residential use with the permission of the Ministry of Interior. If the required land is not used as a residence within two years from the date of acquisition and registration, the Ministry has the power to dispose of the land (US DoS, 2012).

Petroleum concessionaires may own land necessary for their activities. Rather than purchasing, many foreign businesses instead sign long-term leases and then construct buildings on the leased land. Under the 1999 Condominium Act, non-Thais were allowed to own up to 100% of a condominium building if they purchased the unit between April 28, 1999 and April 28, 2004. Under the newer Condominium Act of 2007, foreign ownership in a condominium building, when added together, must not exceed 49% of the total space of all units in the building, except for those purchased between 1999 and 2004 (US DoS, 2012).

The use of such property in any form depends on several factors. One factor includes the environment which includes the condition and appearance of the real estate. Another includes land use, which can include zoning, which helps maximize benefits of the land itself.

Thus to exploit its full potential, Thailand's Board of Investment (BoI) was established to promote investments to investors in both Thailand and to foreigners with a mission to increase the competitiveness and facilitate investment. BOI's business support services provide information and advice about setting up a business in Thailand, management visits to study the suitability of plant locations, manufacturer's supply parts OEM and partnerships, contact details of agencies, both public and private. Additionally, coordinate and cooperate with foreign businesses and other government agencies including marketing to promote Thailand as a source of support as one of the best investments in Asia. It also is assigned to prepare and implement strategic plans, which define and influence the global investment activities throughout the year.

Investments are both direct and indirect, with direct taking the form of real-estate holdings allocated for the production of goods and services. Indirect investment is obtained through the trading of financial securities. The investment model depends on the purpose of the investment.

In addition, in today's globalized world where investments flow freely and the integration of economic, social and political agreements formalize these movements, whereas trading blocs such as the ASEAN Economic Community (AEC) become crucial to these processes.

The three pillars of the ASEAN community, namely the ASEAN Political-Security Community (APSC), the ASEAN Economic Community (AEC) and the ASEAN Socio-Cultural Community (ASCC), are the most crucial areas deemed necessary for the progress and evolution of ASEAN and its peoples. The Blueprints of these three communities have been carefully formulated to detail specific strategic objectives and actions which intend to achieve progress and positive development in the respective areas (Keng, 2009).

The AEC as one of the three pillars helps investors recognize the benefits of investing in the AEC with its beneficial conditions of participation and investment exchange between member nations. This will lead to higher investment in Thailand from foreigners, including the purchase of property, both in real estate and other sectors such as securities.

Investments affect Thailand's economy and society and with these further investments, come a proportional increase in property holdings by foreigners but these real estate investments take on many forms.

Research from Satjanon *et al.* (2009) has said that the foreign use and possession of property in Thailand has occurred in a legal way but Thai people have been used as nominees to and in a way that the people of Thailand as holding legal title. But in practice these nominees, often times exploited and occupied by foreigners which impacts both positive and negative ways. It is imperative that Thailand manages and uses property in a systematic way.

The Thailand Development Research Institute (TDRI) also conducted a study and prepared a report on strategic land management which included the planning, land holdings, reserves and undeveloped land and reserved or restricted land. Consequently, this data has been utilized in drafting overall strategic management of land and land holdings and the governmental legislation pertaining to this as well as the holdings of land and property by foreigners.

It also has created a special department which is unique to Thailand's administration structure which provides an organization that manages and conducts local public services in the area that has some characteristics different from other areas of the country.

The authority of this organization is different from other organizations, such as in the areas of personnel and revenue management. In both Bangkok and Pattaya with their large numbers of foreigners, the researchers therefore wanted to undertake a study that investigated the variables of the implementation and the factors of these 'Special Autonomous Systems' of Thailand. Therefore, the researchers have conducted research of 'Foreign Real Estate Holdings in Thailand's Special Autonomous Systems (SAS) Bangkok and Pattaya a structural equation model'.

CONCEPTUAL DEVELOPMENT

Real estate holdings types: Real estate holdings of individuals have different purposes including residential and home as well as for career and professional reasons. Decisions affecting real estate holdings are very dependent on consumer behavior, which is associated with emotional behavior affecting the acquisition, the property's use and decision to leave. Consumers steps in deciding to buy property are problems, data collection, evaluate alternatives, decision/purchase behavior and after decision to purchase behavior (Rungruangphon, 2008).

Real estate holdings can be classified either as a purchase or a lease, but the decision to purchase or lease affects overall costs as purchasing increases debt load while renting decreases or significantly reduces the cost of the enterprise (Dowden and Humphreys, 2013).

Another form of ownership of real estate is that of the agent or nominee, which is an instrument used by a foreign entity to purchase land (Tan, 2004) or establish a corporation (Satjanon *et al.* 2009)

However, the factors that influence real estate holdings take many forms, such as the government policy to promote the use of land (Mohd *et al.*, 2009), which are associated with legal factors, land ownership regulations (Camilleri, 2011) and factors of investment characteristics (Lopez *et al.*, 1988) and whether investment are direct or indirect.

Investors need to consider both the opportunities available and the purpose of the investment, such as the selection of a location in which the objectives are different for residential and business purposes. If an investment is to be used for internal factors such as business expansion (expansion, new business, joint ventures with local entrepreneurs), the cost-effectiveness (cost of raw materials, labor, logistics and land rental) and size of business. (Investment capital and number of workers) and external factors, including the attitude of society, infrastructure, tax incentives and maintaining consistency with social attitudes, tax benefits and provincial strategies (Suttapong *et al.*, 2010).

Economy and investment: Economic growth in developing countries requires continued investment and for developing countries, the investment from abroad is considered a critical factor for growth. Its benefits include the transfer of company knowledge and technology, including financial assistance and knowledge transfer to the country of investment. This also increases wages for worked in the manufacturing sector, which has a 'knock-on' affect for other benefits and domestic workers. Thus, the liberalization of foreign investments is important.

In a US land holdings research, the study conducted by Adelaja *et al.* (2010), it was discovered that there is an inverse relationship between the rate of land value appreciation and the demand for land by farmers. In the data from 48 states, spanning from 1950-2004, it was noted that government policies can trigger increases in the rate of appreciation of farmland which may also potentially result in the agricultural hoarding of land. Additionally, enhanced profitability in agriculture due to government programs targeting viability, commodity price support and reduction of regulation or market expansion programs can also potentially affect land retention.

And in the current era of globalization with its ability to move funds freely, policies and strategies must be considered carefully which makes Thailand a net benefactor of foreign investment.

Research from the OSMEP (2012) found that the factors that foreign investors take into consideration for investment are many but include market expansion, investors to create business, security and confidence of investment and no risk in finding new buyers. A reason to invest in overseas business is the ability to source cheap labor, ready manufacturing supply chains, productivity and ability to expatriate your capital investment, cheap resource materials and the ability to easily sell you product into the local market (Ratniyom, 2013).

Free Trade Agreements allow decisions to invest in property (Omran and Pointon, 2009) which results in many groups in many countries to trade between each other, taking advantage of production, products and services of the same type or not.

While has embraced the theory of imperfect competition to describe the emergence of international trade in a world of imperfect competition, international trade is driven as much by increasing returns and external economies as by competitive advantage. Furthermore, these external economies are more likely to be realized at the local and regional scale than at the national or international level. While Intra-Industry Trade is primarily a product in the same industry, there may be a difference in the product. Differential products, which is the difference of the product, will allow consumers to choose the product to be consumed from many different channels, allowing the consumer to, 'diversity' even more and 'gain from variety' itself.

In order to contribute to confidence in economic integration and greater prospects for agreements and trade within the region, there needs to be an agreement between the different areas of concern. Within the ASEAN community, the 7th AFAS package agreed to the following (Dee, 2013):

- To enhance cooperation in services amongst Member States in order to improve the efficiency and competitiveness, diversify production capacity and supply and distribution of services of their service suppliers within and outside ASEAN
- To eliminate substantially restrictions to trade in services amongst Member States
- To liberalize trade in services by expanding the depth and scope of liberalisation beyond those undertaken by Member States under the GATS with the aim to realising a free trade area in services

Under the concept of trade liberalization between member states and 'trade in services', real estate services was also included with ASEAN investors being allowed to hold shares of not less than 70% by the year 2015.

However, members agreed that the option activity under the Central Product Classification or CPC, CPC 8210 (Real estate services Involving own or leased property) and CPC 8220 (Real estate services on a fee or contract basis) contain only one activity which is a commitment to open markets and it is achieved in the AEC blueprint in the field of real estate. Certain AEC countries such as Thailand, the Philippines and Singapore are ready for liberalization in their property and real sector while other ASEAN countries may not be ready and need to revert to their local investment laws for real estate investment (United Nations, 1991).

Government policy: The Thai government has formulated a policy to encourage investment which is established by the Board of Investment (BOI) to enhance competitiveness and facilitate investment and conduct business support services. The government also needs to determine monetary and fiscal including the various policies that can meet the goals of the provincial governments.

Research by Kasikorn Research Center (2012) found that government policy measures set a credit limit, conduct land appraisal, create tax incentives for the purchase of housing, legal processes for land ownership which all affects the real estate business direction and affect state policy related to trade and foreign investment.

As mentioned above, research shows that government policy measures to support investment require a combination of several measures, including measures to limit credit or financial measures that affect their access to capital. Financing advantages affecting investment decisions.

Research from Suttapong *et al.* (2010) stated that investor investment strategy would affect strategic mergers or acquisitions and the potential development of the company (Cohen, 2010) because the amount of financial sector support affects the real estate pricing models and helps in the decision to purchase the property faster and creates cash flow to market real estate (Roubi and Ghazaly, 2007).

Tax incentives measures, such as tax rates and associated fees, will affect land and buildings cost (Adelaja *et al.*, 2010). If tax rates and fees are low and property prices also not high, businesses will be more lucrative contributing to increased production into the market. Having adequate amounts of real estate in the market will affect real estate prices and their purchase decision (Chan and Chen, 2011).

Real estate and property laws are determined by government regulations and zoning, such as with the textile industry which needs to be located near water (Ratniyom, 2013) and is considered the economic laws in force planning, financial systems related to credit (Mohd *et al.*, 2009) the provisions of legal and legal environment of business operations is a major problem in India (Suttapong *et al.*, 2010).

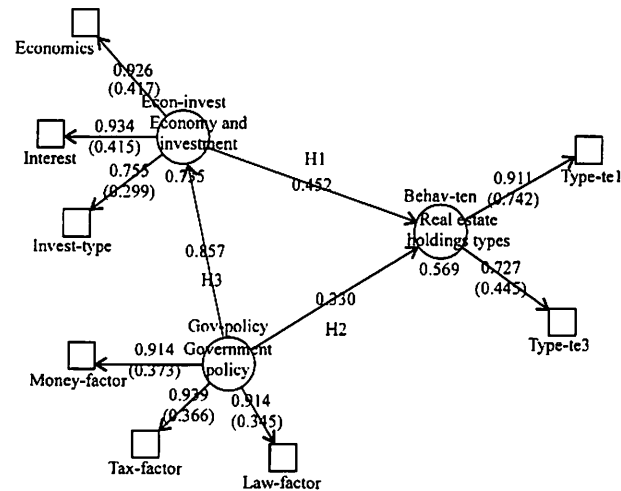


Fig. 2: Final model-analysis of factors that affect types of real estate holdings within Thailand's Special Autonomous Systems (SASs)

From the above conceptual review and development, the researchers have developed the following three hypotheses for this study on Foreign Real Estate Holdings Types within Thailand's Special Autonomous Systems (SASs) (Fig. 2):

- **Hypothesis 1 (H1):** Economy and investment have a direct and positive influence on the types of Real Estate Holdings
- **Hypothesis 2 (H2):** Government policy has a direct and positive influence on the Types of Real Estate Holdings
- **Hypothesis 3 (H3):** Government policy has a direct and positive influence on the economy and investment

METHODOLOGY

Data collection: This study was conducted from a sample population of foreigners in the SAS areas of Bangkok and Pattaya City as well as from 10 executives from large, international organizations and Thailand's Investment Promotion Agency using both quantitative and qualitative research, respectively.

Data collection: Quantitative research was conducted with Stratified Sampling by dividing the sample according to the pattern of land ownership, buyers, renters, nominees, corporations and investments held in the form of joint ventures. For this research, the measurement instrument or questionnaires utilized were prepared from the literature. A seven-point rating scale was employed for this survey.

Questionnaire design: For this research, the measurement instrument or questionnaires to be utilized were prepared from the literature. Quality and content was monitored with tools used in the research and as a measurement of quality. Both content validity and reliability was assured by 5 experts in their respective fields with an evaluation index consistent with the content and the

purpose of the research (index of Item-Objective Congruence (IOC) to carry out screening questions specifically dealing with an IOC higher than 0.5 only. The selected items were dealt with using an IOC higher than 0.5. Questions were then rated by the use of the Likert rating scale with each class of measurements using a 7 unit scale for measuring internal consistency with coefficient (α -coefficient) of Akron BAC (Cronbach) to calculate for the average value of the correlation coefficient.

For this study, the measurement instrument or questionnaires utilized were prepared from the literature. To gauge both the content validity and reliability of the survey, 5 specialists in their respective fields were chosen to evaluate the consistency of the content and confirm it was valid for the purposes of the research. Additionally, the index of Item-Objective Congruence (IOC) developed by Rovinelli and Hambleton (1977) was employed to carry out the screening of questions. The IOC is a procedure used in test development for evaluating content validity at the item development stage. This measure is limited to the assessment of unidimensional items or items that measure specified composites of skills. The method prescribed by Rovinelli and Hambleton (1977) results in indices of item congruence in which experts rate the match between an item and several constructs assuming that the item taps only one of the constructs which is unbeknownst to the experts. The research then proceeded to select items that with an IOC index higher than 0.5 which were considered acceptable.

Questionnaires were constructed to be a tool to measure concept definition and practice. The instrument or questionnaire used the 7-Point (Likert, 1972) as the measurement scale and the conceptual framework for determining the internal consistency measured by coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient. All values lower than 0.50 were eliminated from the measurement. Qualitative research was collected from information from the executives of large international organizations and executives from Thailand's Investment Promotion Agency in order to confirm the model of quantitative research with a sample of 10 executives selected for sampling using non-probability sampling using random sampling (purposive sampling).

Measurement

Dependent variable: Real Estate Holdings Types (Behav_ten) analysis used as a measurement instrument or questionnaire utilizing a 7-Point (Likert, 1972) and was constructed with the scales developed enabling measurement of Purchasing (Type_te1) and Long-Term Lease (Type_te3) (Satjanon *et al.*, 2009; Rungruangphon, 2008; Dowden and Humphreys, 2013; Tan, 2004).

Independent variables: Economy and Investment (Econ_invest) analysis used as a measurement instrument or questionnaire a 7-Point (Likert, 1972) and was constructed with the scales developed enabling measurement of economy (Economics), interest rates (Interest) and foreign investment type (Invest_type) (Lopez *et al.*, 1988; Suttapong *et al.*, 2010; Adelaja *et al.*, 2010; OSMEP, 2012; Ratniyom, 2013; Omran and Pointon, 2009; Kasikorn Research Center, 2012).

Government policy (Gov_policy) analysis used as a measurement instrument or questionnaire a 7-Point (Likert, 1972) and was constructed with the scales developed enabling measurement of financial incentives (Money_factor), tax incentives (Tax_factor) and legal transparency (Law_factor) (Mohd *et al.*, 2009; Camilleri, 2011; Suttapong *et al.*, 2010; Kasikorn Research Center, 2012; Suttapong *et al.*, 2010; Cohen, 2010; Roubi and Ghazaly, 2007; Adelaja *et al.*, 2010; Chan and Chen, 2011; Ratniyom, 2013; Suttapong *et al.*, 2010).

RESEARCH ANALYSIS AND RESULTS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of manifest variable and latent variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001). According to the analysis result of scale validity and reliability, scale investigation was conducted using internal consistency measurement coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient, whose range was found to be highly reliable.

In case of measure variables with reflective analysis, convergent validity has been conducted. Loading is used as consideration criteria and must be positive quantity and indicator loading has been more than 0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) quoted in (Piriyakul and Wingwon, 2010) and analysis results as shown in Table 1.

Economy and investment (Econ_invest) factors underlying the external variables influencing economics (Economics), interest rates (Interest) and foreign investment type (Invest_type) with values loading from 0.707 and a significant level of confidence percentage 95 (t-stat>1.96), which considers such factors highly reliable. It has a direct impact on Real Estate Holding types.

Government policy (Gov_policy) factors underlying the external variables influencing financial incentives (Money_factor), tax incentives (Tax_factor) and legal transparency (Law_facotr) with values loading from 0.707 and a significant level of confidence percentage 95 (t-stat>1.96), which considers such factors highly reliable. It has a direct impact on Economy and Investment and Real Estate Holdings Types.

Real Estate Holding types (Behav_ten) factors underlying the external variables influencing Purchasing (type_te1) and Long-Term Lease (Type_te3) with values loading from 0.707 and a significant level of confidence percentage 95 (t-stat>1.96), which considers such factors highly reliable.

The above reflective model in Table 1 shows the discriminant validity of the internal latent variables and the correlation of variables. It also depicts the scale reliability which has been analyzed from Composite Reliability (CR) as well as the Average Variance Extracted (AVE) and R^2 . The CR value should not go below 0.60 and the AVE values should also drop below 0.50 and R^2 values should not be under 0.20 (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) quoted in Piriyakul and Wingwon, (2010).

Table 1: Statistic values presenting convergent validity of reflective scales of latent variables

Construct/item	Loading	AVE	t-test
Economy and investment (Econ_invest)		0.767	
Economics (Economics)	0.9262		135.1047
Interest rates (Interest)	0.9338		125.0802
Foreign investment type (Invest_type_	0.7549		21.5665
Government policy (Gov_policy)		0.851	
Financial incentives (Money_factor)	0.9142		70.8694
Tax incentives (Tax_factor)	0.9389		114.5318
Legal transparency (Law_factor)	0.9140		80.8752
Real estate holdings type (Behav_ten)		0.679	
Purchasing (Type_te1)	0.9112		71.7008
Long-term lease (Type_te3)	0.7270		16.4829

Table 2: Confirmatory Factor Analysis (CFA) of the independent variables of economy and investment, government policy, social and environmental conditions on the dependent variable of real estate holdings types

Construct	CR	R ²	AVE	Cross construct correlation		
				Economy and investment	Government policy	Real estate holding types
Economy and investment	0.907	0.7347	0.767	0.876		
Government policy	0.945		0.851	0.857	0.922	
Real estate holding types	0.807	0.5690	0.679	0.735	0.718	0.824

CR: Composite reliability, R²: Square of the correlation, AVE: Average variance extracted, statistical significance level is at 0.01 and diagonal figures mean \sqrt{AVE}

Table 3: Research hypotheses test results

Hypotheses	Coef.	t-test	Results
H1 Economy and investment have a direct and positive influence on the real estate holdings types	0.452	4.9828	Supported
H2 Government Policy has a direct and positive influence on the real estate holdings types	0.330	3.4660	Supported
H3 Government Policy has a direct and positive influence on the economy and investment	0.857	44.0669	Supported

Coefficient refers to the Beta (β). t-stat is the t-value. 95% confidence level

Table 2 below shows the results of factor analysis affecting Biomass Power Environmental Impact. The data also shows the CR values are higher than 0.60, with all AVE values higher than 0.50 for all values and R² values higher than 0.20, representing the reliability of the measurement. It found that data sets in the \sqrt{AVE} have higher values than all of the corresponding values in the 'Cross Construct Correlation' in the same column, representing discriminant validity of the measure in each construct and with a greater value than 0.50 of AVE as shown in Table 2. The samples were analyzed to answer the research hypotheses criteria in the three assumptions presented in Table 3.

Furthermore, the structural analysis model framework was used to research the t-test coefficients and their relationship of each path of the t-test hypothesis with significance greater than 1.96. This explains the results obtained from analysis as shown in Table 1 and 2 as well as the test results presented in Table 3 below.

RESULTS

Property includes land and buildings and the land is classified as a limited natural resource. Today's technology is capable of augmenting this resource to some degree such as building tall towers or filling in sea for expansion and development, but overall urban areas are limited and property development has to be carefully considered. The Thai government should create incentives and encourage investment from both Thais and foreigners whose investment aims are residential, farming or industry and manufacturing.

Therefore, consumers need to consider the economy and investment situation to see if investments make economic sense to invest or not. Investment costs, such as interest rates, can result in whether a return on investment is attractive to investors or not. There are also other factors that affect investment decisions by government policies, such as the promotions, investment finance measures, tax incentives and legal and regulatory measures.

There are also community related social and environmental factors such as community relations, the availability of utilities, international linkage systems, sanitation systems, etc. So you can see that all these factors are involved in investments which will affect investment patterns, both direct investment and indirect investment, which is linked to behavior and the type of land holdings.

CONCLUSION

Thailand is on the precipice of change. The country has experienced amazing growth and prosperity to its economy, mainly due to foreign direct investment in various forms across many sectors of its economy. Government policy has also had a huge influence on this investment as can be seen from the policies and statistics from Thailand's Board of Investment (BoI). Pattaya and Bangkok have seen their property markets explode with premium commercial property in Bangkok soaring to US\$50,000 for 4 square meters. This however is dependent on factors that appear to be changing rapidly as this study is being finished.

Sadly, Thailand is undergoing another convulsion of change. With this change, hopefully for the better, is uncertainty and chaos. What the study does show conclusively is that the economy and investment have a positive and direct influence on foreigner's desire to hold real estate in the kingdom. It also has been established that government policy has a direct and positive effect on the economy and investment as well as real estate holdings by foreigners. This assumes however that governmental policy is transparent and favorable for the foreign investor.

Thailand has entered another chapter of its long history with the coup of May 2014. Where it exits and under what circumstances is anyone's guess and how it affects foreign investor sentiment is beyond the scope of this research. That as they say, is for another day.

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Analysis of Bangkok's Metropolitan Administration (BMA) District Offices Using a Structural Equation Model

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ABSTRACT

This research study is concerned with the analysis of the Bangkok Metropolitan Administration's (BMA) district offices using the Linear Structural Model (LEM) to determine the variables that affect public sector organizational performance. Three hundred and forty quantitative samples were drawn from all 50 of Bangkok's BMA districts using simple random sampling (purposive sampling) while using Partial Least Square (PLS-Graph) software to apply Structural Equation Modeling (SEM) analysis. The research found that there are three factors determining BMA's strategy. They are public sector marketing factors, transformational leadership and organizational strategy. The first element, public sector marketing factors has a direct and positive influence on BMA's performance. The second, transformational leadership has been shown to have a positive although, indirect effect through variables in their organizational strategy. It was also discovered that organizational strategy able to keep pace with the flow of change and how to run a modern government efficiently and flexibly were crucial factors as well. These were important in achieving the goals of satisfying the constituency and optimizing public sector resources.

Key words: Public sector marketing, leadership, managerial skill, high performance organization

INTRODUCTION

Change is unavoidable and affects organizations in both the private and public sector. Every enterprise is confronted with new competition that often times require reengineering complete systems and processes or else they might be forced out of business. State agencies are no different than corporate enterprises in the fact that they are affected by new technologies and innovation and must be willing to generate change. At the same time, there is no guarantee that state agencies will always have funding assuring their survival.

They must also embrace strategic vision on how they can operate more efficiently as well as implement new innovations. They must market themselves to gain understanding of their issues from their tax-paying electorate. This also includes agencies concerned with their oversight and monitoring.

As state enterprises are big organization with large bureaucracies and complex management structures, it is necessary to adapt to these supporting changes (Kotler and Lee, 2006).

With regards to civil service reform, it is the state's obligation to develop related laws that are consistent with political, administrative, economic and social developments. The intent is to enable

the civil servants to create rapid, equal and fair administration and service systems for society. In order to provide these public sector services, bureaucracies must decentralize and arrange state activities in which they can effectively develop and cooperate with other state agencies (Jantharasorn, 1997).

Today, a modern governmental administrative system needs to combine management models with commercial market models. Privatization of bureaucratic roles in public service operations creates a pressure building mechanism that creates competition.

This opinion was consistent with 'New Public Management in Action' which involves the introduction into public services of the 'three M's': Markets, Managers and Measurement. This new method of governmental administration classified its operations into management of change, downsizing and decentralization and the search of excellence while focused on public services (Ferlie *et al.*, 1996).

In an effort to restructure large and unwieldy bureaucracies into smaller and more efficient management systems, some have advocated a disaggregation of bureaucratic units in order to form a more efficient and accountable public service. Additionally, with the use of free-market mechanisms stimulating competition with appropriate cost-cutting measures, goal-oriented managers with short-term employment contracts and better financial incentives and administrative autonomy will be better equipped to service their constituency.

Thailand has significant problems with its bureaucracies in that they serve their electorate less efficiently than modern businesses and they have little to no oversight governance. If the government does not encourage modern development and management within the public sector, it will undermine Thailand's competitiveness which is an obstacle to its future economic and social development.

Review of the literature found that local government problems as well as Bangkok's metropolitan area districts were exacerbated by the inability to have a dialog and discuss community issues such as public housing or water/flood management between government officials and the local communities. This resulted in local government project's lack of support and often time failures.

Many scholars have suggested to government administrations that they need to embrace modern marketing concepts for the public sector. Akkrarabavorn (2008) said that bureaucracies needed to modernize their marketing concepts and use better management tools to better support their local areas. They also needed to think of their citizens as 'customers', in which the government is providing goods and services.

The Bangkok Metropolitan Administration (BMA) has a special status within the Kingdom of Thailand as its administrative organization also serves the nation as its capital. It contains a total area of 1,568.7 km² with a metropolitan population of 5,710,883 people, operating with 50 divisions or 'District Offices'.

Reorganization and administrative autonomy are necessary so that officials can perform their duties in a manner that is consistent with the district's economic and social conditions. This also helps facilitate better serving the people's needs and helps with the coordination and monitoring of state government goals and objectives within Bangkok (BMA Data Center, 2012).

A survey was conducted for Bangkok in which citizens were asked about their opinion of civil service performance and their satisfaction with it. The results were later used to improve civil service staff which was consistent with the study of Luke and Verreynne (2006) that strategy formulation in governmental administrative organizations had a direct influence on the activities

of businesses. Also, strategies in business management affected the structural hierarchy as well as the research process and project management (Hitt *et al.*, 2001).

The study by Walsh (1994), found that many semi-public service organizations have come into existence and attempt to become more market-oriented. The underlying assumption here seems to be that exposure to some form of market mechanism leads to improved customer management processes and thus improves customer satisfaction.

After reviewing the above literature, the researcher has determined after research and analysis of Bangkok's BMA 50 districts that government officials and administrators must experiment with new activities and services, such as communication and information channels to reach the public they service. This will result in public recognition for their better quality of services. Transforming the public sector however requires restructuring, technology development, better and easier to use community services; all leading to a better and more efficient and cost savings solution.

GOVERNMENTAL CUSTOMER CARE

The new concept of 'C-Customer' or customer care should be the starting point to find personnel that are able to apply private sector marketing principles that can deliver better services to their electorate.

Efficient and effective organizations need to have the capacity for change, support innovation and function effectively without being 'top-heavy' with excessive managers. The key is to encourage and motivate personnel so they can sustain a good attitude and work performance.

Research conducted by Miller (2009) analyzed the role of High Performance Organizations (HPO) produce organizational capability that delivers sustainable organizational results through a system of teamwork and good operational practices.

They would also change from a High-Control Organization (HCO) to one embracing ideas found as a High-Trust Organization (HTO). Change would also occur from being focused on material manufacturing to knowledge based services.

In organizations of high trust (HTO), problems are dealt with easily and efficiently with management teams compared to low-trust environments with a single individual. Team spirit and work leads to team rewards compared to individual reward. Corporate and institutional structure flattens out compared to a more bureaucratic hierarchical structure. HTO's also demonstrate more flexibility in their structure willing to exchange information with both employees and outsiders as well as accepting blame for mistakes and problems. As such, this study is concerned with the analysis of the BMA government organization measuring (1) Constituency satisfaction (2) Customer service and (3) Transparency and accountability of each office, leading to the following three hypotheses.

The study by Kelloway *et al.* (2000) 'Enhancing transformational leadership: The roles of training and feedback' applied transformational leadership measures of Bass *et al.* (1990) perhaps one of the best contributions to our understanding of transformational leadership. Transformational leaders are thought to engage followers by employing one or more of the 4 "I's" to stimulate voluntary and enthusiastic responses to their influence attempts. These characteristics are:

- **Individualized consideration:** Gives personal attention to others, making each individual feel uniquely valued
- **Intellectual stimulation:** Actively encourages a new look at old methods, stimulates creativity, encourages others to look at problems and issues in a new way

- **Inspirational motivation:** Increases optimism and enthusiasm, communicates high expectations, points out possibilities not previously considered
- **Idealized influence:** Provides vision and a sense of purpose. Elicits respect, trust and confidence from followers

The conclusion of the study found that leadership training for transformational leaders was an effective and positive use of resources which contributed to more positive attitudes and better information exchange amongst management. It could also be determined from their study that training contributed to better group morale and more positive attitudes.

However, Kirkbride (2006) also found that it was essential for transformational leaders to have leadership skills that emphasized creativity and was able to be innovative with new work methods. They also add value to the environment from existing resources, affecting service quality and customer satisfaction.

Idealized influence: Is described when a leader is being a role model for his/her followers and encouraging the followers to share common visions and goals by providing a clear vision and a strong sense of purpose.

Inspirational motivation: Represents behaviors when a leader tries to express the importance of desired goals in simple ways, communicates high level of expectations and provides followers with work that is meaningful and challenging.

Intellectual stimulation: Refers to leaders who challenge their follower's ideas and values for solving problems.

Individualized consideration: Refers to leaders who spend more time teaching and coaching followers by treating followers based on individual basic.

The above factors contribute to employee loyalty and customer satisfaction. According to the study and analysis by Anantnavee (2006) on leadership characteristics of Eastern Thailand Educational Service Area executives, it was found that organizational environment affected effective administration.

Research results found that these educational managers on Thailand's eastern seaboard (1) Had both transformational and a high level of transactional leadership skills as well a low level of laissez-faire thinking (2) Office environments had excellent morale (3) Management was capable at doing their jobs and (4) And last, the variable with the most effect upon the organization was transformational leadership skills. A secondary factor was the organization's work environment and the intuition of the administrators.

Transformational leadership skills and the workplace environment had both a direct and indirect effect on management outcomes on Eastern Thailand's Educational Service Areas offices.

In a study about the linkages between internal marketing and leadership Gounaris (2006) and Hult (1996) concluded that if managers gave priority to the communications with customers, this would facilitate a better understanding of their products and services (Bell *et al.*, 2004).

In addition, the study by Pasmore (2011) found that transformational leaders created new jobs as well embracing social responsibility, better customer relations and risk management. Leadership roles effect organizational strategy formulation within in the public sector in different ways and

was consistent with the study of Sarros *et al.* (2008), Carr (1996) and Marcketti *et al.* (2011). According to literature review summaries, hypotheses have been formulated as follows:

H1: Transformational leadership affects organizational strategy formulation

Governmental organizations are plagued with the negative perception concerning their relationship with their 'customers', the general public. The perception is that they are large, slow and bureaucratic organizations unable to deal with new innovation and information technologies. This thinking and sadly, in many cases reality, must change.

It is within this context that customer relations management has the greatest potential to fulfill the needs of the general public (Da Silva and Batista, 2007). Applying good customer service management techniques should be the focal point for implementation of new operating processes and information technology platforms.

According to the study by De Sousa Filho *et al.* (2010), 'Strategic Corporate Social Responsibility Management for Competitive Advantage', the findings were that social responsibility has become indispensable and strategic decisions of large companies involve social as well as economic consequences which are intimately connected. Strategy and competitive advantage are related to enhancing the company's image and reputation through the efforts of employees.

This was also applicable for a company's image and reputation as the relationship between social strategy and competitive advantage was influenced from opportunity, resources, employee skill, company, industrial structure and stakeholders. Decisions from the strategy formulation process should take into account the positive and negative impacts that may arise, not only for the business itself but also for stakeholders and society in general.

Therefore, the crucial strategy of an organization is managing the customer relationships and enhancing the reputation of the government. You also need to successfully take advantage of the management of the relationship as much as possible which will be reflected in better customer service for the public. Administrators also need to be keenly aware of policy formulation, democratic governance and marketing to their constituents (Da Silva and Batista, 2007). This positively affects customer communications by building good relations with the customers which also affects operations, increasing profits and customer satisfaction in user services (Akroush *et al.*, 2011; Kim *et al.*, 2004; Yim *et al.*, 2004; Sin *et al.*, 2005) and customer loyalty building (Venkatraman and Ramanujam, 1986; Walker and Ruekert, 1987; Day and Wensley, 1988; Venkatraman, 1990; Doyle, 1995; Ambler and Kokkinaki, 1997). The literature review summaries have led to following hypotheses:

H2: Organizational strategy formulation affects marketing in the public sector

H3: Organizational strategy formulation affects High Performance Organization (HPO)s

Management of the public sector in the future will require different management tools which are adopted for use in a variety of organizations. Akkrarabavorn (2008) said that the public sector should aim at the 'customer' which is the start of the sales of goods and services. Public administration should mirror concepts of private business in marketing to the public sector and meet their expectations and satisfaction to the best of their abilities.

In a marketing research study for government Nutley (2003) and Palermo *et al.* (2010) found that public policy needs to be creative and updated to reflect their new roles and to keep up with

external changes. They must also experiment with new activities and services, such as communication and information channels to reach the public. As a result, organizations will get public recognition for their quality of services.

Transforming the public sector requires restructuring, development, processes and services to citizens which will result in a solution. It will also cause great changes and affect public sector performance management (Sparrow *et al.*, 2002).

However, the study 'Marketing Planning in the Public and Non-profit Sectors' by Cousins (1990), showed that marketing planning in the public sector is not much different compared to the private market. Market share is less important than the overall size of the market. Pricing is something that cannot be controlled as well. Competition is usually not relevant to the needs of the market. Resources determine to some extent the better performance of the organization and the difference in the positions of competitors.

In a review of the literature this leads us to the following hypothesis:

H4: Marketing in public sector affects High Performance Organization (HPO)

RESEARCH METHODOLOGY

The survey was conducted from a random sampling of residents within the 50 Districts of the Bangkok Metropolitan Administration area.

Data collection: The sample group for this research includes 340 of Bankokian.

Questionnaires design: The questionnaires were designed to be used as a measurement tool according to the conceptual framework and operational definitions. The survey used the 5-Point Likert Scale and field definitions were constructed with its use.

Quality has been assured by using Cronbach's α -coefficient for calculation of average of correlation coefficient gained. It was found that α -coefficient for the entire questionnaire was 0.964 and the α -coefficient for each enquiry was between 0.508 to 0.853 which is considered a high reliability factor if each item of α value is less than <0.50 . Resultant data below 0.50 has been eliminated from the measurements.

Dependent variables: Analysis on the 'High Performance Organization (HPO)' were applied from research scholars including Verdegem and Hautekeete (2008), Nor *et al.* (2010), Iqbal *et al.* (2011) and Liem (2007) which were used as measuring instruments according to a conceptual framework and operational definitions. The measuring instrument or questionnaires were constructed by applying a 5-Point Likert Scale type measure (Likert, 1972).

Independent variables

Transformational leadership: Scholarly research includes Bass *et al.* (1990), Kelloway *et al.* (2000) and Kirkbride (2006) and the measuring instrument or questionnaires were constructed by applying 5-Point Likert Scale type measure (Likert, 1972).

Organizational strategy formulation: Scholarly research includes Da Silva and Batista (2007), Day and Wensley (1988), Sin *et al.* (2005) and De Sousa Filho *et al.* (2010) and the measuring instrument or questionnaires were constructed by applying 5-Point Likert Scale type measure (Likert, 1972).

Governmental marketing: Scholarly research includes Verma referred in Punyaratabandhu (1986), Sparrow *et al.* (2002), Cousins (1990); Palermo *et al.* (2010) and the measuring instrument or questionnaires were constructed by applying 5-Point Likert Scale type measure (Likert, 1972).

ANALYSIS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of Manifest Variable and Latent Variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001).

Transformational Leadership variables included idealized influence (LDF), inspiration building (LDI) and individuality (LDC). The loading value was more than >0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales.

Organizational Strategy Formulation variables included Customer Relations Management (CRM) and Corporate Social Responsibility (CSR). The loading value was more than >0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales. This was considered that such factors affected marketing in public and high performance organizations.

Strategic Public Marketing (MKS) variables included Customer Relations Management (CRM) and Corporate Social Responsibility (CSR).

Governmental Marketing variables included people needs and desires (MKN), service convenience (MKV) and communication (MKM). The loading value was more than >0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales which is considered that such factor affected High Performance Organization (HPOs).

High Performance Organization (HPO) variables included satisfaction of service user (HPS), service quality (HPQ) and transparency (HPT). The loading value was more than >0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales as shown in (Table 1).

Table 1: Convergent validity statistics in latent variable measurements in the Reflective Model

Construct/Item	Loading	t-stat
LDSF: Transformational leadership		
LDF: Idealized influence	0.965	26.0957
LDI: Inspiration motivation	0.986	31.8670
LDM: Intellectual stimulation	0.459	2.9508
LDC: Individualized consideration	0.973	36.5506
MKS: Strategic public marketing		
CRM: Customer relation management	0.953	59.3813
CSR: Corporate social responsibility	0.946	77.4000
PMK: Governmental marketing		
MKN: Customer solution	0.832	12.9044
MKM: Customer communication	0.756	18.2138
MKC: Customer cost	0.535	5.1840
MKV: Customer convenience	0.810	20.9935
HPO: High performance organization		
HPT: Transparency	0.829	29.4613
HPQ: Service quality	0.913	31.6008
HPS: Satisfaction	0.957	28.7388

Table 2: Confirmatory Factor Analysis (CFA) of the independent variables of; leadership, management skill, organizational innovation and their affects on the dependent variable, organizational performance

Construct	CR	R ²	AVE	Cross construct correlation			
				LDSF	MKS	PMK	HPO
LDSF	0.922	-	0.758	0.871			
MKS	0.948	0.201	0.901	0.448	0.949		
PMK	0.823	0.596	0.543	-	0.772	0.737	
HPO	0.901	0.675	0.752	-	0.395	0.478	0.867

Statistical significance level is at 0.01 and diagonal fig mean \sqrt{AVE} . CR: Composite reliability; R²: Square of the correlation, AVE: Average variance extracted

Table 3: Hypothesis Testing Result of Hypothetical Research

Hypothesis	Coef.	t-stat	Result
Transformational leadership affects organizational strategy formulation	0.448	10.356	Supported
Organizational strategy formulation affects marketing in public sector	0.772	33.205	Supported
Organizational strategy formulation affects high performance organizations (HPOs)	0.395	7.028	Supported
Marketing in public affects high performance organizations (HPOs)	0.478	6.586	Supported

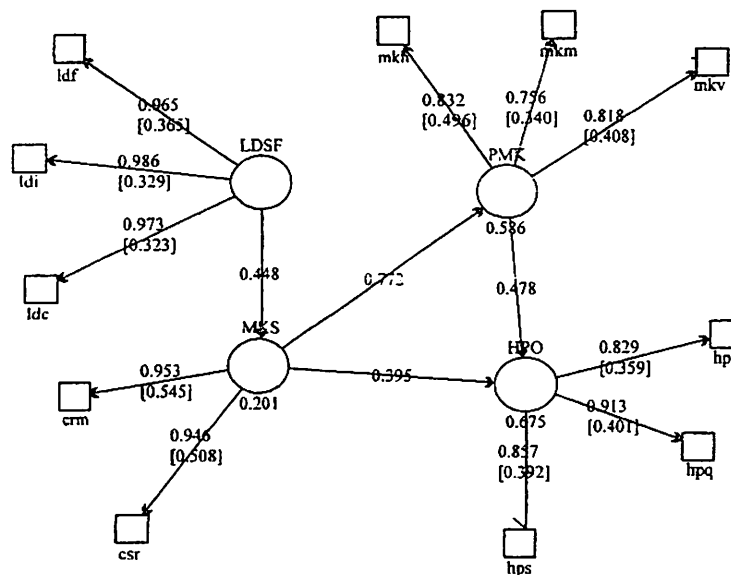


Fig. 1: Results for the structural model of the independent variables of; leadership, management skill, organizational innovation and their affects on the dependent variable, organizational performance. CR: composite reliability; R²: square of the correlation, AVE: average variance extracted, LDSF: Transformational leadership, PMK: Governmental marketing, MKS: Strategic public marketing, HPO: High performance organization

The above reflective model shows the discriminant validity of the internal latent variables and the correlation of variables. It also depicts the scale reliability which has been analyzed from composite value reliability (CR) as well as the Average Variance Extract (AVE) and R². The CR value should not go below 0.60 and the AVE values should also drop below 0.50 and R² values should not be under 0.20 (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) quoted in Boondhavan and Montri (2010).

Table 2, it can be found that all CR values were >0.60 and all R^2 values were >0.20 and all AVE values were higher than 0.50, showing that the measures were reliable. It found that data sets in the \sqrt{AVE} have higher values than all of the corresponding values in the 'Cross Construct Correlation' in the same column, representing discriminant validity of the measure in each construct and with a greater value than >0.50 of AVE as shown in (Table 2).

The model generated below was done using Partial Least Square-Graph software. It mirrors the variables found in (Table 1) but instead generates 'hypothesis testing results' from all of the research variables. This data is shown on Fig. 1 and in (Table 3).

Figure 1 shows the structural model of variables that influence the high performance organization of Bangkok's Metropolitan Administration (BMA) District Offices. Variables included Transformational Leadership, Governmental Marketing and Strategic Public Marketing of surveyed Bangkokian. The samples were analyzed to answer the research hypothesis criteria of the following four assumptions (Table 3).

Furthermore, the structural analysis model was used to research the t-test coefficients and their relationship of each path of the t-test hypothesis with significance greater than 1.96**. This explains the results obtained from analysis as shown in (Table 1 and 2) as well as the test results presented in (Table 3).

RESULTS AND DISCUSSION

Quantitative analysis of the conceptual framework and research hypotheses, including the study of the various theories and a review of the relevant literature, leads to the conclusion that the findings are useful for development. The authors discuss the findings of the objectives of the research and have chosen to model the nonlinear relationships of variables affecting the High Performance Organization (HPO). Details are as follows.

Transformational leadership: It included the four "I"s which were (1) Individualized Consideration (2) Intellectual Stimulation (3) Inspirational Motivation and (4) Idealized Influence (Bass *et al.*, 1990). According to the study, it was found that transformational leadership had the capacity for public organizational development.

This was consistent with Kirkbride (2006) who said that it was essential for transformational leaders to have leadership skills that emphasized creativity and were able to be innovative with new work methods. They were also able to intelligently build value from existing resources, as well as able to formulate organizational strategies in which they were able to keep up with their industry trends.

In a study about the linkages between internal marketing and leadership Gounaris (2006) and Hult (1996) concluded that if managers gave priority to the communications with customers, this would facilitate a better understanding of their products and services (Bell *et al.*, 2004).

Organizational strategy formulation: Strategic thought and vision is an important component of a high performance organization and formulates the direction of public organizations. Negative perceptions about customer relations and service within the public sector are difficult obstacles to overcome due to the slow execution of executive decisions.

These issues could be overcome however with the formulation and application of new information technologies increasing an organization's effectiveness and adding customer satisfaction and value (Da Silva and Batista, 2007). This agreed with the study results from

De Sousa Filho *et al.* (2010) that social responsibility has become indispensable and strategic decisions of large companies involve social as well as economic consequences which are intimately connected. Strategy and competitive advantage are related to enhancing the company's image and reputation through the efforts of employees.

This was also applicable for a company's image and reputation as the relationship between social strategy and competitive advantage was influenced from opportunity, resources, employee skill, company, industrial structure and stakeholders. Decisions from the strategy formulation process should take into account the positive and negative impacts that may arise, not only for the business itself but also for stakeholders and society in general.

It also showed that marketing planning in the public sector is not much different compared to the private market. Market share is less important than the overall size of the market. Pricing is something that cannot be controlled as well. Competition is usually not relevant to the needs of the market. Resources determine to some extent the better performance of the organization and the difference in the positions of competitors.

Governmental marketing: In public administration, the emphasis on High Performance Organization (HPO) concepts in governmental marketing was consistent with Cousins (1990) that in marketing services, there was no differences between public and private sector marketing. Market share is less important than the overall size of the market with pricing usually unable to control. Competition is usually not relevant to the needs of the market as resources will determine to some extent the organizational performance and the difference in the positions of competitors.

However, it was noticed that resource utilization was a factor that drove higher performance in public organizations. In a marketing research study for government Nutley (2003) and Palermo *et al.* (2010) found that public policy needs to be creative and updated to reflect their new roles and to keep up with external changes. It will also cause great changes and affect public sector performance management (Sparrow *et al.*, 2002).

CONCLUSION

Government officials and administrators must experiment with new activities and services, such as communication and information channels to reach the public they service. This will result in public recognition for their better quality of services. Transforming the public sector requires restructuring, technology development, better and easier to use community services, all leading to a better and more efficient and cost savings solution.

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ASEAN Biomass Energy a Thai Environmental Impact Analysis by use of a Structural Equation Model (SEM)

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ABSTRACT

Thailand's economic growth is in many respects determined by power generation with the demand for electricity moving hand-in-hand with rapidly expanding economic growth. With the doubling of Thailand's population since the 1960s, the necessity for rural electricity coverage has also increased dramatically. This however is at times difficult and expensive to achieve in these remote rural locations with their sparsely populated areas. However, power must be available nationwide and when areas are not appropriate for a large-scale power plant investment, smaller and less expensive local power plants need to be chosen. In these rural cases, biomass power plants can be considered as one alternative. Since, Thailand outside the main metropolitan areas is still mostly rural and agricultural, there is a ready source of raw material for biomass power plant conversion. The purpose of this research therefore was to determine the environmental impact of certain variables on the environmental impact on the local community. This study concerns the modeling and analysis of Thailand's biomass power industry using both quantitative and qualitative research methods. Quantitative data was obtained using stratified sampling from 323 biomass power community members and qualitative data from in-depth research of 10 community leaders using simple random sampling while using Partial Least Square (PLS-Graph) software to apply Structural Equations Modeling (SEM) analysis. Results showed from the hypotheses that government policy and community participation had a significant and direct contribution on the overall environmental impact of the local community.

Key words: Environment, biomass, power plant, Thailand

INTRODUCTION

In the initial launch in Bangkok, Thailand of the 'Special Report on Energy Trends in Southeast Asia' in October, 2013, the importance of energy for both Thailand and the ASEAN community were expressed in some startlingly strong statistics. For the larger 600 million large ASEAN Economic Community (AEC) as a whole, fundamentals suggested Southeast Asia's energy needs will continue to grow with Southeast Asia's energy demand increasing by over four-fifths in the period to 2035 (Fig. 1), or by more than the current consumption of Japan (IEA, 2013a). Additionally, the 10 nation AEC's economy will triple by 2035 along with a population expansion of almost one-quarter by 2035-850 million people.

Furthermore, electricity generation is expected to increase by more than the current power output of India with coal emerging as the fuel of choice, accounting for 58% of the power generation growth (Fig. 3).

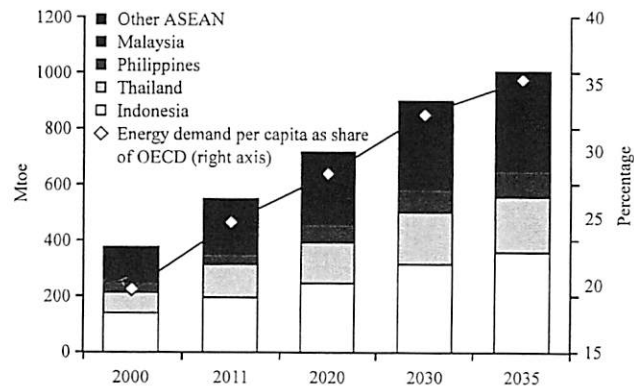


Fig. 1: Growth in ASEAN primary energy demand

In a high-level workshop organized by the IEA (International Energy Agency) and the Thailand Ministry of Energy in May 2013 in Bangkok, input was given as to new insights, feedback and data (IEA, 2013a) presented in this research. Some of this data suggests the following:

- Fossil-fuel subsidies amounted to \$51 billion in Southeast Asia in 2012. Despite recent reform efforts, notably in Indonesia, Malaysia and Thailand, subsidies remain a significant factor distorting energy markets. They encourage wasteful energy use, burden government budgets and deter investment in energy infrastructure and efficient technologies
- More than 130 million people in Southeast Asia or over one-fifth of the population, still lack access to electricity. And almost half of the region's population still relies on traditional use of biomass for cooking which poses a serious risk of premature deaths from indoor air pollution. Although, Thailand only has 1 million people or 1% of the population with no electricity, it still has 26% of its population (18 million) still relying on traditional use of biomass for cooking
- Southeast Asia faces sharply increasing reliance on oil imports which will impose high costs and leave it more vulnerable to potential disruptions. Southeast Asia becomes the world's fourth-largest oil importer, behind China, India and the European Union. Thailand and Indonesia's spending on net oil imports triples to nearly \$70 billion each in 2035. Indonesia, the largest energy user in the region with 36% of overall demand, consumes 66% more energy than Thailand (the second-largest user)

The Paris-based International Energy Agency (IEA) projects that ASEAN's energy needs will increase by 83 percent between now and 2035 (IEA, 2013a). Demand will be met predominantly by fossil fuels, namely, coal, oil and natural gas. Electricity demand in Southeast Asia increased by about a factor of five between 1990 and 2011-712 terawatt-hours (TWh). Nonetheless, on a per-capita basis ASEAN electricity demand remains low compared with developed countries (Fig. 2). This is best illustrated by Indonesia: Until 2005, its electricity demand was less than Norway's, yet its population was approximately 50 times greater.

Although, Thailand is significantly below the OECD nations (8,500 kWh per capita) and other AEC neighbors such as Singapore (9,000 kWh per capita), it still has a significant per-capita electricity demand higher than the ASEAN average (Fig. 2) (IEA, 2013a).

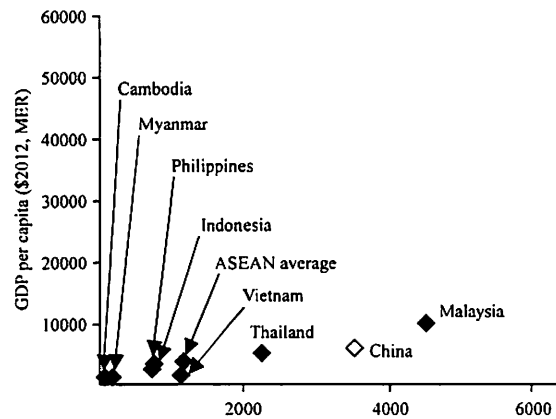


Fig. 2: Per-capita electricity demand and income in ASEAN, 2011 (IEA, 2013b). kWh per capita-MER: Market exchange rate

Given this environment, Thailand has stated that it wants to increase its power generation capacity to 71 GW by 2030, with a gradual reduction in the share of natural gas along with the introduction of nuclear power from 2026. Thailand also wishes to increase the share of renewable energy in final consumption to 25% by 2021, with consumption targets for ethanol of 9 million litres/day and biodiesel of 5.97 million L day⁻¹, both in 2021. Thailand also wants to reduce the energy intensity by 25% by 2030, compared with 2005 levels and increase oil stock to 45 days of net import with the desire to expand this to 90 days in the longer term (IEA, 2013a).

Energy sources used most frequently in Thailand for commercial power generation include coal, oil products and natural gas. In 2007, 49% of the electricity was consumed by the industrial sector, followed by the commercial sector with 25% and residential users with 21% of the total. In 2010, the fuels used for electricity generation ranged from 71.8% for natural gas, followed by 17.6% for coal and 6.3% for renewables (hydropower 4.8% and others, 1.5% the ministry of energy categorized hydropower as renewable) (Meetam and Kiatiprajuk, 2013). Industrial and transportation sectors use of natural gas would increase from 4,167 million cubic feet per day in 2011 to 5,331 million cubic feet per day in 2016 which is an average increase of 5.1% annually. In the long term, demand could increase to 6,999 million cubic feet per day in 2030 (Meetam and Kiatiprajuk, 2013).

This means the country is heavily dependent on imported foreign energy which is a primary reason for Thailand's policy to develop renewable energy and reduce its dependencies on imported oil and other types of fuel and energy used in electrical production. In 2011, Thailand was a net importer of 9 TW/h of electricity (IEA, 2013b).

Thailand has drawn complaints from investors about rising electricity costs and poor reliability after too much reliance on natural gas for power generation began causing more frequent blackouts and brownouts in recent years (FTI, 2014), with the Federation of Thai Industries claiming that a lack of energy security has reduced Thailand's competitiveness. Thailand depends on gas for as much as 70% of power generation, up from 60% a decade ago. Gas from the Gulf of Thailand however, is expected to be depleted within eight years and therefore Thailand will then have to depend on more costly liquefied natural gas (Bangkok Post, 2014).

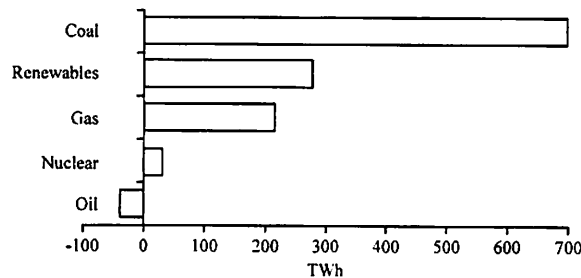


Fig. 3: ASEAN Incremental electricity generation by fuel type (2011-2035)

Biogas and renewable, waste energy technologies have widely been seen to reduce these costs and can be developed as a primary energy to produce electricity for Thailand in the future with ethanol and alternative energy representing 25% of the total within 10 years. In a study concerning greenwaste to biogas in Thailand, results illustrated that for the selected market, converting organic waste into biogas is advantageous both environmentally as well as financially; further, the benefit-cost ratio is three times higher after conversion, compared to before. Additionally, there is a huge margin of conversion and production of biogas (Ali *et al.*, 2012). The production of electricity from biomass is one of the renewable energy alternatives with the fuel used in power plant coming from the waste in the agricultural community. It is also necessary to make the community members more familiar with biomass power plants and let them know it can also secure their power needs against commercial power outages allowing them to relax when such events do inevitably occur.

As can be seen from Fig. 3 data, renewables are second only to coal for current and projected ASEAN power generation until 2035.

Renewable energy however is a broad term and according to the US Department of Energy is energy that comes from resources which are naturally replenished on a human timescale such as sunlight (solar), wind, geothermal, bioenergy and water (DoE, 2014).

The Asia Pacific Renewable Energy (RE) markets especially wind, solar and biomass power projects are expected to continue its high growth trajectory and fare significantly well because of the continued support from the government in the form of incentives, achievable numerical RE targets and launch of industry specific programs (Frost and Sullivan, 2011).

Southeast Asia continues to be an attractive market for developing renewable energy sources, especially biomass, given that it accounts for nearly 230 million tonnes annually. Biomass from crop residues, municipal solid waste and forest residues, such as wood, is available in abundance and the need to harness it effectively has been widely discussed by industry stakeholders (Frost and Sullivan, 2011). Opportunities abound for generating electricity from significantly large biomass stocks in the region. The growing market for biomass can lead to healthy competition to source feedstock at competitive prices and with Thailand still having 26% of its population or 18 million still relying on traditional uses of biomass for cooking, any additional readily available, cheap and abundant source of fuel for consumers should be a welcomed addition to consumers.

Community benefits: Frost and Sullivan (2012). Researchers characterise the various types of biomass in different ways but one simple method is to define four main types, namely; woody plants, herbaceous plants/grasses, aquatic plants and manures (McKendry, 2002).

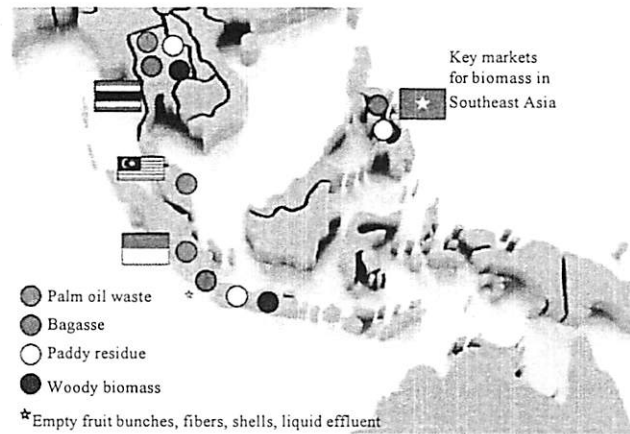


Fig. 4: Key biomass markets in Southeast Asia

Biomass power plants located in the community can involve community participation and the right to develop and control the power through its ownership of the power plants through cooperatives/organizations or local communities (right to property rights) or through investment in other areas that affect the project. This can also include the business of supplying biomass fuel, etc., or the various byproducts of these power plants as the people should benefit from the biomass project itself.

As a natural energy source which can include palm-oil waste, bagasse, paddy residue or woody biomass (Fig. 4), biomass can either be used directly via combustion to produce heat, or indirectly after converting it to various forms of biofuel. Conversion of biomass to biofuel can be achieved by different methods which are broadly classified into: Thermal, chemical and biochemical methods. The production of energy from biomass can be achieved by burning agricultural waste producing heat which generates electricity instead of more costly, imported fossil fuels. These fuel sources can include but are not limited to in Thailand to rice husks, bagasse, palm residue, wood chips, pulp, corn cobs, etc.

There can also be additional benefits from a community biogas plant or one located on just a single farm. These include:

- No more open burning of organic farm waste. Even animal carcasses can be deboned and placed into the bio-digester for conversion into biogas
- No more smelly sewage ditches. Closed systems can channel waste slurry directly to the bio-digester tanks
- Removes the need for unsightly cesspools and large waste water treatment ponds. Farm owners can then reclaim valuable real estate for commercial use
- With all animal waste piped into bio-digesters, there will be no unsightly spillovers in the rainy season. This means improved overall farm cleanliness and reduced risk of water-borne diseases
- The digestate (solid and liquid byproducts of anaerobic digestion) makes excellent free organic fertilizer for beautifying the surroundings (Green Prospect Asia, 2013)

Biomass electricity: Biotechnology-based production of fuels continues to attract much attention. Bioethanol (Wyman, 1996; Roehr, 2001), firewood, biogas, biodiesel (Graboski and McCormick,

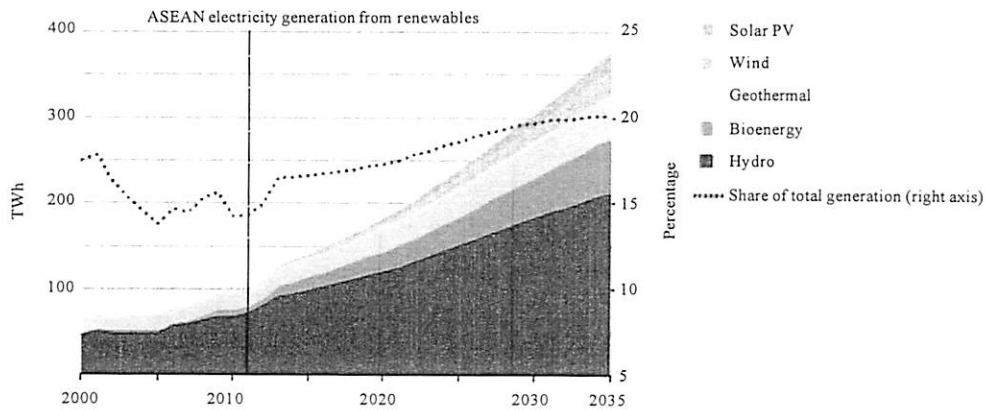


Fig. 5: ASEAN electricity generation from renewables (IEA, 2013b)

1998) and biohydrogen (Nandi and Sengupta, 1998) are examples of biofuels. Biomass can be converted into three main types of product (1) Electrical/heat energy, (2) Transport fuel and (3) Chemical feedstock. Of particular interest in this study is the generation of electricity (McKendry, 2002).

In 2011, renewables-based power increased by more than the current total power output of Indonesia and Thailand combined (Fig. 5), although barriers to deployment need to be tackled (IEA, 2013b).

Power generation can be done directly by burning biomass through a process called 'direct combustion' or through a chemical heat process referred to as 'thermochemical conversion'. Using these processes, biomass power plants have the potential to cause environmental impact which could affect the health of the surrounding communities. This could include such things as air pollution from the burning and combustion of selected organic matter such as wood chips.

Some bad things about biomass are; combustion of wood gives out carbon dioxide thus adding to global warming. Although, biomass fuels are renewable fuel sources, there is still no significant reduction in their emission levels. Biofuels produce the same amounts of harmful pollutants as fossil fuels. Noise and water pollution can also be factors as water is required for the cooling process to the machines.

Biomass power generation has been shown to be a valuable and beneficial component of the economy but can still create issues for communities around the power plant, so the researchers were interested in studying the subject in further detail with the objective to study the impact of environmental factors on biomass power plants and the influence of individual factors that have an impact on the environment by the use of a structural model of environmental factors that affect biomass power plants.

CONCEPTUAL DEVELOPMENT

Environmental impact: The use of renewable energy sources is becoming increasingly necessary, if we are to achieve the changes required to address the impacts of global warming. Biomass is the most common form of renewable energy, widely used in the third world but until recently, less so in the Western world (McKendry, 2002). Renewable energy resources from biomass can be a good solution for heating in rural zones with the growth of energy demand being increasingly satisfied

by diversified energy resources, including sustainable and renewable sources (Gavrilescua and Chisti, 2005). Renewable energy however, does leave a footprint on the environment, with biomass being no different.

Biomass materials such as wood, agricultural crop wastes, fast-growing willow and switchgrass crops, animal wastes and even garbage cans are used as renewable sources of energy to generate heat and power. They also can be used as alternatives to petrochemicals in making plastics and other products. Today, biomass energy systems are very small-scale; some examples include ethanol in gasoline and use of municipal waste to produce methane gas. According to the American Petroleum Institute, the biggest user of biomass energy is the forest products industry which burns much of its waste to make heat and electricity. Biomass fuels contain a lot of carbon; using them requires high-tech burners that reduce smoke (API, 2014). Still, biomass energy can productively use wastes that would otherwise go to landfills or incinerators.

Much attention has been focused on identifying suitable biomass species which can provide high-energy outputs, to replace conventional fossil fuel energy sources. The type of biomass required is largely determined by the energy conversion process and the form in which the energy is required (McKendry, 2002).

The environment can be divided into two categories, the natural environment and the man-made environment. The natural environment includes such things as soil, air, plants, animals, humans, etc., which includes both the living and dead. The environment can also be classified as the man-made environment, such as politics, law, culture, roads, towns etc. As a result, environmental impact can be classified into 4 categories:

- Resource characteristics are a critical component to the sustainable management of the environment. They also play an important role in the control of environmental systems and the rehabilitation of degraded systems
- Technology characteristics is the scientific knowledge used by humanity with technology whose useage mistake could lead to a negative environment impact such as a nuclear power plant explosion
- Waste and environmental pollution which entails 4 types including solid waste pollution (toxic waste, garbage, dust), liquid pollution (water, oil, grease), gas pollution (air contaminated with toxins, soot, oxides of nitrogen, etc.) and the physical and thermal pollution (noise pollution, heat, light, radiation)
- Human/socioeconomic environment refers to the environmental, economic and social elements in the environment that is created by humans, such as demographic, cultural and environmental regulations relevant to humans

Government policy: Governments in Southeast Asia have introduced industry-friendly policies to stimulate biomass power growth, such as the feed-in tariff policy and adder policy. In addition to policy level guidelines, project developers are given investment incentives, guaranteed minimum prices, power purchase agreements with the utility grid, exemptions pertaining to the import of equipment and certain tax credits.

For instance, Thailand was an early mover in identifying the underlying opportunities and had formulated policies to encourage biomass projects through the Very Small Power Producers (VSPPs) scheme. The country has set an ambitious target to achieve 3.7 GW of biomass capacity by 2022 (Frost and Sullivan, 2012).

Currently, the country has an installed biomass capacity of 670 MW out of which nearly 240 MW is connected to the utility grid. With strong policy support and a conducive investment climate, several new industry participants have entered the country since 2010 to develop biomass power projects.

Thailand's Eleventh National Economic and Social Development Plan (2012-2016) states that "The issue of energy security is vital and requires that more clean energy be used and alternative energy sources be developed, leading to overall improvement in energy efficiency" (NESDB, 2011). Thailand and the King's plan is a philosophy of "Sufficiency Economy" which was stated in 1974 by the Thai king His Majesty King Bhumibol Adulyadej and is now firmly rooted in Thai government and society. The heart of this Philosophy is "human development" toward well-being based on sufficiency, moderation, reasonableness and resilience (NESDB, 2011).

State policy also has different policies and objectives in creating Thai energy security. These policies include the supply and use of energy resources as well as providing enough energy to meet demand at an affordable price. So, to lower the risk of an 'energy crisis', organizations must be prepared with backup power sources.

Agencies must also have policies for the intensive care, environmental quality and pollution control as well as policies which promote and create awareness of natural resources and the environment. There needs to be a wide range of other policies that the state determines necessary for strategic or policy goals, methods and movements.

Under the heading, 'Enhance food security and develop bio-energy at household and community levels', Thailand's Economic and Social Plan stated that communities and their citizens should plant trees in around their homes and in public areas. Farmers should utilize sustainable agriculture following the Philosophy of Sufficiency Economy. Information regarding agriculture and food production should be widely and continuously disseminated. Appropriate consumption behavior at individual and community levels and creation of production and consumption networks among nearby communities should be promoted. Application of the zero waste approach in agriculture should be encouraged by utilizing farm residues to produce renewable energy at the community level and infrastructure should be developed to systematically enhance food security for farmers and communities (NESDB, 2011).

Policies needed in order to achieve the policy objectives include factors such as being involved in research and development. This can be seen from the statistics which show that when investment R and D is implemented in developed countries such as North America that the margin on the cost of research and development is the highest in the world with 2.6% while Africa has the lowest proportion percentage with 0.4% (UNESCO, 2010).

Bhattacharyya (2007) stated that governments need to develop technology with the goal of reducing environmental problems, such as the development of the transport systems which reduces carbon emissions. Additionally, the government also needs supporting legislation which is driven by civil society groups in the community (Kolk and van den Buuse, 2012), or in other words, enable people to participate in the operation and legal oversight threats to the environment will have legal penalties and fines.

Others factors in investment, research and development and law is the monitoring and evaluation and to know the level of participation in the program evaluation as well as the results of operations achieved their objectives or not (Kangsarak, 2001), because monitoring is important to take into consideration comments/views, preferences and expectations/hope. This can influence the behavior of individuals in the various groups (Cohen and Uphoff, 1980).

Community participation: The term “community renewable energy” generally means locally owned, locally sited renewable energy (electricity and/or heat). In general, definitions of community energy or community renewable energy tend to include engagement or participation by the community that reaches beyond a simple investment or shareholding relation (CEC, 2010).

In the same Commission for Environmental Cooperation study (CEC, 2010), some of the economic, environmental and social benefits from a community renewable energy project are as follows:

- Creates jobs and additional money in the local economy
- Adds new technical skills to the local community
- Reduces the dependence on expensive fossil fuel imports
- Help reduce greenhouse emissions and pollution related illnesses
- Increases community awareness of energy use and impacts
- Helps lead to greater conservation and sustainable energy behavior
- May reduce the need for large scale hydro-projects
- Does not require large amounts of water
- Can help provide an opportunity for building and participating in local communities
- May build greater acceptance of new renewable energy technologies
- Offers skills training with work based in rural communities
- Creates long-term, high quality jobs and skills

A number of other North American studies have provided statistics on community benefits of renewable energy development for specific areas. Many of these have focused on the economic benefits and include a range of project size and ownership models (Flowers and Kelly, 2005).

Another author in the book ‘Small is Profitable’ (Lovins *et al.*, 2002), detailed 207 economic benefits to community-scale power while Welsh (2005) in the Iowa Policy Project demonstrated that smaller (20 MW or less) locally owned wind projects keep over five times as much money in the community as do larger wind projects owned by out-of-state companies.

The kinds of participation that warrant major concern are (1) Participation in decision making, (2) Participation in implementation, (3) Participation in benefits and (4) Participation in evaluation (Cohen and Uphoff, 1980). If they [the rural poor] are considered in such an aggregated mass, it is very difficult to assess their participation in any respect, since they are a large and heterogeneous group. Their being considered as a group is not, indeed, something they would themselves be likely to suggest. There are significant differences in occupation, location, land tenure status, sex, caste, religion or tribe which are related in different ways to their poverty (1980).

In a study conducted in Bangladesh, elected council members, both male and female, equally participate in planning development projects but participation of common people in the preparation stage of these same projects is negligible (Mohammad, 2010). Participation of community people in project planning is as low as 7% which rises to 24% during implementation stage. However, there is a pervasive feeling that development projects are generally non-participatory.

In addition, participation also has different levels which depends on the importance and purpose of their participation. Forms of participation are divided in many ways, such as a true involvement for citizens start to finish, including project activities allowing the use of available resources. Another but limited for of co-operation is the planned participation with no real intent to contribute to part of the project.

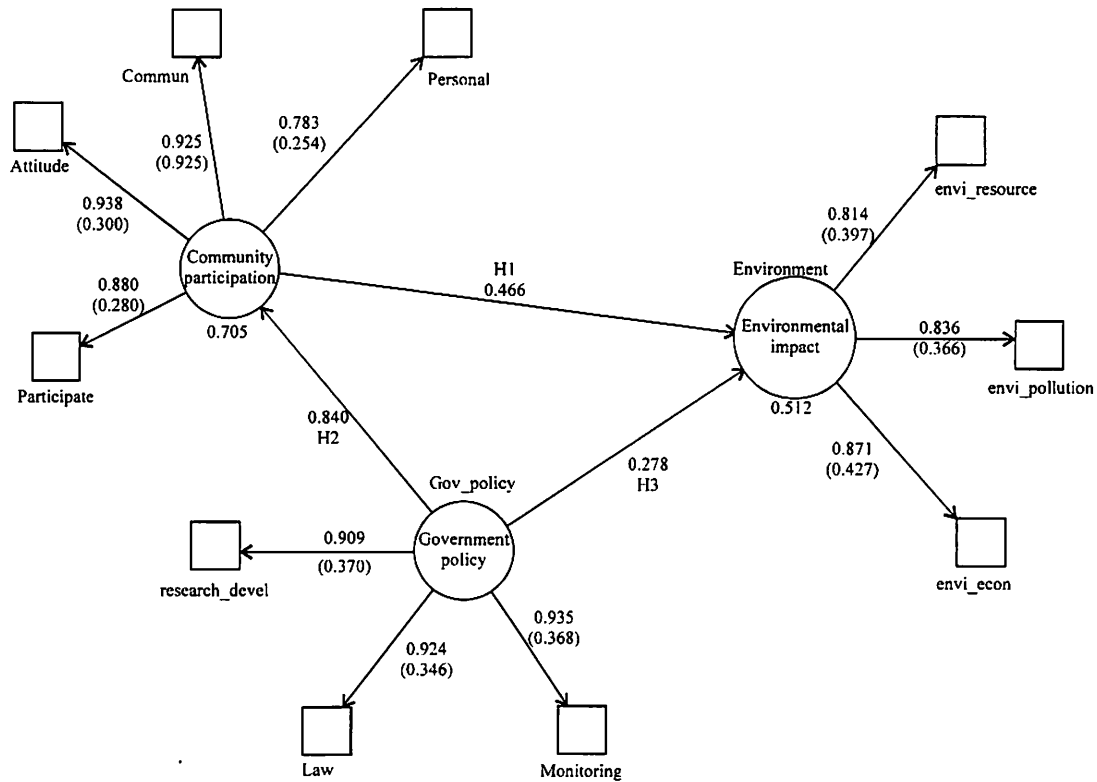


Fig. 6: Final model-analysis of factors that affect environmental impact on biomass energy

From the above conceptual review and development, the researchers have developed the following three hypotheses for this study on biomass energy (Fig. 6).

H1: Community participation influences environmental impact

H2: Government policy influences community participation

H3: Government policy influences environmental impact

METHODOLOGY

This study was conducted from a sample population of community members residing in areas near biomass power plants across Thailand using both quantitative and qualitative research.

Data collection: For this research, the measurement instrument or questionnaires utilized were prepared from the literature. To gauge both the content validity and reliability of the survey, 5 specialists in their respective fields were chosen to evaluate the consistency of the content and confirm it was valid for the purposes of the research. Additionally, the index of Item-Objective Congruence (IOC) developed by Rovinelli and Hambleton (1977) was employed to carry out the screening of questions. The IOC is a procedure used in test development for evaluating content validity at the item development stage. This measure is limited to the assessment of unidimensional items or items that measure specified composites of skills. The method prescribed by Rovinelli and Hambleton (1977) results in indices of item congruence in which experts rate the match between

an item and several constructs assuming that the item taps only one of the constructs which is unbeknownst to the experts. The research then proceeded to select items that with an IOC index higher than 0.5 which were considered acceptable.

Questionnaires were constructed to be a tool to measure concept definition and practice. The instrument or questionnaire used the 5-Point Likert Scale (Likert, 1972) as the measurement scale and the conceptual framework for determining the internal consistency measured by coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient. All values lower than 0.50 were eliminated from the measurement.

Dependent variable: Environmental impact analysis of the biomass power plant sector used a measurement instrument or questionnaires utilizing a 5-Point Likert Scale (Likert, 1972) and have been constructed with the scales developed enabling measurement of resources (envi_resource), water and pollution (envi_pollution) and economic, social and human factors (envi_econ) (McKendry, 2002; Gavrilesuca and Chisti, 2005; API, 2014).

Independent variables: Government policies analysis used a measurement instrument or questionnaires utilizing a 5-Point Likert Scale (Likert, 1972) and have been constructed with three aspects (Table 1) including R and D (research_devel), Legal (law) and Monitoring (monitoring). (Frost and Sullivan, 2012; NESDB, 2011; UNESCO, 2010; Bhattacharyya, 2007; Kolk and van den Buuse, 2012; Kangsanarak, 2001; Cohen and Uphoff, 1980).

Community participation analysis used a measurement instrument or questionnaires utilizing a 5-Point Likert Scale (Likert, 1972) and have been constructed with four aspects (Table 1) including Personal (personal), Community (commun), Attitude (attitude) and Participation (participate) (CEC, 2010; Flowers and Kelly, 2005; Lovins *et al.*, 2002; Welsh, 2005; Cohen and Uphoff, 1980; Mohammad, 2010).

RESEARCH ANALYSIS AND RESULTS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of Manifest Variable and Latent Variable and testing of research hypothesis exhibiting in structural model

Table 1: Statistic values presenting convergent validity of reflective scales of latent variables

Construct/item	Loading	AVE	t-stat
Community participation (participate)			
Personal factors (personal)	0.7832	0.781	22.1173
Community factors (commun)	0.9255		84.1485
Attitude (attitude)	0.9381		108.5072
Participation (participate)	0.8797		53.5740
Government policy (Gov_policy)			
R and D Research and Development (research_devel)	0.9086	0.851	65.9079
Legal (law)	0.9245		73.5503
Monitoring (monitoring)	0.9347		93.3154
Environmental impact (environment)			
Resource factors (envi_resource)	0.8137	0.706	31.6726
Waste and pollution factors (envi_pollution)	0.8358		32.9360
Economic, social and human factors (envi_econ)	0.8710		52.2450

analyzed by using the applications of PLS-Graph (Chin, 2001). According to the analysis result of scale validity and reliability, scale investigation was conducted using internal consistency measurement coefficient alpha (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient, whose range was found to be highly reliable.

In case of measure variables with reflective analysis, convergent validity has been conducted. Loading is used as consideration criteria and must be positive quantity and indicator loading has been more than 0.707 and all values have been statistically significant ($|t| \geq 1.96$) representing convergent validity of scales (Lauro and Vinzi, 2004; Henseler *et al.*, 2009; Piriyaikul and Wingwon (2010) and analysis results as shown in Table 1.

Government policy (Gov_policy) factors underlying the external variables influencing R and D (research_devel), Legal (law) and Monitoring (monitoring) with values loading from 0.707 and a significant level of confidence percentage 95 ($t\text{-stat} > 1.96$) which considers such factors highly reliable. It has a direct impact on environmental impact.

Community participation (Participate) factors underlying the external variables influencing Personal factors (personal), Community (commun), Attitude (attitude) and Participation (participate) with values loading from 0.707 and a significant level of confidence percentage 95 ($t\text{-stat} > 1.96$) which considers such factors highly reliable. It has a direct impact on environmental impact.

Environmental impact (Environment) factors underlying the external variables influencing Resources (envi_resource), Water and Pollution (envi_pollution) and Economic, social and human factors (envi_econ) with values loading from 0.707 and a significant level of confidence percentage 95 ($t\text{-stat} > 1.96$) which considers such factors highly reliable. It has a direct impact on Environmental Impact.

The above reflective model in Table 1 shows the discriminant validity of the internal latent variables and the correlation of variables. It also depicts the scale reliability which has been analyzed from Composite Reliability (CR) as well as the Average Variance Extracted (AVE) and R^2 . The CR value should not go below 0.60 and the AVE values should also drop below 0.50 and R^2 values should not be under 0.20 (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) quoted in Piriyaikul and Wingwon (2010).

Table 2 below shows the results of factor analysis affecting Biomass Power Environmental Impact. The data also shows the CR values are higher than 0.60, with all AEV values higher than 0.50 for all values and R^2 values higher than 0.20, representing the reliability of the measurement. It found that data sets in the \sqrt{AVE} have higher values than all of the corresponding values in the 'Cross Construct Correlation' in the same column, representing discriminant validity of the measure

Table 2: Confirmatory factor analysis (CFA) of the independent variables of government policy and community participation and their effects on the dependent variable, environmental impact

Construct	CR	R^2	AVE	Cross construct correlation		
				Community participation	Government policy	Environmental impact
Community participation	0.934	0.7055	0.781	0.884		
Government policy	0.945		0.851	0.840	0.922	
Environmental Impact	0.878	0.5124	0.706	0.700	0.670	0.837

CR: Composite reliability, R^2 : Square of the correlation, AVE: Average variance extracted. Statistical significance level is at 0.01 and diagonal figures mean \sqrt{AVE}

Table 3: Research hypotheses test results

Hypotheses	Coef.	t-test	Results
H1: Community participation has a direct and positive influence on environmental impact	0.466	4.7589	Supported
H2: Government policy has a direct and positive influence on community participation	0.840	39.9882	Supported
H3: Government policy has a direct and positive influence on environmental impact	0.278	2.8144	Supported

Coefficient refers to the Beta (β). t-stat is the t-value. 95% confidence level

in each construct and with a greater value than 0.50 of AVE as shown in Table 2. The samples were analyzed to answer the research hypotheses criteria in the three assumptions presented in Table 3.

Furthermore, the structural analysis model framework was used to research the t-test coefficients and their relationship of each path of the t-test hypothesis with significance greater than 1.96. This explains the results obtained from analysis as shown in Table 1 and 2 as well as the test results presented in Table 3.

CONCLUSION

Renewable energy is more than a passing fad or trend and is making deep inroads into both the global energy grid and Thailand's. With the stated objective since 1974 of Thailand's king for a "Sufficiency Economy" that has a "human development" component towards a well-being based on sufficiency, moderation, reasonableness and resilience, it is even more imperative to Thailand quickly and effectively move towards renewable energy including biomass.

Electrical utilities are essential for the development of Thailand and at current demand rates; the need is increasing yearly with power generation the assigned duty of the government to meet the demands and needs of its consumers and citizens. As has been shown however from 'A structural equation model of the environmental impact factors from Thailand's Biomass Power Plant Industry', although biomass is a viable and effective option in the renewable mix, it does have hurdles to overcome including technology, environmental and public perception amongst the Thai consumer market.

Renewable energy and especially biomass is a community effort with a much localized mix of problems and benefits. Many of the problems can be overcome with education and transparency but it will take time as most are fearful of what is new and what they don't understand but the problem of population growth along with soaring energy demands will not disappear.

So it therefore becomes critical that Thailand finds energy sources that are sustainable for the long haul and find a mix of renewable energy source for the long run. Fortunately, the research found that Thailand has ready sources for renewable energy because it has huge amounts of agricultural waste due to Thailand still being primarily an agriculture country. For small communities with rural populations, small biomass power plants could be a suitable solution for the localized power grid.

The environmental impact factors from Thailand's Biomass Power Plant industry using agricultural waste materials is small, whether it be from dust, noise or cooling water runoff. But the actual perceived impact on the environment or the socio-economic effects is really more dependent on the public perception of government policy and the involvement of the community. The results of this research show that guidance and education of those involved in the development of biomass power plants is an important component of the overall success or failure of a community project.

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Factors Affecting Free Labor Movement Amongst Rubber Industry Workers Within the ASEAN Economic Community-AEC

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ABSTRACT

The purpose of this study was to determine the variables of the 'factors affecting free labor movement amongst rubber industry workers within the ASEAN economic community-AEC'. As a global leader representing nearly 40% of the world's total rubber exports, Thailand has continued to expand both its areas of cultivation and the need for labor across the industry. The world's demand for rubber is increasing steadily with the estimation of demand to be 31.7 million tons in 2020 compared to 11 million tons in 2011 (AEC,n.d.). The rubber industry in Thailand is of economic and social importance because of its production value, the revenues from export and the employment in this sector. About six million people are involved in rubber plantations (TRA, 2007), whereas about 0.6 million people work in rubber industries. As domestic labor becomes more and more difficult to obtain due to the increases in both cultivation and production, migrant workers are often necessary to employ to meet the shortfalls within the Thai rubber sector. As such, the lack of skilled labor results in higher production costs and creates a competitive disadvantage in the global arena. Therefore, government labor policy and workers' quality of life are important factor that will contribute to reducing the shortage of labor in the rubber industry. Additionally, the rubber industry needs to develop new knowledge which leads to innovation and increases the Thai rubber industry competitiveness.

Key words: Labor movement, industrial relations, government labor policy, life quality

INTRODUCTION

The world's natural rubber production continues to grow with Thailand being the world's largest producer and exporter of natural rubber, accounting for about one-third of world supply. The country's rubber production has more than doubled from 1.6-3.8 million metric tons in the past two decades, about 90% of which is for export (Chomchuen, 2013).

Today, Asia is the main source of natural rubber, accounting for about 94% of output in 2005. The three largest producing countries, Thailand, Indonesia and Malaysia, together account for around 72% of all natural rubber production (Listiyorini, 2010). Additionally, Vietnam over the past 5 years has shown a steady increase in production and in 2011 had attained a 7% market share.

In parts of Thailand which is the main global producer of rubber, smaller, family owned rubber growers planted more than 90% of the retail market with a steadily rising output (Fig. 1).

In recent years, Thailand's rubber production was about 3.52 million tons or about 34% of global output. Research indicates that Thailand's per acre yield over the past 5 years has continued to decline from the previous period.

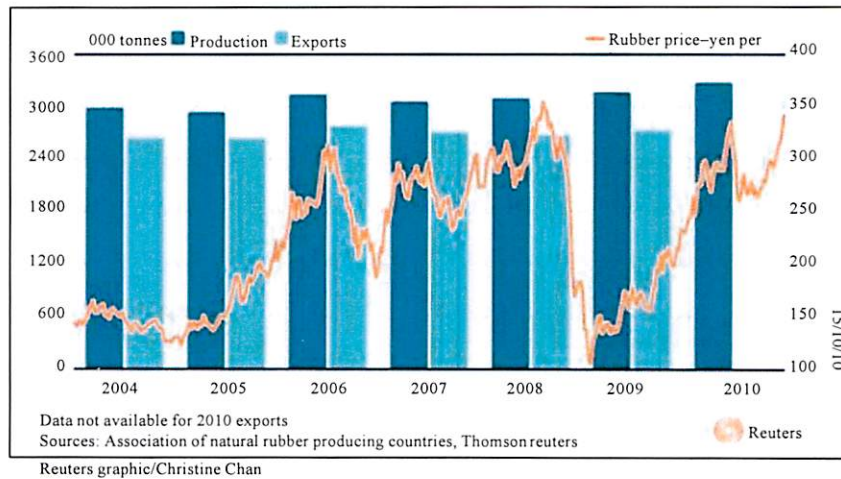


Fig. 1: Thailand's natural rubber output/exports

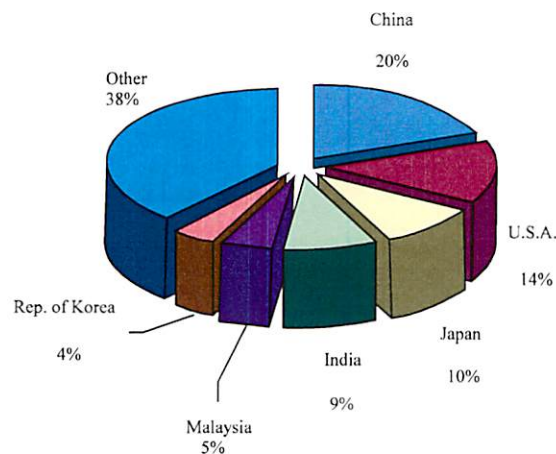


Fig. 2: Global rubber consumption

However, annual global rubber production is estimated at 11.0 million tons, with about 70% being consumed by five main countries/regions which include China, India, U.S., Japan and Europe (Fig. 2). And according to 2013 year of end reports from China, Chinese imports for rubber hit 2.47 million tonnes which was a 13.5% rise from 2.18 million in 2012. China which continues to be the world's largest user of rubber, imported a record 350,000 tonnes of the material in December, a nearly 67% year-on-year surge as traders snapped up shipments from Thailand after Thailand temporarily removed a rubber export tax.

Thailand which is also a major global tire manufacturer, had a yield of approximately 3.86 million tons in 2013 with 13% being used for domestic production while 83% was allocated to export processing (Fig. 1 and 2). Gross revenue from exports of rubber and rubber products reached more than six billion baht per year (\$USD 182 million).

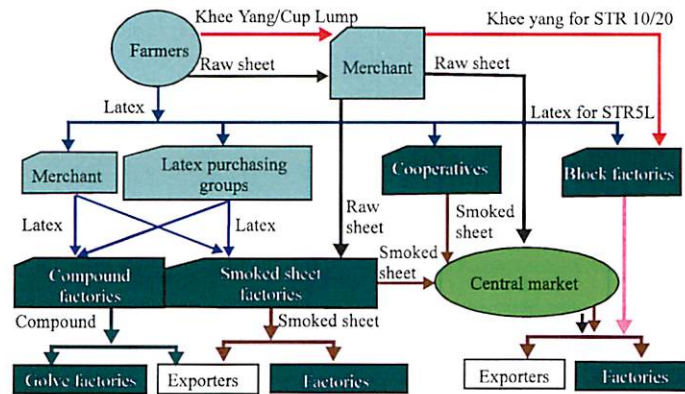


Fig. 3: Rubber value Chain in Thailand's lower South, Department of Economics, Thammasat University, Thailand

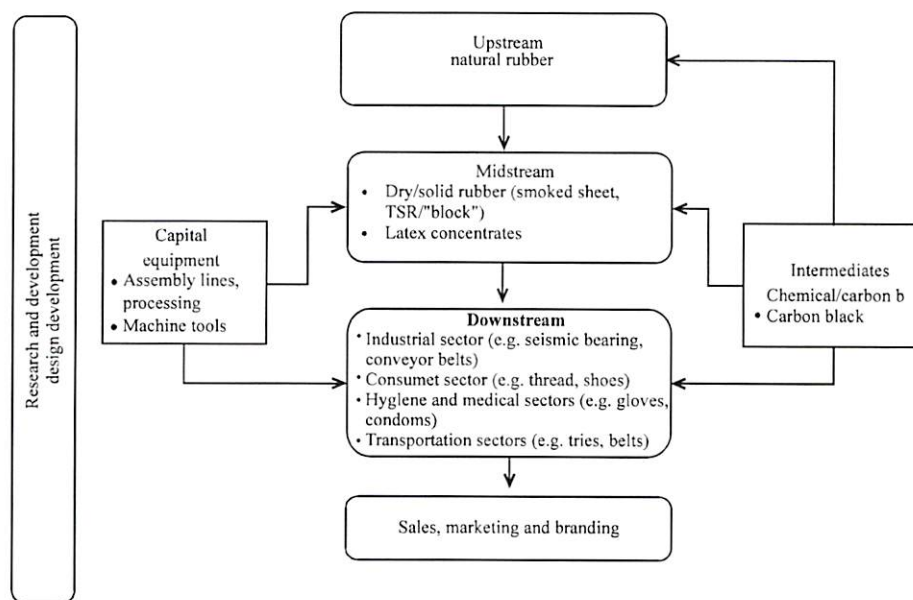


Fig. 4: Thailand's natural rubber value Chain

In Thailand, rubber is grown mostly near the south (Fig. 3) near the equator in two main provinces, Surat followed by Songkhla. This region has over 1.52 million hectares of rubber plantations and is the location rubber processing industries.

Thailand's upstream rubber industry includes the production of raw natural, while mid-stream to downstream includes: Rubber latex products by middle class entrepreneurs as well as raw rubber, ribbed smoked sheet, Technically Specified Rubber-TSR, latex or Concentrated Latex 60% DRC and crepe rubber which is used as raw material for the manufacturing industry (Fig. 4).

Crops
The top 5 Rubber producing countries



	Country	Production 2010 (m t)	Production 2014 (m t)	Change (%)
1	Thailand	3,166,910	3,007,612	+ 5.296
2	Indonesia	2,921,872	2,065,820	+ 41.439
3	Malaysia	1,072,400	1,168,700	-8.24
4	India	819,000	749,665	+ 9.249
5	Vietnam	659,600	419,000	+57.422

Sources: FAOSTAT data, 2010 (last accessed by top 5 of anything: Feb 2011)

List notes: Production is for the most current available year, 2010, in metric tonnes. Rubber defined in this list is natural rubber that is harvested from trees. Last update April, 2012

Fig. 5: Top 5 rubber producing countries

In the past, Thailand has been expanding its cultivation especially, rubber. Yields are increasing and raw rubber processing plants to accommodate most existing output have been built located on the rubber plantations, mostly in southern and eastern Thailand (Sri Varin and Kongjarean, 2008).

Thailand is among the major exporters in the world rubber market which enjoys successful exports to major export markets namely China, Japan and Malaysia (Fig. 5). Today, Thailand is world's largest rubber exporter which accounted for 40% world's total rubber exports (AEC, n.d.). ASEAN countries cover the largest area of rubber cultivation, production and export, with 60% of the world's natural rubber cultivation area been possessed by Thailand, Indonesia and Malaysia. In consistent with the land usage, the three countries together produce 7.27 million tons of natural rubber, accounting for 66% of the world production (10.95 million tons). Vietnam is another potential rubber producer with annual production of 873,000 tons. If including Vietnam, the four core rubber producers in ASEAN contribute over 74% of the world natural rubber.

For entry into the Asian Economic Community (AEC) in 2015, NESDB (2012) identified the importance of the ASEAN economic community which is to provide the population of the member countries increased trade, better communications with easier access and ability to compete with other global trade blocs and regions. A single market and production base which is focused on the movement of goods, services, investment, capital and skilled labor between them freely is also needed.

The free movement of skilled labor is contained in the preliminary agreement; 'Mutual Recognition Arrangement-MRA's in which seven major professional fields focused on property, workforce and talent is detailed including engineering services, nursing, architectural services, surveying qualifications, medical practitioners, dental practitioners and accountancy services (Table 1) which will start in 2015.

Table 1: Completion of the signing of MRA agreement in 7 professional field

Matural recognition arrangement	Year of signing
Engineering services	2005
Nursing services	2006
Architectural servives	2007
Medical practitioners	2008
Dental practitioners	2008
Accountancy services	2008

Officials foresee Thailand becoming a tourist center and center for agricultural production. Manufacturing industries as well as service industries such as health services, tourism, transport and logistics will expand as well.

ASEAN integration will lead to better cooperation amongst countries and provide significant impetus in five sectors, including goods, services, investment, capital and skilled labor for the liberalization of labor mobility will take place fully in the year 2015. Labor movement agreements are focused on professional and specialized labor or other skills described in the ASEAN mutual recognition agreement specification or standard in each profession.

However, the impact of opening trade in services liberalization does not cause a positive impact on workers in the industry. It could cause instability issues in the occupation of unskilled labor and increase the income and welfare gap between workers with different skill levels, as well between workers in different types of industries. For workers, the risk of being unemployed is rising and it is important to come up with certain programs to assist workers in acquiring new jobs. Unskilled workers over 40 years of age would have the greatest difficulty in maintaining their existing jobs and in searching for new ones as well as unskilled workers with minimum education (Teerana *et al.*, 2001).

This is consistent with study by Sarawooth Paithoonpong, Academic Dean of the TDRI (2013), who argues that the problem of the labor market in Thailand is that it is imbalanced in market structure, both lower and upper levels, both in terms of quantity and quality, that is, a shortage of skilled labor both primary and secondary. However, even though there is a surplus in labor at higher levels, these individuals do not meet the higher, ASEAN standards for quality and performance but overtime it is hoped that the ASEAN community can help lift up this group to a higher performance and quality standard.

The rubber industry experiences the same problems as elsewhere in Thailand and as a global leader in production and processing of rubber must have a competitive advantage on the world stage. The potential for upstream to downstream production and processing is excellent as the amount of average trade with ASEAN countries between 2001-2010 showed an average trade value of 53, 656.26 billion baht, export value of 48, 680.68 billion baht and a trade surplus of 43, 705.07 billion baht.

The Revealed Comparative Advantage-RCA is up to 5.47 which indicates the likelihood of opening agreements a Free Trade Agreement-FTA because Thailand has an abundance of raw materials and potential entrepreneurs, companies, including the world's largest tire manufacturers who are based in the country.

In a report dated 2006, the rubber industry had a worker shortage of 89,150 and was expected to increase to 97,320 by the year 2009. Additionally, the industry's need for science and technology professionals has increased on the average to 268 individuals per year.

To increase the qualitative importance of manpower, the rubber industry needs to create value-added services for its industrial workers in the processing end (DoSD, 2005). Due to the increasing demand for workers, the rubber industry has more and more depended on migrant workers. Consequently, the migrant workers have higher labor costs due to their being moved frequently resulting a lack of skilled labor resulting in higher production costs and the loss of competitive disadvantage.

Conceptual development

Labor mobility: Although, the 2015 ASEAN integration date, with its promises of free labor movement sound good, the reality is it will be much harder to accomplish then envisioned. Thai workers could benefit but they need to learn how to take advantage of it (TDRI, 2013).

Studies by Shatragom (1980) found that labor mobility between countries is driven by domestic workers moving out of the country and the factors which attract these workers to other foreign countries includes:

- **Unemployment:** When unemployment is high, workers can't find jobs within their own country. Additionally, when underemployment exists, there is a labor surplus which results in workers being unable to find positions that matches their abilities. Both contribute to workers searching elsewhere outside their country
- **Lower wages compared to abroad:** Another reason for employment migration is foreign countries often pay higher wages for the same service provided
- **Lack of incentives for career advancement:** When workers have gained experience and expertise within their occupation or profession and there appears to be no opportunity for professional advancement, often times workers will look outside their own country
- **Unsuitable human resource policies:** Manpower planning policies are often times not appropriate and not balanced for the jobs required. Underdeveloped countries do not have the manpower development planning and lack a better balance between labor personnel, causing some workers to become excess which contributes again to workers seeking out foreign employment opportunities
- **Social and political factors:** Some workers seek work abroad due to political influences and social prejudice

Dechphaisarn (2004) studied "The Impact of Laotian Migrant workers, Mukdahan Province" and found that the push factors were poorness, low wages and high rates of unemployment forcing the moving out of the country. And the pull factors were high wages, career progress opportunities and the shortage of workforce in Thailand's Mukdahan Province. In the migration process, 60% of the Lao labor migrates by their own will. Most of them had origin in Khanthaburi District in Laos and travelled for 1-2 two h for a non-stop journey and most them came into Mukdahan province by escaping across the Mekong River. The Lao laborers were picked up by family members in Thailand not going through immigration of any form effectively becoming illegal workers.

The economic impact on Mukdahan province was the reduction of unemployment, more variety in the selection of workers by employers and the reduction of the production cost due to the low wages of Lao illegal laborers.

This is consistent with Yodtuga (2003) study 'Labor movement in Latex industry, a case study in Sadao, Songkhla Province' which showed that most of the laborers working in the latex industry were male, 26-35 years old, married, Buddhist and had completed high school. Most lived in private accommodations which were subsidized by the plant. Most laborers had no savings or loans and if additional funds were needed, borrowed the money. Most facilities had TV however. The main factors that influenced labor movement were dependent on income, the environment and work safety.

In addition, the study found that the workers attitudes to changing work were positive because of higher income than their previous Laotian employer. The impact of labor movements is both positive and negative. For the industry, there are problems in the cost of production, opportunities cost, time and efficiency in planning production. But laborers are positive due to the higher income and better social welfare conditions.

Thanapauge (2012) study of the "View of new generation labors in Northeast of Thailand towards migrating to working aboard, in case of Khon Kaen Province" found that the majority were born in the province, were single males, with a mean age of 19.84 having only a secondary school education. Those who lived in Khon Kaen city had a average family income per month of 7425.17 THB. Each family consisted of an average of 4.76 people. Family workers averaged 2.18 people. Of the sample group, 61.90% want to move abroad, especially Taiwan and Korea.

Factors influencing the decision to migrate abroad for work included. Sex, place of birth, current residence, occupation of family, number of workers in family, a member of the family who has worked abroad and a relative who is working abroad. The main reason for the desire to work abroad was higher wages and expectations of gaining experience and new knowledge.

Government labor policies: Now in Thailand, there is an increased need for workers in higher quantities, in particular, workers in the agricultural sector and lower levels. During the past 0 years, Thailand has needed foreign workers in a higher proportion to the labor force to replace the working class positions such as maids security, construction, etc. which includes over 3 million people (DoE, 2010). Both legitimate and illegal foreign has increased in Thailand in all sectors of the economy.

Since 2004, the Thai government cabinet has to approve resolutions for foreign workers throughout the system that organizes workers and registers them for control to meet the demand for foreign laborers. Thailand has also opened negotiations with these bordering countries of foreign workers to help with the management and standards. Additionally, Burmese, Lao and Cambodian aliens need to change their statue from illegal to legal (DoE, 2007).

Thailand has laws relating to the management of foreign workers, including several editions of the, (1) Immigration act (2009), (2) Working of azlien act (2008), (3) The foreign business act, (4) Foreign business act, (5) Define career and (6) Promotion professional prohibition act and for Investment. Industrial Estate Authority of Thailand Act Special Act for export (EPZX) and Trafficking Act (Sciortino and Punpuing, 2009).

The management of labor laws related to patents. Agencies and officials have to make a lot involved. Thereby affecting the management, law enforcement and legal practice as to effectively manage the work of foreigners working in Thailand is the mission of the Employment Department under the alien act of 2008 with operations in both the central and regional authorities.

Working Group approval Of aliens in system and service visas and work permits: One stop service) Employment Office Bangkok Area Division, 1-12 importing foreign workers to organize. The units operate in regional Including 75 provinces Provincial Employment Office (Moonstan *et al.*, 2010).

Labor demand: Thailand has the ability to compete at the international level and one of the key factors is Thailand's need to have a quality labor force with highly skilled workers with high productivity, if it wants to rise to its production capacity. But currently labor productivity is not in a sufficient condition in Thailand due the lack of quality assurance labor mobility in the other cannot use the full potential and/or labor market with adaptive mechanisms of wage rates that are unfair, unreasonable in view of the employer and the employee.

Most businesses in the supply of labor find it difficult to provide overall labor resulting in labor shortages. Workers with basic or lower secondary education is high, especially in large business sectors including textiles/apparel, leather, electronics and electrical, food and beverage, rubber and plastic products and the construction industry.

Research by Lathapipat and Chucherd (2013) in the study "Labor market functioning and Thailand's competitiveness" that the Thai labor market had undergone immense structural change during the economic boom decade prior to the 1997 economic crisis. Growth-enhancing structural transformation contributed greatly to high rates of labor productivity and economic growth which resulted in rapidly rising real wage rates during this period. Post-crisis, however, the pace of growth-enhancing structural change has slowed down dramatically and appears to be on a declining trend over the last fifteen years despite an increasingly-educated workforce. During the last five years the industrial sector even posted a net outflow of workers from this high value-added sector to less productive activities. This labor misallocation has contributed importantly to the slow growth in aggregate labor productivity of 5.2% observed over the 2006-2011 period.

Although, workers are better educated in Thailand, Thailand between 2006-2012 witnessed only a 5% gain in labor productivity but the resulting overall wage increase was small. This raises the question to the value of investing in the education of Thailand, both by the government and by student's families. And further quantitative analysis on the adaptation of the labor market in three major events included: (1) 'Asian Economic Crisis' of 1997, (2) The 2009 global economic crisis and its effect on Thailand and (3) During 2011 severe Thai floods.

The results indicated that Thailand has a market mechanism to allocate excess labor supply in order to support external events as they take effect. But the other side of the labor market mechanism is that the Thai labor market is inefficient at reallocating workers to their most productive uses. Misallocation has been growing fast particularly the high-educated labors as seen in Fig. 6. The increasing share of informal employment for highly-educated workers cannot be good for the economy. This concern takes place due partly to a change in Thai workers' attitudes towards informal employment as well as a consequence of skill mismatch in formal labor market.

TDRI (2013) conducted a survey on the social attitudes and opinions and the results indicated that one way to escape the "Middle Income Trap" was caused by the inability to create innovative and advanced manufacturing technologies to add value to local products.

And as a way to raise wages or income of labor to better the lives of people in the country. Deflection employment on competitive wages to the development of quality products. Restructuring production to create a competitive advantage and to raise labor income to live comfortably. The release trapped middle-income countries, creating a mechanism to create both incentives and pressures to use inputs more advanced technology and want to hire skilled labor rises. Mechanisms of pressure through a mechanism in which the factor price of labor is that wages are higher. Forcing employers have struggled to find ways to improve efficiency.

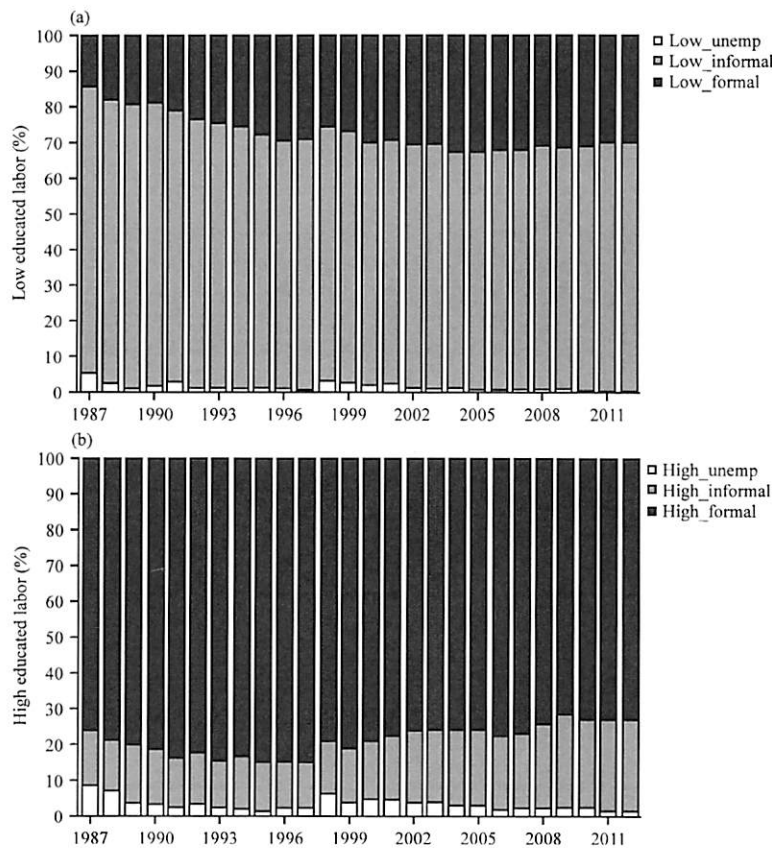


Fig. 6(a-b): Compositions of Thai labor force by educational group, (a) Low-educated labor force % (b) High-education labor force % NSO and authro' calculation

Labor relations: Labor practices is important between employers and employees in the workplace which affects production and services at work and the well-being of employees as well as the economic and social stability of the country.

Research by Thosuwonchinda (2011) in the study "Sound labour relations in Thailand" found that to promote the excellence in the department of labor protection and welfare, a query was used. By using query is simply the form of labor only. The lack of depth in the quality of labor relations. Especially with regard to the trust between employer and employee. Disclosure of information to each the employee to the employee consultation and participation in the administration at all levels. It is necessary to study the quality of the contest to make labor relations and labor welfare was recognized as an outstanding example and a real good access to labor.

Kimura (1992) "The protection of migrant workers, A case study of international law and Japanese law", research aims to study legal problems concerning the protection of migrant workers in Japan and to offer suggestions to solve them. This research on international law has found that Japan is internationally obliged to respect the principle of equal treatment in formulating a policy toward migrant workers including illegal migrant workers. The study of Japanese law has also revealed that migrant workers in Japan whether legal or illegal should be protected in accordance with the labour protection law to the same extent as those of Japanese nationality. However, after

scrutinizing Japanese law in detail it has been found that there still exist legal problems concerning the protection of migrant workers. The problems are as follows: (1) Problems concerning the mafia dealing with traffic in women, (2) Problems which stem from the obligation of public officers to inform the Immigration Bureau about the existence of illegal migrant workers, (3) Legal problems concerning trainees and (4) Problems which arise from deporting illegal migrant workers. In the opinion of the author, these problems are inconsistent with the aims of international law and Japanese law. Reforms are required in order to maintain legal justice in society.

Kittijaros (2001) studied the protection of foreign workers legally in Thailand with "Protection of legal foreign migrant workers in Thailand, case study of international labour standards and Thai Law" found that the law in Thailand in connection with the protection of the rights of foreign workers, was mostly consistent with the principles of non-discrimination against foreign workers and met international labor standards but was different in that they had only limited rights to land ownership which remains the only discrimination between Thailand and foreign labor migrants. Another principle of international labor standards is that if countries are Parties to Convention No. 97 it will contribute to foreign workers' having better labor protection due to them being a member of the International Labor Organization.

Vepavee (2000) studied "Quality of working life and the migration of labor". This study aimed to construct a Quality of Working Life Index (QWLI) at provincial levels and analyzed the influence of the quality of working life in various aspects together with other factors in order to determine its effects on labor migration.

The methodology to construct the QWLI followed the human development Index or HDI concept of UNDP. QWLI was divided into five dimensions comprising benefits from work, working conditions, labor union participation, work security and peaceful workplaces.

The results indicated that employees in most provinces did not have a high level of working life quality. In general, employees in most provinces had a medium level of benefits from work and working conditions. In addition, most employees had high level of work security and peaceful workplaces but they had a low level of labor union membership.

With respect to factors affecting net migration of working age population by using multiple regression analysis it was found that all 20 independent variables could explain the variation in the net migration rate of working age population (66.6%).

It was apparent that the working age population tended to in-migrate to the provinces with high values of average wage of employees, rate of labor union membership, rate of employees distribution, dependency ratio and level of urban population. It was found that the working age populations tended to out migrate from the provinces with a high value of occupational injury rate and the provinces with a high percentage of employed persons in agricultural sector.

In determining factors affecting out-migration of workers by using logistic regression analysis, all independent variables could explain variation of labor migration at 79.62%. When the different levels of quality of working life were taken into consideration with other structural and individual factors, they were shown to influence the out-migration of workers. The construction of a QWLI is the starting point of index development.

The ministry of labor and social welfare should recognize the significance of developing more indices to cover policy functions, planning and development strategies. The QWLI should be used by all related agencies in order to make the data comparable. The indices, questions and methodologies of information system development should be consistent with the standardized indices as shown in this study. The index construction should be continually assessed in order to be able to observe the change of trend in the long term together with the index development.

In addition, this study was confined to data collected within two years during the years 1996-1997. Some variables may not exert influences on labor migration because the period of study was too short. Future studies should be done on migrants for a period of five years because this length of time is sufficient to examine the changing quality of working life and structural factors on socioeconomic structures.

Methodology: The format of the survey population or unit of analysis is lower and middle level managers in Thai rubber businesses.

Data collection: "Quantitative research" will be conducted with stratified sampling by dividing the sample according to lower and middle level managers in Thai rubber businesses.

For this research, the measurement instrument or questionnaires utilized will be prepared from the literature. A seven-point rating scale will be employed for a post-study survey. The draft questionnaire will be created with an undetermined number of items which will be later checked for their content validity by five experts in their respective fields based on the Item-Objective Congruence (IOC) Index. The items with an IOC index higher than 0.5 will be considered acceptable. In order to test the proper reliability of the questionnaire, the questionnaire will be distributed to real estate foreign holders and calculated for proper reliability value by using Cronbach's Coefficient Alpha.

"Qualitative research" will be collected from information from the executives of large international organizations and executives from Thailand's Investment Promotion Agency in order to confirm the model of quantitative research with a sample of 10 executives selected for sampling using non-probability sampling using random sampling (purposive sampling).

Questionnaire design: For this research, the measurement instrument or questionnaires to be utilized will be prepared from the literature. Quality and content will be monitored with tools used in the research and as a measurement of quality. Both content validity and reliability will be assured by 5 experts in their respective fields with an evaluation index consistent with the content and the purpose of the research (index of Item-Objective Congruence (IOC) to carry out screening question specifically dealing with an IOC higher than 0.5 only. The selected items will be dealt with using an IOC higher than 0.5. Questions will be rated by the use of the likert rating scale with each class of measurements using a 7 unit scale for measuring internal consistency with coefficient (α -coefficient) of Akron BAC (Cronbach) to calculated for the average value of the correlation coefficient.

Measurements

Dependent variable: "Labor free movement analysis" will be used as a measurement instrument or questionnaire utilizing a 7-point likert scale (Likert, 1972). Taiwuth (1999), Yodsan (2005), Waralyam (2002), Suwanprapa (2004) and Thanapauge (2012).

Independent variables

Government labor policy: Analysis will be used as a measurement instrument or questionnaire utilizing a 7-point likert scale (Likert, 1972). Waralyam, (2002), Tanin (2003) and Thanapauge (2012).

Labor analysis will be used as a measurement instrument or questionnaire utilizing a 7-point likert scale (Likert, 1972; Tanin, 2003; Yongyuan, 2001; Vepavee, 2000; Dechphaisarn, 2004; Thosuwonchinda, 2011).

Labor demand analysis will be used as a measurement instrument or questionnaire utilizing a 7-Point Likert Scale (Likert, 1972; Tangchonlatip, 2005; Kittijaros, 2001).

CONCLUSION

Workers are vital to the economic system of Thailand. In Thailand today there is not enough workers for the agriculture and industrial sectors. There is also the issue of labor mobility and foreign workers who come to work in Thailand. For everyone involved, from managers to government, if there is not good planning and skill development, there will be severe labor shortages in the future.

The government expanded the scope of the protection of labor laws to protect workers in the agricultural sector so they would receive wages and benefits at the same standard as others. This also protected the industry from larger losses in the labor pool by reducing the number of workers seeking better employment opportunities in industry and urban areas. Employers need to be better ware and informed about the welfare of their workers and pay them wages as required by law. Employers must also listen to the feedback from employees and provide or improve their welfare which will contribute to the organization's wellbeing and longevity.

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EXAMINING THE RELATIONSHIPS BETWEEN SERVICE QUALITY, PERCEIVED VALUE, CUSTOMER SATISFACTION AND PURCHASE INTENTIONS: A MARKETING STUDY OF BANGKOK'S METROPOLITAN RAPID TRANSIT SYSTEM, THAILAND.

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Abstract:

Success of public transport service marketers is dependent on how they satisfy their customers by delivering value through quality services. In order to understand this phenomena, this study aims to investigate the effect of relationships between service quality, customer satisfaction, perceived value and customer purchase intentions in Bangkok's Metropolitan Rapid Transit (MRT) system. A convenience sampling technique was used to collect the data by distributing the questionnaires to the passengers at various MRT stations, out of which 400 passengers returned the questionnaires. Partial Least Square method of structural equation modelling (PLS - SEM) was used to analyze the collected data, assess the model and test the hypotheses. All the hypotheses were proven and the findings confirm that service quality significantly influences passenger's perceived value. Both perceived service quality and perceived value significantly influence customer satisfaction and all of these significantly influence customer's purchase intentions.

Keywords: Service Quality, Perceived Value, Customer Satisfaction, Purchase Intentions, Bangkok MRT.

INTRODUCTION

Access to metro or any rail based transport system, including rapid elevated and underground transport, has become a burning issue for large cities as they aspire to shape the future with the use and implementation of efficient mass transport systems (Prasertsubpakij and Nitivattananon, 2012). These transport systems are usually optimized for maximum passenger volume, in most cases without sacrificing too much comfort and luggage space, though they seldom have all the amenities of long-distance trains (Waris, Yacob, Husin and Mamat, 2010). Development of these transport systems incorporates urban transportation policy and planning of cities to propagate sharing of alternative modes and to diminish car dependency and deal with the issues of traffic congestion (Meyer and Miller, 2000). According to a report published by British Broadcasting Corporation (BBC), Bangkok, Thailand was ranked number 1 in the list of most congested global cities with terrible traffic jams (www.bbc.co.uk, 2012). It is apparent that Bangkok's traffic congestion has reached monumental levels that necessitate the government and planning officials accelerating their problem solving to increase Bangkok's public transportation service systems. Consequently, four types of land transportation systems are operational in Bangkok including Buses (Bus Mass Transit Authority), Trains (State Railway of Thailand), Skytrain (The Bangkok Mass Transit System) and Mass Rapid Transport (MRT Subway System). Amongst these four types, Bangkok's newest Metropolitan Rapid Transit Subway (MRT) has gained most popularity (Bengston, 2006). The MRT was officially launched in 2004 in the Central Business District (CBD) of Bangkok, which includes downtown areas of Siam, Silom, Sathorn and Sukhumvit Road (Prasertsubpakij and Nitivattananon, 2012) to facilitate commuters working/residing or coming to Bangkok as they can travel to the city without being caught in traffic congestion. It has attracted a significant number of passengers in the transportation market. According to recent statistics Bangkok's MRT serves more than 240,000 passengers daily along 27 Kilometres (KM) of underground track (Bangkok Metro Public Corporation Annual Report, 2012).

Nowadays the success of a public transport system depends on the number of passengers which the system is able to attract and retain. With the increase in the number of passengers using MRT, it is expected that Bangkok's premier transportation system can benefit from it by improving its sales and performance owing to higher average trips per

day. For this reason, improving the quality and efficiency of services becomes an issue of maximum importance because it is known that an improvement in the level of quality of the service leads to a higher satisfaction of the passengers and to an increase of the use of the system (Ona, Ona, Eboli and Mazzulla, 2013). Moreover, congestion in urban areas and its immediate and wider consequences on the climate are pushing central and local governments to instigate sustainable transport policies that require an ever more personalized attention to the desires of the customer, to know and quantify the most influential variables on their intentions and decisions to travel by these transport systems (dell'Olio, Ibeas and Cecin, 2011).

Few scholars have studied the advantages of developing and maintaining customer loyalty within public transport systems. For instance, Ona et al., (2013) stated that service marketers can improve their profitability by decreasing their costs through loyal customers. Customer loyalty may also result in increased frequency of system usage (Choocharukul and Sriroongvikrai, 2013). It has also been observed that loyal customers usually engage in positive behaviors such as word-of-mouth promotion which result in attraction of new customers in addition to a positive public image (Ladhari, 2009). Therefore, many public transportation service marketers are now focusing on developing customer loyalty by identifying its determinants (Walls et al., 2011).

Service quality has been suggested as a means to develop customer loyalty (Parasuraman et al. 1988; Prentice, 2013; Ryu and Han, 2010). Advantages of superior service quality in augmenting market share and profits have been documented in the literature (Tarn, 1999). Studies have been conducted showing the effects of service quality on customers' loyalty and behavioral intentions (Prentice, 2013; Zeithaml et al. 1996). Additionally, another most discussed determinant of customer loyalty in services marketing literature is customer satisfaction (Zaibaf et al., 2013), whose significance is attributed to its ability in predicting post-purchase behavior. It has been found to be a significant determinant of repeat sales, word-of-mouth and customer loyalty across various industries (Ladhari, 2009; Ryu et al., 2012). However, in recent years, there is evidence suggesting that perceived service quality and customer satisfaction are not the only determinants of customer loyalty (Han and Ryu, 2009). Perceived value is also posited to be highly associated with service quality and customer satisfaction in developing customer loyalty. Perceived

value is conceptualized as a trade-off between perceived benefits relative to perceived sacrifices (Monroe, 1990). Parasuraman et al. (1994) stated that customer satisfaction is based on customer's evaluations of service quality and perceived value which may significantly influence his/her post-purchase behavior (Hu et al., 2009).

Many of the studies focusing on service quality, customer satisfaction, perceived value and loyalty have examined various issues ranging from theoretical measurement of the determinants of service quality to interrelationships of these variables across different industries (Choocharukul and Sriroongvikrai, 2013). Despite of the indications that service quality, customer satisfaction and perceived value are essential components in the formation of customer loyalty, support for the interrelationships of these important variables in the context of Bangkok's Public transport specifically Bangkok's Metropolitan Rapid Transit System (MRT) is scant. Therefore, the primary objective of this study is to investigate the relationships between service quality, customer satisfaction, perceived value and customer purchase intentions across Bangkok's MRT system. This study aims to enhance our understanding of the relationships between service quality, customer satisfaction and perceived value and their influences on customer purchase intentions.

LITERATURE REVIEW

Service Quality

In the literature related to services marketing, service quality points to customer's judgment of service marketers' overall superiority or excellence (Zeithaml, 1988). Bitner and Hubbert (1994; p. 77) have defined service quality as *"the customer's overall impression of the relative inferiority and superiority of the organization and its services"* (p. 77). Over the past three decades, considerable attention has been given to the theory and practice of service quality by practitioners and academics alike. Service quality has been viewed as a means of competitive advantage, customer satisfaction, loyalty and improved business performance (Hu et al., 2009; Parasuraman et al., 1985). Therefore, the quest for providing quality

services has become a significant aspect for all the service marketers operating in today's highly competitive marketplace (Sultan and Wong, 2010).

Since a large number of scholars have studied the concept of service quality, a globally-accepted and unanimous definition of service quality and its conceptualization is lacking (Sharif and Kassim, 2012). Juran (1988) considered service quality as meeting expectations of a consumer whereas Zeithaml (1988) presented it as excellence or superiority in the delivery of services. Despite differences in definitions, recent scholars agreed that service quality is a vast concept that is consumer driven and is multi-faceted (Lien and Kao, 2008); and the differences in its definitions are because of the differences in consumers from country to country and from service sector to service sector. This confusion about service quality's definition has also rippled its operationalization (Seth et al., 2005). In this regard, an early operationalization of service quality was presented by Lehtinen and Lehtinen (1982) having three primary facets i.e., physical quality, interactive quality, and corporate quality. Another operationalization was presented by Gronroos (1982) having two primary dimensions i.e., technical quality and functional quality. This model was used as a basis by Parasuraman et al., (1985) who proposed SERVQUAL model which focused on the discrepancy between customers' expectations and perceptions regarding different dimensions of service quality. Parasuraman et al., (1988) developed five dimensions (i.e., reliability, responsiveness, assurance, empathy, and tangibles). Their work asserted that if customer's perceptions related to five dimensions of service quality exceeded their expectations, service marketer is delivering quality services and the differences in score defines the level of service quality (Sharif and Kassim, 2012). This concept of Parasuraman et al., (1985) was, however, hugely criticized by Cronin and Taylor (1992), who stated that the discrepancy between customers' expectations and perceptions refer to customer satisfaction, not service quality. Still, SERVQUAL was used by many scholars to assess service quality across different service sectors (Ali and Zhou, 2013; Zeithaml & Bitner, 2003). However, various scholars observed some discrepancies with SERVQUAL scale in terms of its 5-dimensional applicability across various service sectors (Ladhari, 2009), resulting in proposition of many modified versions of SERVQUAL in relation to various study contexts.

Service Quality in Public Transportation Context

Few scholars have assessed the service quality within the context of public transportation (Brons *et al.*, 2009; Choocharukul, 2004; Eboli and Mazzulla, 2007; Eboli and Mazzulla, 2009; Nathanail, 2007; Stuart *et al.*, 2000; Weinstein, 1998). For instance, Weinstein (1998) conducted a study to assess service quality of San Francisco Bay Area Rapid Transit District (BART) and found seven dimensions of service quality in rapid transport system including train cleanliness and comfort, station cleanliness, service and information timeliness, station entry and exit, police presence, parking, and policy enforcement. Similarly another study conducted by Nathanail (2007) used 6 service quality dimensions i.e., itinerary accuracy, system safety, cleanness, passenger comfort, servicing, and passenger information while assessing service quality of Hellenic Railways in Greece. In another study conducted by Brons *et al.* (2009) on the Dutch Railways, it was found that passenger's overall satisfaction partly depends on satisfaction with access facilities, travel comfort, travel time reliability, station organization and information, service schedule, dynamic information, price-quality ratio, accessibility, ticket service, personal safety, and personnel. Choocharukul and Sriroongvikrai (2013) also assessed service quality of Bangkok's Metropolitan Rapid Transit (MRT) using 6 dimensions naming travel convenience, service and information, access and egress, cleanliness and safety, facilities and transit fare. Another study conducted by Ona *et al.*, (2013) assessed service quality of Transport Consortium of Granada (Spain) using three dimensions i.e., Service, Comfort and Personnel.

Customer Satisfaction

Almost every existing service marketer strives to achieve customer satisfaction because it can ripple down and result in many advantages for the service marketer including trust, commitment, loyalty, positive word-of-mouth and recommending to others etc. (Dominici and Guzzo, 2010; Ryu and Han, 2010). Because of its significance for the service marketers, the concept of customer satisfaction has attained much attention from the scholars (Hu *et al.*, 2009). Some of the early scholars conceptualized it as transaction-specific. For instance,

Parasuraman et al. (1988; p. 16) argued that "... *satisfaction is related to a specific transaction*". Some other scholars, however, believe that customer satisfaction is a vast attitude and may not develop based on one transaction only. Rather, it develops over time after a series of multiple experiences (Ali et al., 2012). For instance, McDougall and Levesque (1994) considered customer satisfaction as the overall assessment of the service marketer. Hu et al., (2009) share the same view and argue that customer satisfaction is a cognitive or affective reaction that emerges in response to a prolonged set of service encounters.

In terms of its measurement, Oliver (1981) proposed disconfirmation paradigm where satisfaction can be measured as a gap between customer's expectation and perceptions. Exceeding perceptions as compared to their expectation will result in their satisfaction and vice versa (Crotts and Magnini, 2011). Moreover, Cronin and Taylor (1992) discussed it to be a uni-dimensional construct that can be measured by evaluating customer overall attitude towards the services provided. Nevertheless, Hu et al., (2009) criticized that one-item scale is not sufficient to encompass the richness of customer satisfaction construct. Therefore, some multi-item scales to measure customer satisfaction can also be observed in the literature. For example, a four-item scale was used by Bitner and Hubbert (1994) to assess customer satisfaction with the service marketer whereas Barsky and Labagh (1992) used nine items to assess customer satisfaction. In a study on public transport systems, Choi et al., (2004) used two-items to assess customer satisfaction i.e., system reliability and commuter convenience. To conclude, it can be observed that that satisfaction is multifaceted evaluative process developed through many experiences.

Perceived Value

Similar to service quality, providing higher customer value is also observed as a source of standing out and competitive edge (Gounaris, Tzempelikos & Chatzipanagiotou, 2007). However, nature of this construct is quite subjective and remains unclear (Wang et al., 2004). Day (1990) defined it as the difference between customers' perceived benefits and costs. Similarly, Zeithaml (1988) claimed that perceived value refers to "*consumer's overall*

assessment of the utility of a product based on perceptions of what is received and what is given". These definitions show the subjectivity in the nature of perceived value as different individuals have different perceptions of what a product is offering based on varying personal values, needs, preferences and financial ability (Huber et al., 2001; Ravaid & Grönroos, 1996).

Even though there are varying definitions of perceived value, yet, there are some common grounds. For example, the extent of value as perceived by customers is determined by customers' perceptions and not by the suppliers' assumptions or intentions (Wang et al., 2004; Wu, 2013). Besides, Doyle (1989) also stated that value is always subjective because of being a trade-off between customers' perceived benefits and costs. This is why perceived value is normally seen as a function of price and quality (Gounaris et al., 2007). In terms of its classifications, Sheth et al., (1991) classified it into five elements i.e., functional value, social value, emotional value, epistemic value and conditional value. Another classification of perceived value was proposed by Sweeney and Soutar (2001) where they divided functional dimension of value into "quality" and "price" value and eliminated the epistemic and conditional elements. They named this scale as, "PERVAL." A careful literature review concludes that using a single overall evaluative statement as a measure of perceived value may reduce the reliabilities of their results considering the fact that perceived value is derived from both the tangible and intangible aspects of the services provided and should be measured using multiple items (Gounaris et al., 2007).

Purchase Intentions

Another focus of our research is to look at the purchase intentions of consumers. Every existing service marketer struggles to attain positive customer purchase intentions, which is the ultimate goal (Ryu et al., 2012). Therefore, in many research studies related to services marketing, consumer's purchase intentions are used as the primary dependent variable (Wu, 2013). Customer purchase intentions indicates their willingness of keeping a sustainable relationship with the service marketer (Zeithaml et al., 1996). It is very relevant to study customer's intentions as in saturated markets, it is integral to retain existing

customers rather than attracting new customers (Gounaris et al., 2007). Some notable scholars consider customer's intentions or behavior of repeated purchases as their loyalty. Ajzen and Fishbein (1980) stated that satisfied customers may become loyal customers showing further repurchase intentions, which are additional part of their loyalty towards the service provider.

HYPOTHESES DEVELOPMENT

As stated earlier, many scholars have studied the impact of service quality on customer satisfaction. Majority of them concurred that perceived service quality is a significant predictor of customer satisfaction (Dominici and Guzzo, 2010; Gronroos, 1990; Ryu and Han., 2010). Choocharukul and Sriroongvikrai (2013) conducted a study on Bangkok's MRT system and established that customers' perceived service quality predicts their satisfaction levels. Bitner and Hubbert (1994) considers the relationship between service quality and customer satisfaction as intuitive. Another study was conducted by Ona et al., (2013) on the assessment of service quality of the Metropolitan bus transit service operating in the city of Granada, Spain. They also confirmed the significant influence of service quality over customer satisfaction. Thus the following hypothesis is proposed;

Hypothesis 1: Service Quality will influence customer satisfaction significantly for consumers using Bangkok (Thailand) MRT system.

Similarly, a number of scholars also endorse the significant influence of perceived service quality dimensions on customer's purchase intentions. According to Anderson et al. (1994), higher levels of perceived service quality increases purchase intentions. Tarn (1999) stated that high perception of service quality triggers a satisfying feeling which in turn influences repurchase intentions of customers. This relationship was also tested and confirmed by Heung et al., (2000), Kim (2011) and Chen et al., (2013). Thus, the following hypothesis is proposed;

Hypothesis 2: Service Quality will influence customer purchase intentions significantly for consumers using Bangkok (Thailand) MRT system.

Customers look for value in any marketing exchange, therefore, it is defined as the difference between customers' perceived benefits and costs (Babin et al., 1994). A higher perceived service quality will improve the perceived benefits of the services received and thus enhance the perceived value (Hellier et al., 2003). In a study conducted by Lai et al., (2009) also observed and confirmed the significant effect of perceived service quality on perceived value. This relationship is also supported by various other scholars (Andreassen and Lindestad, 1998; Choi et al., 2004; Cronin et al., 2000; Zins, 2001). Thus, the following hypothesis is proposed;

Hypothesis 3: Service Quality will influence customer's perceived value significantly for consumers using Bangkok (Thailand) MRT system.

It has been established that customer satisfaction can be achieved by delivering value to them. Oliver (1981) also discussed it in his disconfirmation framework that before receiving a service, a consumer may have some expectations about the value he/she anticipates to receive from the service. Once he/she consumes the service, he/she then has a perception of the value he receives from it. Difference between expectation and perceptions results in customer satisfaction (Ali et al., 2012). Thus, customer satisfaction becomes a function of perceived value (Gounaris et al., 2007). In a study, Wu (2013) also endorsed the significant effect of perceived value over customer satisfaction. Thus, the following hypothesis is proposed;

Hypothesis 4: Perceived value will influence customer satisfaction significantly for consumers using Bangkok (Thailand) MRT system.

In addition to predict customer satisfaction, perceived value has a significant role in shaping consumer behavior too. Chang and Wildt (1994) found that perceived value was a significant determinant of repurchase intentions. Moreover a study conducted by Cronin et. al., (2000)

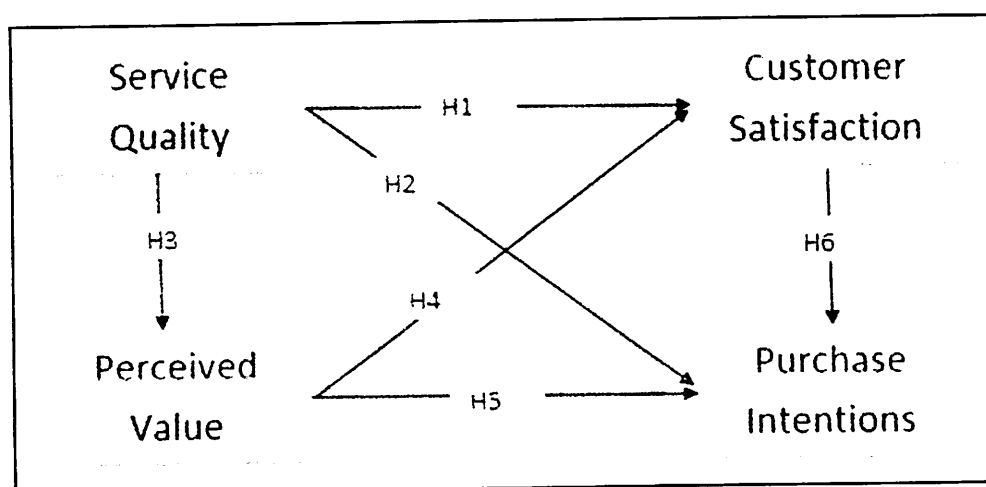
also confirmed that perceived value explained the variance in purchase intentions significantly. The results of the study conducted by Gounaris et al., (2007) also suggested that delivering superior customer value enables a service provider to achieve favorable behavioral intentions including purchase intentions. Thus, the following hypothesis is proposed;

Hypothesis 5: Perceived value will influence customer purchase intentions significantly for consumers using Bangkok (Thailand) MRT system.

A number of scholars have studied and confirmed the significant influence of customer satisfaction towards their loyalty and behavioural intentions (Ali and Amin, 2013). In a study conducted by Han and Ryu (2009) it was confirmed that customer satisfaction may end up in customer loyalty in terms of repurchase likelihood. Cronin and Taylor (1992) also studied multiple service industries and indicated that satisfaction leads to positive behavioral intentions such as repurchase intentions (McDougall & Levesque, 1994). Thus the following hypotheses is proposed;

Hypothesis 6: Customer satisfaction will influence customer purchase intentions significantly for consumers using Bangkok (Thailand) MRT system.

Figure 1: Proposed Conceptual Framework



Theoretical Foundation

Because of the intangible nature of services, consumers usually face a higher rate of uncertainty, therefore, they rely on multiple other cues to assess the service quality of the services provided (Reimer and Kuehn, 2005). Some of these cues are consumer's previous experiences, word-of-mouth from social and peer groups and information gathered from reliable sources. Based on these arguments, Olson and Jacoby (1972) proposed their theory named as "Cue Utilization Theory" that has been used widely by various scholars to assess service quality.

The framework in this current study is also based on Olson and Jacoby's (1972) "Cue Utilization Theory" because it helps in understanding human behavior in regard to its communication with multiple cues. "Cue Utilization Theory" posits that any specific service comprises of multiple cues that work as stand-in gauges of that service's quality. These cues are divided into two distinct groups i.e., intrinsic cues which includes physical features of the service and extrinsic cues which includes features such as image and price etc. (Ziethaml, 1988). Recent scholars have also endorsed this theory and have stated that consumers usually use multiple cues to assess the quality of services delivered to them because services are produced and consumed simultaneously with higher human contact (Ha and Jang, 2012; Hartline and Jones, 1996). Yuksel (2013) conducted a study in Turkish tourism industry stating that various design, social and ambient cues work as influential factors in developing consumer's choices. Loken (2006) also endorsed it and stated that these cues can convey reliable information about the value and quality of the services. Other scholars also refer to these cues as informational cues and stated that they can offer reliable information about the quality and the overall experience (Bitner et al., 1994; Baker et al., 2002; Loken, 2006).

This theory has been utilized in a number of studies across multiple industries. For example in a study conducted on customers of restaurants and banks, Reimer and Kuehn (2005) employed "Cue-Utilization Theory" and stated that servicescape may work as a cue for judging the service quality and developing customer satisfaction and behavior. Another study conducted by Ha and Jang (2012) also utilized this theory as theoretical base while identifying the influences of specific environmental factors on quality perception and

behavioral intentions on Korean restaurants across USA. Chitty et al., (2007) also employed this theory while assessing the satisfaction and loyalty of backpackers staying in three youth hostels across Australia. Similarly, Yan (2007) also utilized this theory as theoretical base while identifying the influences of multiple factors on quality perception of public transportation in Kota Kinabalu city in Malaysia. Moreover, Maia (2004) also employed this theory while assessing the impact of urban traffic congestion on quality of life in Brazil. In view of these studies, the conceptual framework for this study (As shown in Figure 1) proposes that Thai passengers using public transport options such as MRT will be subjected to various tangible and intangible cues helping them in better assessment of the quality of services and the value they are getting from these services. This perceived service quality and perceived value may then develop customer satisfaction that can ultimately transform into purchase intentions.

RESEARCH METHODOLOGY

Sample and Procedures

The population for this study were the passengers of Bangkok's Metropolitan Rapid Transit (MRT) system at Bangkok, Thailand. Data collection was done by intercepting the respondents at various MRT stations over a three-week period from January to February 2013. Respondents were briefed about the objectives of the research and their right of withdrawal from the survey. Sample size was determined using the ratio between the numbers of respondents based on the number of parameters. As per Peng and Lai (2012), this ratio should be 20:1. Considering this, the sample size for this study was set to a total of 400 respondents drawn based on convenience sampling. Out of these 400 respondents, 40% were males whereas 60% were females. In terms of age, majority of the respondents (48%) were within the age group of 21-30 years. Moreover, 64% of the total respondents were having or were studying for their bachelor degree. In terms of monthly income, almost 50% of the total respondents were having it between 5000-20000 Thai Bhatt.

Survey Instrument

Four main variables were included in this study i.e., (i) service quality, (ii) perceived value, (iii) customer satisfaction and (iv) purchase intentions. The instrument to measure service quality includes 3 dimensions (Service, Comfort and Personnel) adopted from Ona et al., (2013) whereas perceived value was measured using 3 items taken from Ryu et al., (2008). Moreover, 3 items were used to assess customer satisfaction (satisfaction with service, satisfaction with comfort and satisfaction with personnel) whereas 1 item was used to assess purchase intentions of passengers. As shown in Table 1, all the items were taken from previous studies (Choi et al., 2004; Ona et al., 2013; Ryu et al., 2008), and were all measured using a 5 point likert scale (1 = strongly disagree; 2 = disagree; 3 = Neutral; 4 = agree; 5 = strongly agree). Questionnaire was developed in Thai language and was sent to three subject experts to examine its content and face validity. The questionnaire was also pre-tested by 30 passengers of MRT. Reliability analysis was conducted which confirmed that the scales were reliable with Cronbach's alpha value of 0.78.

Table 1: Questionnaire items and Cronbach's Alpha			
Variable	No of Items	Taken from	Cronbach's Alpha
Service quality	11 items across three dimensions Service (5), Comfort (4) and Personnel (2)	Ona et al., 2013	0.77
Perceived Value	3 items	Ryu et al., 2008	0.81
Customer Satisfaction	3 items	Ona et al., 2013	0.79
Purchase Intentions	1 item	Ryu et al., 2008	Single item factor

Analytical Procedures

In this study, structural equation modelling using a Partial Least Squares (PLS) method was used to test the hypotheses. PLS is a well-established technique for estimating path coefficients in structural models and has been widely used in various marketing related

research studies (Rezaei and Ghodsi, 2014). The PLS technique has become increasingly popular during the last decade because of its ability to model latent constructs with single item or/and under conditions of non-normality (Chin 1998). To run the analysis, SPSS and Smart PLS (Ringle, Wende and Will, 2005) software was used by applying bootstrapping technique to assess the significance of the factor loadings, and path coefficients. As suggested by Anderson and Gerbing (1988), before testing the structural model, validity and reliability of measurement model was also estimated.

RESULTS AND ANALYSIS

Measurement Model

In order to assess the convergent validity of the measurement model, factor loadings, composite reliability (CR) and average variance extracted (AVE) was calculated (Hair *et al.*, 2006). As shown in table 2, factor loadings for all the items were above the cut-off value of 0.6 (Chin, 1998), except for one item S6 which was deleted. Value of composite reliability for all the constructs are also above the cut-off value of 0.7, as suggested by Hair *et al.* (2006). Moreover, average variance extracted (AVE) was also calculated for all the constructs and these values were also above the recommended value of 0.5 (Hair *et al.* 2006).

Table 2: Validity and Reliability for Constructs					
Constructs	Items	Statements	Loadings	CR^a	AVE^b
Service	S1	Frequency	0.856	0.865	0.534
	S2	Punctuality	0.821		
	S3	Speed	0.837		
	S4	Proximity	0.631		
	S5	Fare	0.771		
Comfort	C1	Cleanliness	0.783	0.886	0.663
	C2	Space	0.889		
	C3	Temperature	0.897		
	C4	Accessibility	0.665		
Personnel	P1	Safety	0.887	0.888	0.800

	P2	Courtesy	0.900		
Perceived Value	PV1	Good value for price	0.802	0.894	0.783
	PV2	Worth the money	0.896		
	PV3	good value compared to other transportation means	0.875		
Customer Satisfaction	CS1	Satisfaction with service	0.847	0.894	0.739
	CS2	Satisfaction with comfort	0.892		
	CS3	Satisfaction with Personnel	0.839		
Purchase Intentions	PI1	Continue usage	1.000	1.000	1.000
^a Composite reliability = (square of the summation of the factor loadings) / [(square of the summation of the factor loadings) + (square of the summation of the error variances)]					
^b AVE = (summation of squared factor loadings)/(summation of squared factor loadings) (summation of error variances)					

In addition to factor loadings, CR and AVE, discriminant validity of the constructs was also assessed by matching the square root of the Average Variance Extracted (AVE) with the correlations between the variables. Table 3 shows the square root of AVE for each construct in bold values whereas all the other values are that of correlation between constructs. Ali et al., (2013) stated that if the square root of the AVE is higher than the correlation between different variables, they can be considered as distinctive theoretical entities. It can be seen in Table 2 that the square root of the AVE (diagonal values) of each construct is larger than its corresponding correlation coefficients pointing towards adequate discriminant validity (Fornell and Larcker, 1981).

Table 3: Discriminant Validity						
	1	2	3	4	5	6
Comfort	0.814					
Customer Satisfaction	0.401	0.859				
Perceived Value	0.237	0.479	0.884			
Personnel	0.325	0.330	0.120	0.938		
Purchase Intentions	0.198	0.323	0.178	0.255	1.000	
Service	0.259	0.235	0.206	0.336	0.108	0.730

Moreover, comparing the loadings across the columns in the table 4 also indicates that an indicator's loadings on its own construct are in all cases higher than all of its cross loadings with other constructs. Thus, the results indicate there is discriminant validity between all the constructs based on the cross loadings criterion.

Table 4: Cross Loadings						
Constructs	Comfort	Personnel	Purchase Intentions	Perceived Value	Service	Customer Satisfaction
C1	0.783	0.232	0.022	0.153	0.191	0.237
C2	0.889	0.344	0.141	0.167	0.254	0.344
C3	0.897	0.310	0.242	0.210	0.232	0.401
C4	0.665	0.139	0.249	0.265	0.154	0.319
P1	0.275	0.887	0.149	0.028	0.295	0.244
P2	0.307	0.900	0.302	0.182	0.305	0.344
PI1	0.198	0.255	1.000	0.178	0.108	0.323
PV1	0.178	0.123	0.192	0.802	0.190	0.369
PV2	0.219	0.107	0.135	0.896	0.193	0.433
PV3	0.213	0.080	0.136	0.875	0.150	0.432
S1	0.179	0.253	0.061	0.233	0.856	0.219
S2	0.174	0.260	0.032	0.298	0.821	0.238
S3	0.186	0.217	0.131	0.241	0.837	0.170
S4	0.183	0.312	0.193	-0.057	0.631	0.157
S5	0.106	0.190	0.033	0.139	0.771	0.136
SAT1	0.321	0.243	0.296	0.520	0.249	0.847
SAT2	0.330	0.301	0.291	0.367	0.190	0.892
SAT3	0.392	0.318	0.238	0.323	0.154	0.839
^a Bold values are loadings for items which are above the recommended value of 0.5.						

Moreover, table 5 shows that weights of the first order constructs on the designated second order construct indicating that service quality (SE) is a second order factor with three dimensions namely service, Comfort and Personnel. The weight for service is 0.794 with t-value of 21.201 implying it as a first order construct designated on service quality. Similarly, comfort with weight of 0.735; t-statistics of 17.313 and personnel with weight of 0.639; t-statistics of 14.986 also show that these are first order constructs designated on service quality.

Table 5: Weights of the first order constructs on the designated second-order construct			
Second-order constructs	First-order constructs	Weight	T-Value
Service Quality	Service	0.794	21.201**
	Comfort	0.735	17.313**
	Personnel	0.639	14.986
Notes: Critical t-values. **2.58 (P<0.01).			

Structural Model

Structural model and hypotheses were also tested using SmartPLS 2.0 (Ringle *et al.*, 2005). A bootstrapping procedure with 1000 iterations was performed to examine the statistical significance of the weights of sub-constructs and the path coefficients (Chin, Peterson and Brown, 2008). Since many scholars have criticized PLS of not generating overall goodness of fit indices, Tenenhaus *et. al.*, (2005) proposed a diagnostic tool to assess the model fit which is also referred to as the goodness of fit (GoF) index. GoF takes into account the mean of the average communality and the average R^2 (for endogenous constructs). Hoffmann and Brinbrich (2012) report the following cut-off values for assessing the results of the GoF analysis: GoFsmall = 0.1; GoFmedium = 0.25; GoFlarge = 0.36. For the model used in this study, a GoF value of 0.355 was calculated which indicates a medium model fit as shown in table 6.

Table 6: Goodness of Fit Index		
	AVE	R^2
Service	0.585	-
Comfort	0.534	
Personnel	0.663	
Customer Satisfaction	0.739	0.326
Perceived Value	0.738	0.074
Purchase Intentions	1	0.116
Average Scores	0.734 ^a	0.172 ^b
AVE * R^2	0.126	
($GOF = \sqrt{AVE \times R^2}$)	0.355	

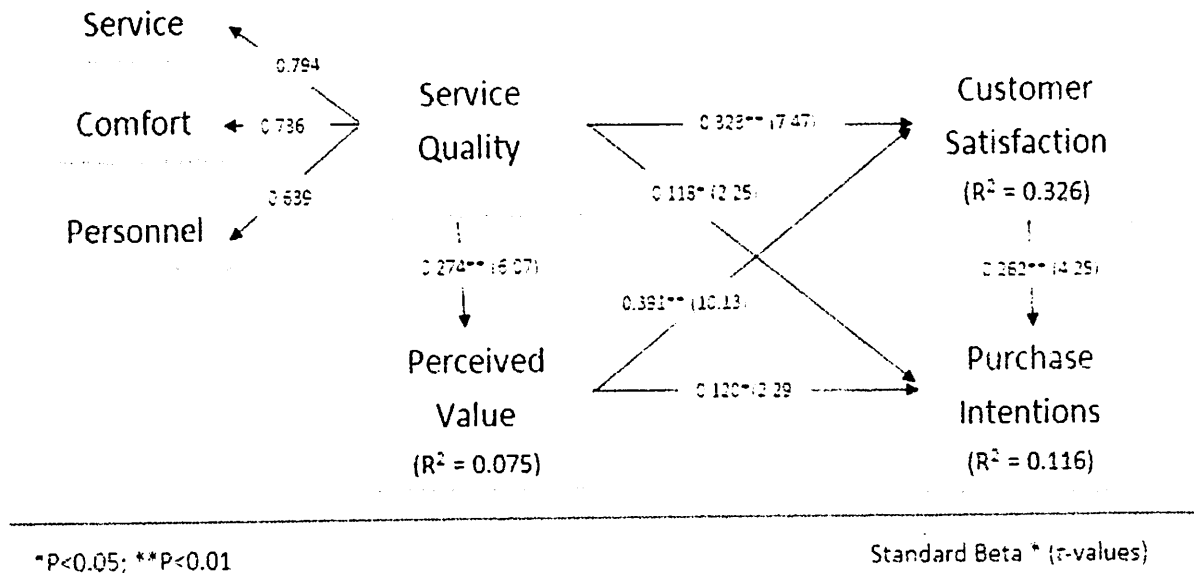
In addition to the measurement model validity and reliability and goodness of fit measures, the hypothesized paths indicated in the structural model were also verified. Results of the structural model are presented in Figure 2. The values in the figure shows the standardized coefficients and their respective t-values. The corrected R^2 in the figure refers to the

explanatory power of the predictor variable(s) on the respective construct. As shown in Figure 2, service quality predicts 7.5% of perceived value ($R^2 = 0.075$) whereas both service quality and perceived value predict 32.6% of customer satisfaction ($R^2 = 0.326$). Moreover, service quality, perceived value and customer satisfaction altogether predict 11.6% of customer's purchase intentions ($R^2 = 0.116$). In regard to model validity, Chin *et al.*, (2008) classified the endogenous latent variables as substantial, moderate or weak based on the R^2 values of 0.67, 0.33, or 0.19 respectively. Accordingly, customer satisfaction ($R^2 = 0.326$), perceived value ($R^2 = 0.075$) and purchase intentions ($R^2 = 0.116$) can be described as weak.

In addition to the size of R^2 , the predictive sample reuse technique (Q^2) can effectively be used as a criterion for predictive relevance (Chin *et al.*, 2008). Based on blindfolding procedure, Q^2 shows how well the collected data can be reconstructed empirically with the help of model and the PLS parameters (Akter *et al.*, 2011). For this study, Q^2 was obtained using cross validated redundancy procedures as suggested by Chin (2010). As per Fornell and Cha (1993), a Q^2 greater than 0 means that the model has predictive relevance whereas Q^2 less than 0 mean that the model lacks predictive relevance. As shown in Table 7, Q^2 for perceived value, customer satisfaction and purchase intentions are 0.051, 0.157 and 0.100 respectively indicating acceptable predictive relevance.

Table 7: Results of Predictive Relevance	
Endogenous Constructs	Q^2
Perceived Value	0.051
Customer Satisfaction	0.157
Purchase Intentions	0.100

Figure 2: Structural Model



Structural Estimates and Hypotheses Testing

The complete results of the structural model and hypotheses testing are presented in Table 8. The results show a strong support for all the six hypotheses of the study. H1 was hypothesizing that service quality will influence customer satisfaction significantly which was supported by results (H1: $b = 0.323$, $t = 7.476$, $\text{sig} < 0.01$). These results confirm that passengers having positive perceptions of the service quality will have higher levels of satisfaction. These findings are in line with the previous studies coinciding that perceived service quality is a significant predictor of customer satisfaction (Dominici and Guzzo, 2010; Gronroos, 1990; Ryu and Han., 2010). A similar study was conducted by Choocharukul and Sriroongvikrai (2013) on Bangkok's MRT system. They established that customers' perceived service quality predicts their satisfaction levels. Similarly, Bitner and Hubbert (1994) and Ona et al., (2013) also tested and confirmed the effect of service quality over customer satisfaction.

H2 was hypothesizing that service quality will influence passengers' purchase intentions significantly which was supported by result (H2: $b = 0.118$, $t = 2.250$, $\text{sig} < 0.05$). These results confirm that passengers having positive perceptions of the service quality will

have higher chances of positive purchase intentions. These findings are also in line with the endorsement of a number of scholars related to significant influence of perceived service quality dimensions on customer's purchase intentions. Tarn (1999) stated that high perception of service quality triggers a satisfying feeling which in turn influences repurchase intentions of customers. This relationship was also tested and confirmed by Heung et al., (2000), Kim (2011) and Chen et al., (2013).

A strong support was also found for H3 hypothesizing the significant effect of service quality on perceived value (H3: $b = 0.274$, $t = 6.073$, $\text{sig} < 0.05$). These results confirm that passengers having positive perceptions of the service quality will have higher levels of perceived value. Previous scholars also confirmed this relationship. For instance Lai et al., (2009) also observed and confirmed the significant effect of perceived service quality on perceived value. This relationship is also supported by various other scholars (Andreassen and Lindestad, 1998; Choi et al., 2004; Cronin et al., 2000; Zins, 2001).

Moreover, H4 hypothesized that perceived value will influence customer satisfaction significantly which was supported by results (H4: $b = 0.391$, $t = 10.13$, $\text{sig} < 0.01$). These results confirm that passengers having positive perceptions of the value will have higher levels of satisfaction. Previous studies also confirmed this relationship. For example, customer satisfaction has been studied as a function of perceived value by Gounaris et al., (2007). In another study, Wu (2013) also endorsed the significant effect of perceived value over customer satisfaction.

H5 hypothesizes significant effect of perceived value on purchase intentions. The results support this hypothesis (H5: $b = 0.120$, $t = 2.296$, $\text{sig} < 0.05$). These results confirm that passengers having positive perceptions of the value will have higher chances of positive purchase intentions. Some earlier scholars also tested and confirmed that perceived value has a significant role in shaping consumer behavior. Chang and Wildt (1994) found that perceived value was a significant determinant of repurchase intentions. Moreover, results of the study conducted by Gounaris et al., (2007) also suggested that delivering superior customer value enables a service provider to achieve favourable behavioral intentions including purchase intentions.

Lastly, H6 hypothesized that customer satisfaction significantly effect purchase intentions. The results support this hypothesis (H6: $b = 0.262$, $t = 4.251$, $\text{sig} < 0.01$). These

results confirm that passengers having higher levels of satisfaction will have higher chances of positive purchase intentions. These findings are also in line with the findings from previous studies (Ali and Amin, 2013; Cronin and Taylor, 1992; McDougall & Levesque, 1994). In a study conducted by Han and Ryu (2009) it was confirmed that customer satisfaction may end up in customer loyalty in terms of repurchase likelihood. Cronin and Taylor (1992) also studied multiple service industries and indicated that satisfaction leads to positive behavioral intentions such as repurchase intentions.

Table 8: Structural Estimates (Hypotheses Testing)				
Hypothesis	Standard Beta	Standard Error	T Statistics	Decision
H1: Service Quality -> Customer Satisfaction	0.323	0.043	7.476**	Supported
H2: Service Quality -> Purchase Intentions	0.118	0.052	2.250*	Supported
H3: Service Quality -> Perceived Value	0.274	0.045	6.073**	Supported
H4: Perceived Value -> Customer Satisfaction	0.391	0.039	10.13**	Supported
H5: Perceived Value -> Purchase Intentions	0.120	0.069	2.296*	Supported
H6: Customer Satisfaction -> Purchase Intentions	0.262	0.062	4.251**	Supported
*P<0.05; **P<0.01				

DISCUSSION AND CONCLUSION

The primary objective of this study was to propose and test the model that describes the interrelationships between perceived service quality, customer satisfaction, perceived value and customer purchase intentions in Bangkok's Metropolitan Rapid Transit (MRT) System. It was proved that perceived service quality significantly influences passenger's perceived value. Both perceived service quality and perceived value significantly influence customer satisfaction and all of these significantly influence customer's purchase intentions. The study is also supported by the general theoretical framework proposed by Mehrabian and Russell's (1979) consisting of three main elements (i) stimulus (our study refers to it as service quality provided by MRT), (ii) organism (our study refers to it as customer perceptions of value) and (iii) Response (our study refers to it as customer satisfaction and purchase intentions). All these findings are in line with the previous studies (Andreassen and Lindestad, 1998; Chen et al., 2013; Choocharukul and Sriroongvikrai, 2013; Cronin and

Taylor, 1992; Dominici and Guzzo, 2010; Gounaris et al., 2007; Gronroos, 1990; Heung et al., 2000; Kim, 2011; Ona et al., 2013; Ryu and Han, 2010; Wu, 2013).

Customer satisfaction has been a central element in many studies because of its importance in shaping post-purchase behavior. Our study also supported the same notion and confirmed significant impact of passengers' satisfaction on their purchase intentions. However, customer satisfaction alone may not be sufficient to generate purchase intentions (Tarn, 1999). Our study revealed that customer's perceived service quality is also an integral determinant of customer's purchase intentions. Our study used three dimensions to assess service quality of Bangkok's MRT including (i) service, (ii) comfort, and (iii) personnel taken from Ona et al, (2013). The first dimension, "service" describes the performance of the service using four observed variables (Frequency, Punctuality, Speed and Fare). The second dimension, "comfort" uses three observed variables to characterize the grade of comfort inside the vehicle (Cleanliness, Space and Temperature). The last dimension is personnel, that is explained by two attributes related to the behavior of the personnel involved in the service, "safety" (related to the driver's behavior) and "courtesy" (as the kindness of the personnel). It was proven that these items and scales are appropriate for the assessment of service quality in the mass transit services, and for determining the variables which play an important role in passengers' perceptions about the service quality. As an example, the results of the structural model indicated that service is the exogenous latent variable with highest loadings on service quality. Frequency and speed are the observed variables having higher loadings on this construct whereas proximity and fare are the variables with the lowest loadings. This implies that customers look for frequent carriers with better speed. In terms of service quality dimensions, personnel came up with lower loadings. It implies that mostly passengers are worried about the behavior of personnel including safety and courtesy. It is noteworthy that passengers mostly emphasize the service component, however, the other two components, i.e., comfort and personnel also have an integral role in developing customer's positive perceptions and satisfaction.

One important implication derived from the present study is the importance of taking customers' perceived value into consideration when assessing their experiences. The findings of this study showed a strong influence of customer's perceptions on their satisfaction and purchase intentions indicating that perceived value can act as an

information source that can be used in attitude-development. In this regard, Wu (2013) and Gounaris et al., (2007) endorsed the significant effect of perceived value over customer satisfaction and purchase intentions. As per Ravald and Gronroos (1996), ensuring customer value can be used as an alternative way of gaining competitive advantage that can be done by adding extra value to the service offering.

The findings from this study hold implications for managers of this industry. The findings of this study showed that customers are not only satisfied but also have positive purchase intentions towards the Bangkok's MRT system because of the perceived value developed by the quality of services provided. However, in today's highly competitive marketplace, satisfying customers may not be sufficient. Management of MRT should emphasise on improving perceptions of customers regarding overall service quality and value provided rather than only focusing on customer satisfaction. As per Hu et al., (2009), high levels of service quality, greater perceived value and customer satisfaction altogether may result in customer's positive behaviours and can end up in greater competitiveness. Hence, management of MRT should constantly mend both service quality and perceived value. Quality standards should also be set to guarantee the service quality for all the passengers.

LIMITATIONS AND FUTURE DIRECTIONS OF RESEARCH

Like other studies, the current study also hold some limitations that can be tackled by future research. Data for this study was collected from customers at MRT stations in Bangkok, Thailand. Therefore, generalizations of the findings on public transport systems from other countries or geographic locations should be done with caution. A larger sample can be selected consisting of wider range of passengers of other types of public transport in Bangkok i.e., Skytrain. The service setting for this study was Bangkok's MRT subway system. One suggestion for future research would be to study customers' perceptions of service quality, perceived value and behavior in bus transit service or inter-city train services. Moreover, this study used three dimensions to measure service quality in the context of public transport. There might be other dimensions of service quality in this context that should be considered in future studies. Another interesting avenue for future research would be incorporating customer emotions in the new model.

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Hierarchical Model of Service Quality and its Effect on Consumer's Perceived Image, Satisfaction and Behavioural Intentions: A Study of Bangkok's Mass Rapid Transit Systems, Thailand

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Hierarchical Model of Service Quality and its Effect on Consumer's Perceived Image, Satisfaction and Behavioural Intentions: A Study of Bangkok's Mass Rapid Transit Systems, Thailand

ABSTRACT

Success of public transport service providers is dependent on how they satisfy their customers by delivering quality services. In order to understand this phenomena, this study aims to investigate the effect of relationships between service quality, customer perceived image, satisfaction and behavioural intentions in Bangkok's MRT system. A convenience sampling technique was used to select the sample by distributing the questionnaires to the passengers at various MRT stations, out of which 400 passengers returned the questionnaires. Partial Least Square method of structural equation modelling (PLS - SEM) was used to analyse the collected data, assess the model and test the hypotheses. All the hypotheses were proven and the findings confirm that perceived service quality influences customer's perceived image, satisfaction and behavioural intentions significantly. Research implications and future research opportunities are also discussed.

Keywords: Service Quality, Perceived Image, Customer Satisfaction, Behavioural Intentions, Bangkok MRT.

INTRODUCTION

Access to metro or any rail based transport system, including rapid elevated and underground transport, has become an outstanding issue for many societies in large cities as they aspire to shape the future with the use and implementation of efficient mass transport systems (Prasertsapakij and Nitivattananon, 2012). These transport systems are usually optimized for maximum passenger volume, in most cases without sacrificing too much comfort and luggage space, though they seldom have all the amenities of long-distance trains (Waris, Yacob, Husin and Mamat, 2010). Development of these transport systems incorporates urban transportation policy and planning of cities to propagate sharing of alternative modes and to diminish car dependency and deal with the issues of traffic congestion (Meyer and Miller, 2000). According to a report published by British Broadcasting Corporation (BBC), Bangkok, Thailand was ranked number 1 in the list of most congested global cities with terrible traffic jams (www.bbc.co.uk, 2012). It is apparent that Bangkok's traffic congestion has reached monumental levels that necessitate the government and planning officials accelerating their problem solving to increase Bangkok's public transportation service systems. Consequently, four types of land transportation systems are operational in Bangkok including Buses (Bus Mass Transit Authority), Trains (State Railway of Thailand), Skytrain (The Bangkok Mass Transit System) and Mass Rapid Transport (MRT Subway System). Amongst these four types, Bangkok's newest Mass Rapid Transit Subway (MRT) has gained most popularity (Bengsston, 2006). The MRT was officially launched in 2004 in the Central Business District (CBD) of Bangkok, which includes downtown areas of Siam, Silom, Sathorn and Sukhumvit Road (Prasertsapakij and Nitivattananon, 2012) to facilitate commuters working/residing or coming to Bangkok as they can travel to the city without being caught in traffic congestion. It has attracted a significant number of passengers in the transportation market. According to recent statistics this Bangkok MRT serves more than 240,000 passengers daily along 27 Kilometres (KM) of underground track (Bangkok Metro Public Corporation Annual Report, 2012).

Public-sector service providers play a significant role in most economies. Indeed, the importance of the public sector in some countries is reflected in the fact that the public sector is almost as big as the private sector (Bigne' et al., 2005). This also works the same for public sector transportation services including mass rapid transport systems (Prasertsapakij and Nitivattananon, 2012). Success of a public transport system depends on the number of passengers which the system is able to attract and retain which resulted in profound changes in the roles, management, staffing, and delivery of services. Faced with intensified competition, it is expected that Bangkok's premier transportation system can benefit from it by improving its sales and performance. For this reason, improving the quality and efficiency of services becomes an issue of maximum importance because it is known that an improvement in the level of quality of the service leads increased usage of the system (Ona, Ona, Eboli and Mazzulla, 2013). It requires an ever more personalized attention to the desires of the customer, to know and quantify the most influential variables on their intentions and decisions to travel in these transport systems (dell' Olio, Ibeas and Cecin, 2011).

Service quality has been suggested as a means to trigger customers' behavioural intentions by influencing perceived value and corporate image during a service encounter (Elmorshidy, 2013; Grace and O'Cass, 2004; Qin et al, 2010). However, Wu (2013) indicated that few studies focus on behavioral intentions and their relevant constructs because those constructs serve as accomplices in the maintenance of behavioral intentions during service encounters. A service encounter consists of a bundle of service performances, each with an opportunity to satisfy the consumer. The service encounter is frequently viewed as a single service when in reality it is a cascade of unique, yet interrelated service performance (Bitner, 1992). The separation of service encounters into sequential evaluation stages allows service providers to disaggregate the influence of multiple components on their service offering (Walker, 1995). In particular, it would be valuable to know which disaggregated service encounter elements are the most influential on planned repeat purchases since these factors could then be stressed in advertising messages.

Service elements have been separated conceptually and sequentially. According to Gronroos (1982), core or outcome components are those technical elements that conceptually constitute "what" the consumer receives. Process components are the functional elements that comprise "the way" the service is delivered to the customer. Fisk (1997) also supported this notion and explicitly recognised that the evaluation process of a service entails more than a single post-usage judgement. Walker (1995) takes up the sequential idea with his model of service encounter satisfaction that explicitly considers the evaluation process over time. This is the reason why many scholars classified service performance into distinct components and assessed their quality by identifying primary and sub dimensions of service using hierarchical modelling as a robust and testable framework across multiple

industries (Dabholkar, Thorpe, & Rentz, 1996; Brady & Cronin, 2001; Ko & Pastore, 2005; Clemes, Gan, & Kao, 2007; Dagger, Sweeney, & Johnson, 2007; Clemes, Wu, Hu, & Gan, 2009; Clemes, Gan, & Ren, 2011; Wu, Lin, & Hsu, 2011; Wu & Ko, 2013). However, little research has paid attention to identifying the primary and sub dimensions of service quality using a multi-level and hierarchical model in the context of Bangkok's Public transport (Choocharukul and Sriroongvikrai, 2013).

The purpose of this study is to empirically assess the interrelationships among the service quality, corporate image, customer satisfaction and behavioral intentions towards Bangkok's MRT system. This study will enhance our understanding of the relationships between service quality, corporate image, customer satisfaction and behavioral intentions. Gaining an understanding of which service attributes are most influential on planned repeat purchase behaviour should benefit the planning and production of effective advertising messages to appropriate market segments.

LITERATURE REVIEW

Service Quality

Bitner and Hubbert (1994; p. 77) defined service quality as "*the customer's overall impression of the relative inferiority and superiority of the organization and its services*". Literature review demonstrates that numerous scholars use SERVQUAL and SERVPERF for service quality assessment in various service contexts (Qin et al., 2010). Parasuraman, Zeithaml, and Berry (1988) proposed SERVQUAL, which is now a widely-accepted service quality measurement tool. It evaluates the difference between quality expectations and perceived service in five areas: reliability, tangibles, responsiveness, empathy and assurance (Ali, Khan, Rahman, 2012). Despite its wide-usage, it has been criticised heavily on the aspects of conceptualisation and measurement. Few scholars questioned the techniques and guidelines adopted for its construction (Babakus & Boller, 1992). For example the same statements are utilized to measure and study both the expectations and perceptions of customers. Another criticism was based on its initial hypothesis, which stated that numerous dimensions of service quality have the same value, although it was not empirically tested by studying the distribution of weights for each dimension (Wu, 2013). Consequently, a better and more direct measurement tool for service quality, named SERVPERF, was developed to handle the problems associated with measuring the differences between customer's expectations and perceptions (Kang and James, 2004; Palmer, 2001). Although it was a purely performance-based service quality measurement tool, Cronin and Taylor (1994) still criticised SERVPERF for lacking generalizability in its factor structure and in explaining more variance on overall service quality measurement.

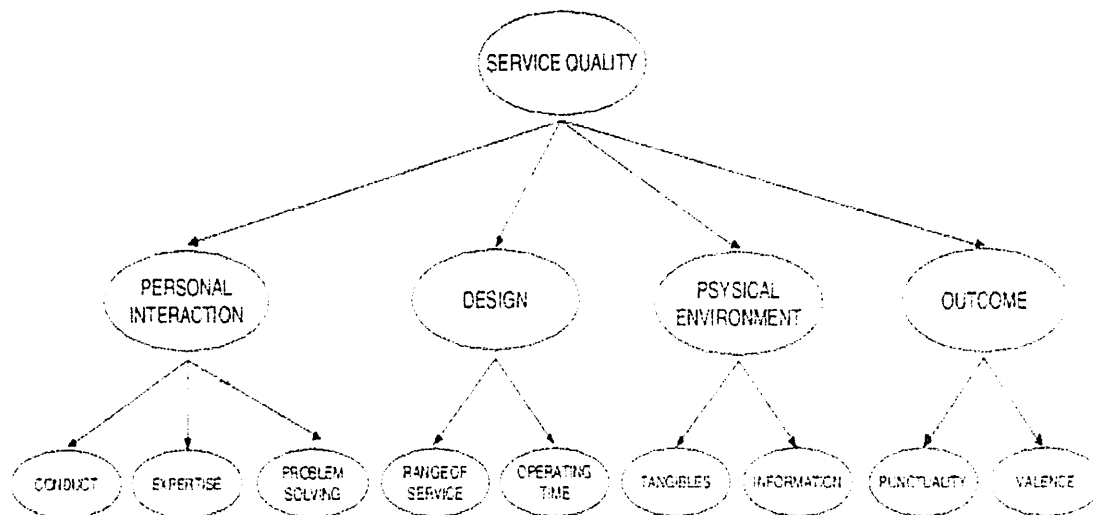
Therefore, based on the literature, it can be concluded that, both these measurement tools i.e., SERVQUAL and SERVPERF, are highly criticized (Wu, 2013). In effect, some scholars proposed that the conceptualisation and the operationalization of service quality to be performed based on a multi-dimensional concept (Brady & Cronin, 2001; Dabholkar et al., 1996). However, a literature review on service reveals that only few scales are available to specifically measure service quality in the public transport industry.

A hierarchical scale was developed by Caro and Gracia (2007) to measure service quality in public transportation within a town in Spain. Their model consisted of four main dimensions i.e., personal interaction, physical environment, design and outcome, and nine sub-dimensions, comprising of behaviour, attitude, expertise, problem solving, range of services, operating time, punctuality, tangibles, information and valence. The basis of development of the scale was based on scholars suggestion, whereby service quality should be measured using a hierarchical approach because the dimensions can drive service quality perceptions (Dabholkar, Shepherd, & Thorpe, 2000; Jarvis, MacKenzie, & Podsakoff, 2003; Parasuraman, Zeithaml, & Malhotra, 2005). Dagger et al. (2007) suggested using a multi-level and hierarchical model of service quality, rather than the more traditional model, as it could highlight the influences of the dimensions of service quality construct. Using a relatively small sample size, Caro and Gracia (2007) tested their proposed model. They also requested for replication of their model for a generalisation of the results and further validation. Hence, this study draws on their call for further research and validates their perceived service quality scale specifically for Bangkok's MRT system. Next is a brief discussion of the primary dimensions for the model proposed by Caro and Gracia (2007).

Service Quality Dimensions for this Study

Caro and Gracia (2007) proposed a hierarchical and multidimensional model in which quality is a higher-order factor defined by four primary dimensions and nine sub-dimensions (see Fig. 1).

Figure 1: Hierarchical structure of service quality



Source: Adapted from Caro and Gracia (2007), p. 67

The first primary dimension in this model is personal interaction. A number of scholars highlighted the importance of personal interaction during service delivery (Ai et al., 2012; Ryu et al., 2012). Furthermore, it has been considered as the most significant determinant for the perceived service quality (Bitner and Hubbert, 1994). Personal interaction has three sub-dimensions, namely attitude, expertise, and problem solving. All three dimensions agree with the study by Brady and Cronin (2001). Other scholars have also emphasised employee's attitude and expertise in delivering quality services (Czepiel et al., 1985 and Gronroos, 1990), while problem solving has been recommended as a factor under 'personal interaction' (Dabholkar et al., 1996 and Terblanche and Boshoff, 2001).

The second primary dimension is called 'design'. According to Caro and Gracia (2007), based on their qualitative study, their results demonstrated that the presence of this dimension was necessary in a model that assesses service quality. This dimension was also emphasised by two other studies on service quality assessment (Ko and Pastore, 2005 and Brady and Cronin, 2001). The dimension includes all aspects related to service configuration as well as two sub-dimensions, which are ranges of service and operating time. Range of services refers to the variety and attractiveness of services offered to consumers (Chelladurai and Chang, 2000), whereas operating time evaluates whether the service provider has convenient hours (Howat et al., 1996; Ko and Pastore, 2005).

The third dimension in the model is the physical environment. Many scholars have emphasized on this factor and regarded it as the most significant factor in determining the perceived service quality (Bitner, 1992; Brady and Cronin, 2001; Spangenberg et al., 1996). In public transport, consumers do not typically evaluate aspects such as design or store layout etc. Therefore, based on their qualitative study and that of Dabholkar et al. (1996), Caro and Gracia (2007) identified two sub-dimensions of 'physical environment', including tangibles and information. A theory proposes that customers use any tangible evidence of the service outcome as a representation for judging performance (Booms and Bitner, 1982; Zeithaml et al., 1985). Dabholkar et al. (1996) proposed the second sub-dimension, 'information', which concerns the ease of finding merchandise and moving within the service context. Alternatively, Howat et al. (1996) defined it as the feasibility of obtaining updated information about services variety.

The last dimension of service quality is the outcome. Scholars agreed that the outcome of a service encounter has significant effects on customer perceptions of service quality (Gronroos, 1984, 1990; McDougall and

Levesque, 1994; Rust and Oliver, 1994; Carman 2000). Two sub-dimensions for 'outcome' were identified i.e., punctuality and valence, based on the findings from Brady and Cronin (2001). Punctuality has considerable support in the literature. For example, the findings of Parasuraman et al. (1985) showed that consumers identify service, punctuality as an integral part of their overall evaluation. Further, Houston et al. (1998) found punctuality to be an important predictor when they incorporated it into their analysis on service quality encounters. As for the second sub-dimension, valence, it captures the attributes that control customers' beliefs on the goodness or badness of a service outcome, despite their evaluation on any other aspect of the experience (Brady and Cronin, 2001)

Perceived Image

Due to its complex nature, the various definitions and operationalization of images are available from the literature (Ryu et al., 2008). For example, brand image was defined as a series of perceptions that a consumer formulates about a brand based on the brand's associations held in the customer's memory (Keller, 1993). Similarly, Low and Lamb (2000, p. 352) defined image as "*the reasoned or emotional perceptions consumers associate to specific brands*". Baloglu and Brinberg (1997, p. 11) also defined image as "*the sum of the beliefs, ideas, and impressions that people have of a place or destination*". Researchers have studied image within the hospitality industry. For instance, Ryu et al., (2012) studied the effect of food and physical qualities on a restaurant image and customer satisfaction using four items. On the other hand, Hu et al., (2009) studied the relationships between service quality, perceived value, image satisfaction in hotel industry using two sub-dimensions i.e., image attributes and image holistic. Andreassen and Lindstad (1998) maintained that corporate image is vital for service organizations because it plays an important role in influencing customers' purchase decisions, especially when they do not have sufficient information on the service attributes. Consequently, it has become the goal of every service provider to develop a good perceived image due to its potential impact on repeat purchasing behaviour and profits (Ryu, et al., 2012; Hu et al., 2009).

Customer Satisfaction

Almost every existing service provider strives for customer satisfaction because it results in many advantages for them, including trust, commitment, loyalty, positive word-of-mouth and recommendation to others etc. (Bonnal and Moinier, 2014; Dominici and Guzzo, 2010; Ryu and Han, 2010). The concept of customer satisfaction has gained much attention from the researchers due to its significance toward service providers (Hu et al., 2009). Some early scholars conceptualized it as transaction-specific, such as Parasuraman et al. (1988; p. 16), who argued, "*... satisfaction is related to a specific transaction*". Other scholars, however, believed that customer satisfaction is a vast attitude that does not develop based on a single transaction, rather through a series of multiple experiences over time. Based on this notion, McDougall and Levesque (1994) considered customer satisfaction as the overall assessment of a service provider, and Hu et al., (2009) argued that customer satisfaction is a cognitive or affective reaction in response to a prolonged set of service encounters.

In terms of measuring satisfaction, Oliver (1981) proposed a disconfirmation paradigm, whereby satisfaction is measured as a gap between customer's expectation and perceptions. Therefore, satisfaction occurs when an expectation exceeds perception and vice versa (Crotts and Magnini, 2011). Moreover, Cronin and Taylor (1992) discussed it to be a uni-dimensional construct, and measurement can be performed by evaluating customer overall attitude towards the services provided. Nevertheless, Hu et al., (2009) criticized that one-item scale is not sufficient to encompass the richness of customer satisfaction construct. Therefore, a number of multi-item scales were also available in the literature. Examples include a four- (Bitner and Hubbert (1994)) and a nine-item scale (Barsky and Labagh (1992)) to assess customer satisfaction. In a recent study of public transport systems, Choi et al., (2004) used two items, which are system reliability and commuter convenience, to assess customer satisfaction. To conclude, it can be observed that satisfaction is a multifaceted evaluative process developed through experience. Hence, the multiple - item scale is a more appropriate method to measure it.

Behavioral Intentions

Behavioural intention is a concept referred to as people's beliefs about their intended action when encountering a specific situation (Ajzen&Fishbein, 1980). To extend this concept, Zeithaml, Berry, and Parasuraman (1996) recommended that favourable behavioural intentions are associated with service providers' ability to make their customers: (1) provide positive comments regarding their service (Bouldin, Kalra, Staelin, & Zeithaml, 1993), (2)

recommend them to others (Parasuraman et al., 1988, 1991), (3) remain loyal to their service (Rust & Zahorik, 1993), (4) increase their expenses with the organization (Lin & Hsieh, 2007), and (5) pay premium prices (Lin & Hsieh, 2007). Furthermore, Dabholkar et al. (2000) found that financial success and future performance of organisations depend on the extent to which customers' favourable behavioural intentions are fostered.

HYPOTHESES DEVELOPMENT

As stated earlier, the impact of service quality on customer satisfaction have been studied extensively. The majority agreed that perceived service quality is a significant predictor for customer satisfaction (Dominici and Guzzo, 2010; Gronroos, 1990; Ryu and Han., 2010). Furthermore, Bitner and Hubbert (1994) considered the relationship between service quality and customer satisfaction as intuitive. This concept was demonstrated in a recent study on Bangkok's MRT system, which established that customers' perceived service quality predicts their satisfaction levels (Choocharukul and Sriroongvikrai, 2013). This was also evident in another study that assessed the service quality of the Metropolitan bus transit service in the city of Granada, in which they confirmed the significant influence of service quality over customer satisfaction (Ona et al., 2013). Thus, the following hypothesis was proposed;

Hypothesis 1: Service quality significantly influences customer satisfaction.

Likewise, a number of scholars have also endorsed the significant influence of perceived service quality dimensions on customer's behavioural intentions. For example, according to Anderson et al. (1994), higher level of perceived service quality increases purchasing intentions. Next, Tarn (1999) reported that high perception of service quality triggers a satisfying feeling, which influences customers' intention to repurchase and revisit. More importantly, the relationship between service quality and behavioural intentions was also tested and confirmed by Heung et al., (2000), Kim (2011) and Chen et al., (2013). Thus, the following hypothesis was proposed;

Hypothesis 2: Service quality significantly influences customer behavioural intentions.

Selnes (1993) argued that service quality influences the general evaluation of a brand. Similarly, Ostrowski et al. (1993) posited that *"positive experience over time following several good experiences will ultimately lead to positive image"* regarding the evaluation of airline services, (p. 23). Booms and Bitner (1982) also reported that the servicescape of a hospitality firm had significant impact on a restaurant's brand image and customer revisit intention. Moreover, Lai et al. (2009) proposed and tested an integrative model to examine the relationships among service quality, customer perceived value, image, satisfaction, and loyalty. In this study, service quality was assessed using five elements of Parasuraman et al. (1988) SERVQUAL (i.e. tangibles, responsiveness, reliability, assurance, and empathy). Results showed that service quality had a direct effect on both customer perceived value and image perceptions, which in turn influenced satisfaction. The relationship between service quality and image was also tested and confirmed by other scholars in hospitality industry (Ali et al., 2013; Hu et al., 2009; Ryu et al., 2012). Thus, the following hypothesis was proposed;

Hypothesis 3: Service quality significantly influences customer's perceived image.

Previous studies show that the image of a brand/store has significant impact on customer satisfaction and revisit intentions (Andreassen and Lindestad, 1998; Bloemer and Reyter, 1998; Cretu and Brodie, 2007; Lai et al., 2009; Patterson and Spreng, 1997; Ryu et al., 2008). Thus, maintaining a distinguished restaurant image is important for restaurant operators compared to managing competition. Managing a consistent and distinct image is an important marketing strategy for restaurant managers, as it influences customer satisfaction and behavioural intentions. Patterson and Spreng (1997) studied the role of customer perceived image in explaining consumer behaviour in a service context and found that customer's perceived image was a positive and direct antecedent of customer satisfaction and behavioural intentions. Moreover, Bloemer and Reyter (1998) also found that a store's image only affects customers' behavioural intentions through store satisfaction with a particular department store. Castro et al. (2007) found that a destination's image influenced tourists' future behaviour through service quality and/or tourist satisfaction. Ryu et al. (2008) examined the relationships among overall quick-casual restaurant image, customer perceived value, customer satisfaction, and behavioural intentions in the quick casual restaurant industry. They found that, overall; quick-casual restaurant image was a significant determinant of customer satisfaction and behavioural intentions. Thus, the following hypotheses were formulated:

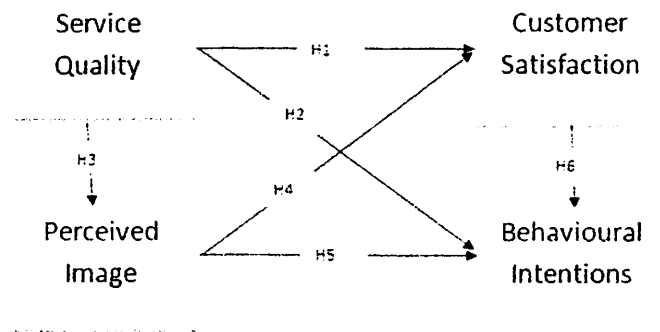
Hypothesis 4: Perceived image significantly influences customer satisfaction.

Hypothesis 5: Perceived image significantly influences customer behavioural intentions.

A number of scholars have studied and confirmed the significant influence of customer satisfaction on loyalty and behavioural intentions (Ali and Amin, 2013). To demonstrate this, a study confirmed that customer satisfaction might end up with customer loyalty in terms of repurchase likelihood (Han and Ryu, 2009). A previous study by Cronin and Taylor (1992) also studied multiple service industries and indicated that satisfaction leads to positive behavioural intentions, such as repurchase intentions (McDougall & Levesque, 1994). Thus the following hypothesis was proposed;

Hypothesis 6: Customer satisfaction significantly influences customer purchase intentions.

Figure 2: Proposed Conceptual Framework



THEORETICAL FOUNDATION

Customers usually prefer to revisit service providers who are successful at developing good perceived image. In this regard, Ryu et al., (2012) and Nguyen and Leblanc (2001) stated that various aspects of service quality, such as physical environment quality, contact personnel, food quality and others, are significant because they can amplify or diminish consumer's perceptions. In order to investigate the impacts of a stimulus on customers' internal organisms and behaviour, the leading environmental psychology framework to be used is the *Stimulus Organism Response* framework, which is also referred to as Mehrabian-Russell (M-R) model (Lin and Liang, 2011). This was confirmed by Ali et al., (2013), who proposed that the framework provides a prudent account of an environmental variable's (stimulus) impact on the arbitrating variables, consumers' perceptions (organism), and the ways that their mind-frame impacts their behavioural reactions (response) toward the environmental stimulus under investigation. Additionally, Sayed et al., (2003) stated that even if the proper stimulus classification in the consumer's environment is not specified by the framework, it is still specifically substantial in the determination of arbitrating and reaction variables.

The behaviour in customer surroundings can be classified into approach and avoidance (Mehrabian & Russell, 1974, and Novak et. al., 2010). Lin and Liang (2011), and Ryu and Jang (2007) found out that the response dimension, approach and avoidance, includes attitudes, comprising amplified or diminished readiness for social interaction – recommendation, staying longer or leaving, responding or evading environmental interaction – patronage, and amplified or diminished readiness for further expenditure – spending more.

The *Stimulus Organism Response* framework was tested in practical investigations based on consumer context (Baker & Cameron, 1996, and Sayed et. al., 2003), and it was found that customers' perception assessment of the service context and the "approach-avoidance" attitudes were considerably affected by service quality dimensions. This was also conceded by Wirtz et. al., (2000). The association between service quality and customer's perception and behaviour was explored for Mauritian hotels using the same framework (Hu et al., 2009). Guests were asked to fill out a survey questionnaire during their stay. Results demonstrated that high service quality leads to superior perceived value, customer satisfaction, and favourable perceptions of corporate image. Moreover, customers' perceived image was also found to affect their satisfaction, such that they are more likely to prefer the

organisation and recommend it to others. The *Stimulus Organism Response* framework was also utilized to investigate resort hotels in Malaysia, in which it was observed that when a customer has better insight on the physical setting, they had favourable perceptions, amplified contentment and behavioural intentions (Ali et al., 2013). Another study proposed an extended Mehrabian-Russell (MR) model by adding a direct linkage between atmospherics and behavioural intentions, in which the direct effects of atmospherics on behavioural intentions were identified (Jang and Namkung, 2009). Hence, it can be concluded that service quality can act as a stimulus to develop customers' perceived image of service provider, which will develop their satisfaction and loyalty.

RESEARCH METHODOLOGY

Sample and Procedures

The population for this study were the passengers of Bangkok's Mass Rapid Transit Subway (MRT) at Bangkok, Thailand. Data collection was done by intercepting the respondents at various MRT stations over a three-week period from January to February 2013. Respondents were briefed about the objectives of the research and their right of withdrawal from the survey. Sample size was determined using the ratio between the numbers of respondents based on the number of parameters. As per Peng and Lai (2012), this ratio should be 20:1. Considering this, the sample size for this study was set to a total of 400 respondents drawn based on convenience sampling. Out of these 400 respondents, 40% were males whereas 60% were females. In terms of age, majority of the respondents (48%) were within the age group of 21-30 years. Moreover, 64% of the total respondents were having or were studying for their bachelor degree. In terms of monthly income, almost 50% of the total respondents were having it between 5000-20000 Thai Baht.

Survey Instrument

Four main variables are included in this study i.e., (i) service quality, (ii) perceived image, (iii) customer satisfaction and (iv) behavioural intentions. The instrument to measure service quality includes 4 primary dimensions (personal interaction, design, physical environment and outcome) having 9 sub-dimensions (attitude, behavior, expertise, problem solving, range of services, operating time, tangibles, information, punctuality and valence) adopted from Caro and Gracia (2007) whereas perceived image was measured using 2 items taken from Wu (2013). Moreover, 4 items were used to assess customer satisfaction adopted from Westbrook and Oliver (1994) whereas 3 items were used to assess behavioral intentions of the passengers. All the items were measured using a 5 point likert scale (1 = strongly disagree; 2 = disagree; 3 = Neutral; 4 = agree; 5 = strongly agree). Questionnaire was developed in Thai language and was sent to three subject experts to guarantee its content and face validity. The questionnaire was also pre-tested by 30 passengers of BRT and MRT. Reliability analysis was conducted which confirmed that the scales were reliable with Cronbach's alpha value of 0.78.

Analytical Procedures

In this study, structural equation modelling using a Partial Least Squares (PLS) method is used to test the hypotheses. PLS is a well-established technique for estimating path coefficients in structural models and has been widely used in various marketing related research studies (Rezaei and Ghodsi, 2014). The PLS technique has become increasingly popular in the last decade because of its ability to model latent constructs with single item or/and under conditions of non-normality (Chin 1998). To run the analysis, SPSS and Smart PLS (Ringle, Wende and Will, 2005) software was used by applying bootstrapping technique to assess the significance of the factor loadings, and path coefficients. As suggested by Anderson and Gerbing (1988), before testing the structural model, validity and reliability of measurement model was also estimated.

RESULTS AND ANALYSIS

Measurement Model

In order to assess the convergent validity of the measurement model, factor loadings, composite reliability (CR) and average variance extracted (AVE) was calculated (Hair et al., 2006). As shown in table 1, factor loadings for all the items were above the cut-off value of 0.7 (Chin, 1998), except for six items (Expertise3, Range of Services1, Information1, Information2, Punctuality1 and Satisfaction1) which were deleted. Value of composite reliability for

all the constructs are also above the cut-off value of 0.7, as suggested by Hair *et al.* (2006). Moreover, average variance extracted (AVE) was also calculated for all the constructs and these values were also above the recommended value of 0.5 (Hair *et al.* 2006).

Table 1: Validity and reliability of the measurement items

Primary Dimensions	Secondary Dimensions	Items	Loadings	AVE	CR
Personal Interaction	Attitude	I can count on the employees being friendly	0.786	0.659	0.885
		The attitude of employees demonstrates their willingness to help me	0.781		
		The employees search for what is in the best interests of the customers	0.850		
		The employees show their interest in accelerating the services	0.828		
	Behaviour	I can count on employees taking actions to address my needs	0.804	0.633	0.873
		The behavior of the employees gives me trust	0.841		
		The employees are never too busy to respond to consumer's requests	0.779		
		This service has employees who give me individual attention	0.755		
	Expertise	Employees are able to answer my questions quickly	0.708	0.629	0.835
		The employees understand that I rely on their knowledge to meet my needs	0.824		
		The employees understand consumers' specific needs	0.841		
	Problem Solving	When a customer has a problem, this service provider shows a sincere interest in solving it	0.871	0.711	0.907
		The service provider is conscious of how important that the resolution of the complaints is for me	0.878		
		The service provider has a fair system for the handling of the complaints	0.881		
		The employees are able to handle customer complaints directly and immediately	0.735		
Design	Range of Services	The services offered by this service provider fit my needs	0.920	0.828	0.906
		The services offered by this service provider are attractive to me	0.899		
	Operating Times	The operating hours of this service provider are convenient	0.849	0.681	0.895
		The operating hours are convenient to my needs	0.832		

Physical Environment	Tangibles	This service provider has operating hours convenient to all its customers	0.807	0.745	0.898		
		The schedule fit my needs	0.814				
		The equipment is visually appealing	0.871				
		The service has modern-looking electronic equipment	0.864				
	Information	Employees have a neat and professional appearance	0.854				
		The employees inform punctually and sincerely about all the conditions of service	0.849			0.709	0.83
		This company informs appropriately about its promotions	0.835				
	Punctuality	The service provider understands that waiting time is important to me	0.826				
		This service provider provides service to the consumers punctually	0.845				
		This service provider provides its services at the time it promises to do so	0.837				
Valence		When the service finishes, I usually feel that I have had a good experience	0.723	0.573	0.843		
	I believe this service provider tries to give me a good experience	0.797					
	I believe this service provider knows the type of experience its customers want	0.767					
	When I leave this service provider, I always feel that I got what I wanted	0.740					
Image	This service provider has a good impression	0.735	0.565	0.722			
	An excellent reputation of this service provider is available	0.768					
Satisfaction	My choice to choose this service provider was a wise one	0.850	0.629	0.835			
	I think I did the right thing when I chose to use this service provider	0.795					
	I feel that my experience with this service provider has been enjoyable	0.729					
BI	I intend to continue using services from this service provider	0.871	0.781	0.877			
	I will spread positive word-of-mouth about this service provider	0.895					

In addition to factor loadings, CR and AVE, discriminant validity of the constructs was also assessed by matching the square root of the Average Variance Extracted (AVE) with the correlations between the variables. Table 2 shows the square root of AVE for each construct in bold values whereas all the other values are that of correlation between

constructs. Ali et al., (2013) stated that if the square root of the AVE is higher than the correlation between different variables, they can be considered as distinctive theoretical entities. It can be seen in Table 2 that the square root of the AVE (diagonal values) of each construct is larger than its corresponding correlation coefficients pointing towards adequate discriminant validity (Fornell and Larcker, 1981).

Table 2: Discriminant Validity

	SQ	PI	CS	BI
Service Quality	0.718			
Perceived Image	0.689	0.856		
Customer Satisfaction	0.679	0.638	0.819	
Behavioural Intentions	0.631	0.597	0.607	0.883

Structural Model

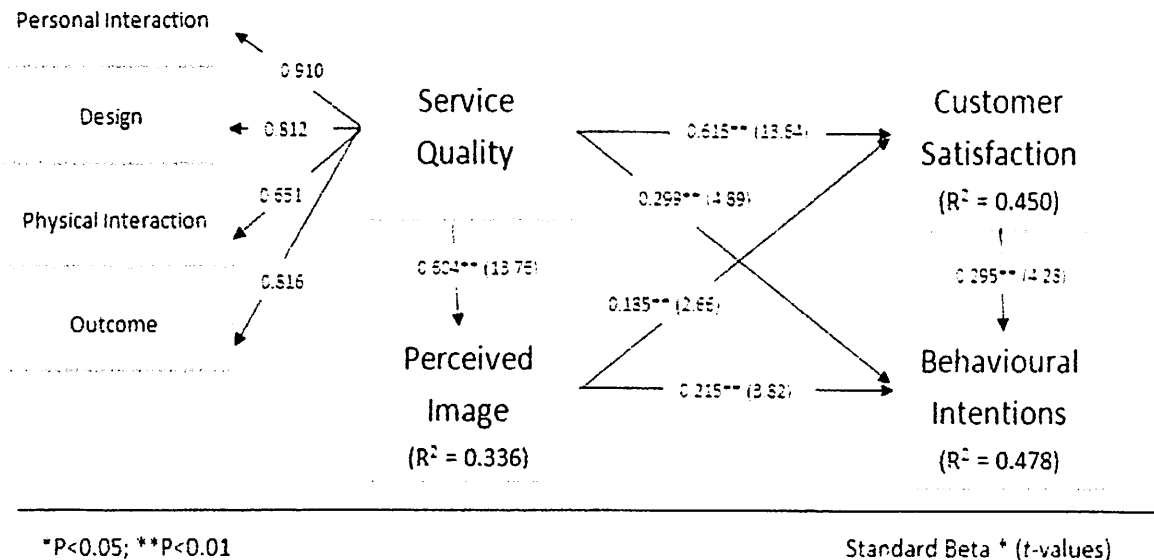
As stated earlier, structural model and hypotheses were tested using SmartPLS 2.0 (Ringle et al., 2005). A bootstrapping procedure with 1000 iterations was performed to examine the statistical significance of the weights of sub-constructs and the path coefficients (Chin, Peterson and Brown, 2008). Since many scholars have criticized PLS of not generating overall goodness of fit indices, Tenenhaus, Vinzi, Chatelin and Lauro (2005) proposed a diagnostic tool to assess the model fit which is also referred to as the goodness of fit (GoF) index. GoF takes into account the mean of the average communality and the average R^2 (for endogenous constructs). Hoffmann and Brinbrich (2012) report the following cut-off values for assessing the results of the GoF analysis: GoFsmall = 0.1; GoFmedium = 0.25; GoFlarge = 0.36. For the model used in this study, a GoF value of 0.531 is calculated which indicates a large model fit as shown in table 3.

Table 3: Goodness of Fit Index

	AVE	R^2
Service Quality	0.502	-
Perceived Image	0.734	0.336
Customer Satisfaction	0.671	
Behavioural Intentions	0.780	0.326
Average Scores	0.671^a	0.421^b
AVE * R^2	0.282	
($GOF = \sqrt{AVE \times R^2}$)	0.531	

In addition to the measurement model validity and reliability and goodness of fit measures, the hypothesized paths indicated in the structural model were also verified. Results of the structural model are presented in Figure 3. The values in the figure shows the standardized coefficients and their respective t-values. The corrected R^2 in the figure refers to the explanatory power of the predictor variable(s) on the respective construct. As shown in Figure 2, service quality predicts 33.6 % of perceived image ($R^2 = 0.336$) whereas both service quality and perceived image predict 45.0% of customer satisfaction ($R^2 = 0.450$). Moreover, service quality, perceived image and customer satisfaction altogether predict 47.8% of customer's behavioural intentions ($R^2 = 0.478$). In regard to model validity, Chin et al., (2008) classified the endogenous latent variables as substantial, moderate or weak based on the R^2 values of 0.67, 0.33, or 0.19 respectively. Accordingly, customer satisfaction ($R^2 = 0.450$), perceived image ($R^2 = 0.336$) and behavioural intentions ($R^2 = 0.478$) can be described as moderate.

Figure 3: Structural Model



Structural Estimates and Hypotheses Testing

The complete results of the structural model and hypotheses testing are presented in Table 4. The results show a strong support for all the six hypotheses of the study. H1 was hypothesizing that service quality will influence customer satisfaction significantly which was supported by results (H1: $b = 0.615$, $t = 13.64$, $\text{sig} < 0.01$). These results confirm that passengers having positive perceptions of the service quality will have higher levels of satisfaction. These findings are in line with the previous studies coinciding that perceived service quality is a significant predictor of customer satisfaction (Dominici and Guzzo, 2010; Gronroos, 1990; Ryu and Han., 2010). A similar study was conducted by Choocharukul and Siroongvikrai (2013) on Bangkok's MRT system. They established that customers' perceived service quality predicts their satisfaction levels. Similarly, Bitner and Hubbert (1994) and Ona et al., (2013) also tested and confirmed the effect of service quality over customer satisfaction.

H2 was hypothesising that service quality will influence passengers' behavioural intentions significantly which was supported by result (H2: $b = 0.299$, $t = 4.897$, $\text{sig} < 0.01$). These results confirm that passengers having positive perceptions of the service quality will have higher chances of positive behavioural intentions. These findings are also in line with the endorsement of a number of scholars related to the significant influence of perceived service quality dimensions on customer's behavioural intentions. Tarn (1999) stated that high perception of service quality triggers a satisfying feeling which in turn influences repurchase intentions of customers. This relationship was also tested and confirmed by Heung et al., (2000), Kim (2011) and Chen et al., (2013).

A strong support was also found for H3 hypothesizing the significant effect of service quality on perceived image (H3: $b = 0.604$, $t = 13.76$, $\text{sig} < 0.01$). These results confirm that passengers having positive perceptions of the service quality will have higher levels of perceived image. Previous scholars also confirmed this relationship. For instance Hu et al., (2009) also observed and confirmed the significant effect of perceived service quality on perceived image. This relationship is also supported by various other scholars (Ali et al., 2013; Ryu et al., 2012).

Moreover, H4 hypothesized that perceived image will influence customer satisfaction significantly which was supported by results (H4: $b = 0.185$, $t = 2.667$, $\text{sig} < 0.01$). These results confirm that passengers having positive perceptions of the image will have higher levels of satisfaction. Previous studies also confirmed this relationship. For example, customer satisfaction has been studied as a function of perceived image by Jin et al., (2012). In another study, Wu (2013) also endorsed the significant effect of perceived image over customer satisfaction.

H5, which hypothesizes significant effect of perceived image on behavioural intentions. The results support this hypothesis (H5: $b = 0.215$, $t = 3.821$, $\text{sig} < 0.01$). These results confirm that passengers having positive perceptions of the image will have higher chances of positive behavioural intentions. Some earlier scholars also tested and confirmed that perceived image has a significant role in shaping consumer behavior. Jin et al., (2012) found that perceived image was a significant determinant of behavioural intentions in restaurants. Moreover, results of the study conducted by Wu (2013) also suggested that maintaining good image enables a service provider to achieve favourable behavioral intentions including purchase intentions.

Lastly, H6 hypothesized that customer satisfaction has significant effect on behavioural intentions. The results support this hypothesis (H6: $b = 0.295$, $t = 4.282$, $\text{sig} < 0.01$). These results confirm that passengers having higher levels of satisfaction will have higher chances of positive behavioural intentions. These findings are also in line with the findings from previous studies (Ali and Amin, 2013; Cronin and Taylor, 1992; McDougall & Levesque, 1994). In a study conducted by Han and Ryu (2009) it was confirmed that customer satisfaction may end up in customer loyalty in terms of repurchase likelihood. Cronin and Taylor (1992) also studied multiple service industries and indicated that satisfaction leads to positive behavioral intentions such as repurchase intentions.

Table 4: Structural Estimates (Hypotheses Testing)

Hypothesis	Standard Beta	Standard Error	T Statistics	Decision
H1: Service Quality -> Customer Satisfaction	0.615	0.043	13.64**	Supported
H2: Service Quality ->Behavioural Intentions	0.299	0.052	4.897**	Supported
H3: Service Quality -> Perceived Image	0.604	0.045	13.76**	Supported
H4: Perceived Image -> Customer Satisfaction	0.185	0.039	2.667**	Supported
H5: Perceived Image ->Behavioural Intentions	0.215	0.069	3.821**	Supported
H6: Customer Satisfaction ->Behavioural Intentions	0.295	0.062	4.282**	Supported

**P<0.01

DISCUSSION, CONCLUSIONS AND MANAGERIAL IMPLICATIONS

The main objective of this study was to propose and test a model that describes the interrelationships between perceived service quality, customer satisfaction, perceived image and customer behavioural intentions in Bangkok's Mass Rapid Transit system, also known as the MRT system. Data was gathered at various MRT stations from 400 passengers over a period of three weeks between January to February 2013, and analysed using partial least squares (PLS) method of structural equation modelling (SEM). All items in the measurement model showed reliability and validity, and were further used to test the structural model. Results showed strong support for all six hypotheses, and proved that perceived service quality influences passenger's perceived image significantly. Both perceived service quality and perceived image influenced customer satisfaction significantly, and all of these influenced customer's behavioural intentions significantly.

The general theoretical framework proposed by Mehrabian and Russell's (1979) also supported this study. The framework comprises of three main elements, namely (i) stimulus (referred to as service quality provided by MRT in this study), (ii) organism (referred to as customer perceptions of image in this study) and (iii) response (referred as customer satisfaction and behavioural intentions in this study). All findings from this study agreed with multiple previous studies (Ali and Amin, 2013; Ali et al., 2013; Bitner and Hubbert, 1994; Chen et al., 2013; Choocharukul and Siroongvikrai, 2013; Cronin and Taylor, 1992; Dominici and Guzzo, 2010; Gronroos, 1990; Heung et al., 2000; Jin et al., 2012; Kim, 2011; McDougall & Levesque, 1994; Ona et al., 2013; Ryu and Han, 2010; Ryu et al., 2012; Wu, 2013).

Customer satisfaction has been a central element in numerous studies due to its importance in shaping post-purchase behaviour. In the same light, this study also supported the notion by confirming the significant impact of passengers' satisfaction on their behavioural intentions. However, positive behavioural intentions cannot be generated by customer satisfaction alone (Tarn, 1999). In this study, it was demonstrated that customer's perceived service quality is also an integral determinant for their behavioural intentions.

This study used a hierarchical and multidimensional model proposed by Caro and Gracia (2007), whereby service quality is a higher-order factor defined by four primary dimensions (personal interaction, design, physical environment and outcome) and ten sub-dimensions (attitude, behaviour, expertise, problem solving, range of services, operating time, tangibles, information, punctuality and valence). The first primary dimension is 'personal interaction', which is considered as the most significant determinant for the perceived service quality (Bitner and Hubbert, 1994). It has three sub-dimensions, namely attitude, expertise, and problem solving. A number of scholars also emphasised these attributes for employees in order to deliver quality services (Czepiel et al., 1985 and Gronroos, 1990). The second primary dimension is called 'design'. This dimension was emphasised by Ko and Pastore (2005) and Brady and Cronin (2001) in their studies on service quality assessment. It includes all aspects related to service configuration, and has two sub-dimensions consisting of a range of service and operating time. The third dimension is 'physical environment'. Many scholars regarded it as the most significant factor to determine the perceived service quality (Bitner, 1992; Brady and Cronin, 2001; Spangenberg et al., 1996). For this study, two sub-dimensions were used, namely tangibles and information. The last dimension is 'outcome'. Based on a previous study, punctuality and valence were identified as the sub-dimensions (Brady and Cronin, 2001). This study proved that these items and scales are appropriate to assess service quality in mass transit services, and to determine the variables that play important roles in passengers' perceptions on its service quality.

For example, the results of the structural model indicated that 'personal interaction' is the exogenous latent variable with the highest loading on service quality. Problem-solving skills and behaviour are two other sub-dimensions with higher loadings in this construct. These results imply that customers look for carriers with staff equipped with good behaviour and problem-solving skills. Physical environment came up with lower loadings, which implies that passengers are mostly worried about the physical environment within the MRT systems, which include tangibles and information. Although passengers emphasized mostly on personal interaction, the other components, i.e., design, physical environment and output also have integral roles in developing customer's positive perceptions and satisfaction.

An important implication derived from this study is the importance of considering customers' perceived image when assessing their experience. This study demonstrated the strong influence of customer's perceived images on their satisfaction and behavioural intentions, which indicate that perceived image, could become a source of information for customer's attitude development. This concept was also demonstrated in the studies by Wu (2013) and Jin et al., (2012), who confirmed that perceived image significantly affects customer satisfaction and purchase intentions. Alternatively, Hu et al., (2009) proposed that ensuring customer value through delivering quality services could be used as a way to gain competitive advantage.

The findings from this study also hold implications for practitioners within this industry. Results showed that customers are satisfied and have positive behavioural intentions towards the Bangkok's MRT system due to the perceived image developed for the quality of services provided. However, in today's highly competitive marketplace, satisfying customers alone is not sufficient. Rather, the MRT management should emphasise on improving customers' perceptions regarding the overall service quality and image, in addition to satisfaction. As noted previously, high level of service quality, good perceived image and customer satisfaction altogether could result in customer's positive behaviours and end up in greater competitiveness (Hu et al., 2009 and Jin et al., 2012). Hence, the management should constantly review and update both service quality and perceived image. Quality standards should also be set to guarantee quality service for all passengers.

LIMITATIONS AND FUTURE DIRECTIONS OF RESEARCH

Similar to other studies, the current study also has a number of limitations to be explored by future research. For this study, the data were collected from customers at MRT stations in Bangkok, Thailand. Therefore, any generalisation on findings related to public transport systems from other countries or geographic locations should be done carefully. A larger sample consisting of a wider range of passengers from other types of public transportation in Bangkok i.e., Skytrain, can be collected. Bangkok's MRT subway system was the selected service setting for this study. A recommendation for future research would be to study customers' perceptions of service quality, perceived image and behaviour for bus transit service or intercity train services. Moreover, this study used a hierarchical and multidimensional model consisting of four primary dimensions and nine sub-dimensions to measure service quality from a public transport perspective. Other service quality dimensions that are missing should be considered in future studies. Another interesting route for future research would be to include customer emotions in the proposed model.

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Thailand's Provincial Electricity Authority (PEA) Electronic Customer Relationship

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ABSTRACT

This study is an analysis of Thailand's Provincial Electricity Authority's (PEA) use of Electronic Customer Resource Management (CRM) systems and how they affect PEA's customers. The PEA operates as a government enterprise in the utility sector, having primary responsibilities which include power generation, procurement, distribution and sale of electricity to the public, businesses and the industrial sector. This currently includes 99.4% of Thailand, with a total of 74 of 77 provinces covering an area of 510,000 km². Research methodologies used within this study include both quantitative and qualitative research. Quantitative is further qualified by the use of a survey given to 500 PEA executives. The Partial Least Square (PLS) technique, a form of structural equation modeling, is additionally used due to it being component-based rather than covariance-based. Additionally, qualitative research is supported by input from questionnaires from 10 key Thai PEA officials utilizing the purposive sampling approach. The results showed that two factors had an immediate and positive impact on customer satisfaction: There were Service Quality and E-CRM. Furthermore, there was also an immediate and positive impact on PEA Customer Satisfaction. A fact recognized by a hypothesis significance $p \leq 0.01$, respectively, with the results of qualitative research being consistent with the results of quantitative research. So, if the PEA has a good ECRM and Service Quality, organizational performance increases.

Key words: Service quality, electronic customer relationship management, customer satisfaction

INTRODUCTION

The emergence of technology and information systems have come to play a key role within the organization and technology, specifically the Internet, becoming an important tool in assisting the organization in its ability to work faster and more efficient each day. As data and information has become more accurate and accessible, Information Technology (IT) systems have crept more and more into everyday life.

As IT became a tool for management allowing faster and faster decision making and analysis, E-CRM became a strategic component of an organization's survival at every level and today it dominates, offering a competitive advantage. Bringing IT into the development of Customer Relationship Management (CRM), is an effort at identifying and retaining customers (Rainer *et al.*, 2007). Process management is a long-term relationship with the customer which needs products or services to satisfy customer's needs.

The use of technology and human resource principles have been used more and more in customer relationship management which builds customer relationships and helps with the continuing education about customer needs and behavior in all aspects of interaction with customers. It also helps educate the customers, whose data is used to develop products and services as well as marketing programs to suit individual customers or groups to meet the needs of their customers at heart (Pleasant, 2005).

A customer relationship management system is a system designed to support all activities relating to the management of the relationship between the customer and the organization (Delafronz *et al.*, 2009). It is also a system which creates a tool that allows organizations to collect customer data from various departments giving them the ability to analyze the objectives of the organization's needs.

It also allows the transfer of this information to other systems which can include customer contact points, helping to create long-term customer satisfaction. Data analysis helps provide enterprise customers greater details about all the old customers and new customers adding long-term value and loyalty to the organization creating greater profitability.

A customer relationship management system also allows organizations to learn their customer's behavior as well giving the organizations a better ability to analyze this data. It also allows organizations to find new customers and development new and better services, customizing and tailoring their services for each individual group. The E-CRM planning can increase customer perceptions and satisfaction leading to longer customer retention (Santos, 2003).

Electronic Customer Relation Management (E-CRM) is a technology tool that has been used to manage the information system applications and communication technology to increase the size and scope of customer service (Blery and Michalakopoulos, 2006). They also mentioned that E-CRM is a internet technology marketing tool with the aim of finding, building and improving long-term relationships with customers to improve their potential performance (Blery and Michalakopoulos, 2006).

Provincial Electricity Authority (PEA): It is a government enterprise in the utility sector attached to the interior ministry, was established on 28 September 1960 with primary responsibilities including power generation, procurement, distribution and sale of electricity to the public, businesses and industrial sectors in 74 provinces, over a nationwide area of 510,000 km² or 99.4% of Thailand, (with the exception of Bangkok, Nonthaburi and Samut Prakarn provinces). The stated missions of the organization are, (1) Optimal performance and utilization of its products and services, (2) A powerful enterprise management system, (3) To maintain successful financial performance and (4) Creation and maintenance of a Customer-Centric Organization with a focus on the customer and the environment (MEA, 2010).

PEA has also become a leading international energy services business functioning with social responsibility and a concern for the environment. With a mission to supply and provide electricity and related services in neighboring countries using international standards, with a focus on customer satisfaction both in the quality of products and services by continuing development within PEA's organizations.

PEA's modern business needs to be managed effectively, in line with market conditions as well as ready for business competitiveness and social and environmental responsibility. Long term strategy should also focus on customer relationship management building relationships to continue learning about customer needs and their behavior in all aspects of interaction with customers.

If you are able to learn from customers the data can be used to develop products and services as well as marketing programs to suit individual customers or groups to meet each customer's needs at a cost that is inexpensive. This will result in a sustainable long-term relationship with loyalty among the customer base contributing to sustained long-term profitability.

Education needs to focus on Customer-Centric Business to collect data and do analysis which contributes to the information helping CRM decision strategy. This helps create a competitive advantage in a highly competitive environment. The CRM has thus become the strategic 'weapon' to win in the modern market place and meet constantly changing business environments as well as the introduction of new information technology, equipment and instruments.

This study's researchers were interested in understanding the model of service quality and electronic customer relationship management (E-CRM) affecting PEA customer satisfaction. Variables have been determined to be: (1) Service Quality which consisted of Trust, Customer Service, Confidence, Customer Care and Physical Appearance, (2) Electronic Customer Relationship Management (E-CRM) variables included Basic Services, Customer-Centric Services and Value-Added Services and (3) Customer Satisfaction with Service, Service System and Overall Satisfaction.

CONCEPTUAL DEVELOPMENT

Service quality: Organizations deploy various methods at being successful but one group's method might not necessarily be successful elsewhere. Indeed, as Buzzell and Gale (1987) cited in Gronroos (1990) state: "Quality (of service) is whatever the customers say it is and the quality of a particular service, is what the customers perceive it to be".

The meaning of Service Quality is provided by two types, (1) Technical Quality refers to the relationship of the results to what the client receives from the service and being able to measure it with the assessment of Product Quality, (2) Functional Quality is related to the process of evaluating which is in line with Crosby (1979), stated that Service Quality is a concept that holds to the idea of DRIFT or "doing it right the first time" and further stated that "quality is free" with zero defects. According to the study by Angelova and Zekiri (2011) "Measuring Customer Satisfaction with Service Quality Using American Customer Satisfaction Model (ACSI Model)", they found that Service Quality and Customer Satisfaction are very important concepts.

In a competitive environment, delivering high quality services is the most important key for a sustainable competitive advantage. Customer satisfaction has a positive effect on the profitability of the organization and is the foundation of a successful business. Customer satisfaction also leads to brand loyalty and repeat purchases from mouth to mouth customer satisfaction but when Service Quality isn't perceived by the client as satisfactory, expectations were higher than the recognition of customers satisfied with the service. The findings will provide additional information about customer needs and satisfaction.

Lewis and Soureli (2006) found that the perception of Service Quality has a direct effect on customer trust. This is consistent with the findings of Chao *et al.* (2009), who also found that Service Quality perception has a direct effect on the satisfaction and trust of customers. While research by Tsai *et al.* (2010) found that perceived Service Quality has a direct influence on customer loyalty. However, there are indirect costs to the service and customer satisfaction is a variable.

Electronic Customer Relationship Management (E-CRM): The concept of Electronic Customer Relationship Management (E-CRM) is a form of customer relationship management using the Internet as a medium. This form of online customer relationship management also includes electronic mail and electronic commerce activities along with several other channels that can reach customers on the internet (Panichchakul and Pongsasakulchai, 2009; Cherdchukijkul, 2005).

E-CRM provides Customer Service and corporate partners more efficient and more productive means to work, so E-CRM is not just something to make the organization's survival but also as a tool to help organizations take advantage of the business as well (Panichchakul and Pongsasakulchai, 2009) and organizations that put E-CRM operations continued to flow and information in relation to enterprise customers (Blery and Michalakopoulos, 2006).

Blery and Michalakopoulos (2006) noted that the use of Internet technology is to achieve specific search objectives and to build and improve relationships with customers to optimize their long term potential (Aydin and Ceylan, 2009) which resulted in employee satisfaction. Customer Satisfaction requires (Olowokudejo *et al.*, 2011), giving organizations the ability to interact with customers which leads to better quality service and responding quickly to customers (Nguyen *et al.*, 2007).

From a study by Wangkananon and Sawmong (2012) concerning the strategy to build loyalty in the Thai cosmetics industry found that the factors that influence loyalty factors are the basic building loyalty. (direct, = 0.243, indirect = 0.0048 and total = 0.2478) and the factor of customer relationship management. (Direct = 0.032), the factors that influence customer loyalty. Factors include building relationships closely and reducing factors that cause change. Strategy to build loyalty in the industry, the manufacture of cosmetics. Factors include the basic building loyalty. Factors and customer relationship management. Which should focus on the underlying factors creating loyalty. Cherdchukijkul (2005) found that the satisfaction of the public to the services at the center a single point, the Bangkok people total. The results showed that people were satisfied with the behavior of services and service system. Corry *et al.* (1997) and Tangkhaprasert (2007) found that users can search for the information you need from the site could be improved more efficiently than the existing site.

Customer satisfaction: Customer satisfaction is an emotion or feeling that the individual expresses at the pleasure of using the product or consuming the product (Pleasant, 2005), which is consistent with the research of Hornby (2000) and Wolman (1973) who stated success breeds happiness and satisfaction.

When we have been successful we get intentional goals to need or motivation. The ACSI model includes three factors that affect customer satisfaction which are the quality of the product or service that customers receive (Perceived Quality). Value of the product or service that customers receive (Perceived Value). The expectations of the customer (Customer Expectation). Other factors contributing to customer satisfaction include customer complaints (Customer Complaints) and loyalty to the product or services (Customer Loyalty) (Eskildsen and Kristensen, 2008).

A study by Aydin and Ceylan (2009) on the satisfaction of both customers and employees for the effectiveness of the organization creates and enhances long-term customer relationships. This affects the optimization potential of the organization and results in employee satisfaction as well as customer satisfaction (Olowokudejo *et al.*, 2011).

Chen and Tseng (2012) found that a website's ease of use affected the attitudes of the consumer and contributed directly to the knowledge, benefits and recognition of the organization. It also enables organizations to increase their ability to interact with customers, leading to a better quality of service and faster customer response times (Anderson, 2006). If the organization can manage the satisfaction of their client, this will lead to the successful operation and loyalty of the customers (Caruana *et al.*, 2000; Paul *et al.*, 2009; Pong and Yee, 2001).

The following hypotheses were developed from the previous discussion:

- **H1:** Service Quality affects Electronic Customer Relationship Management(E-CRM)
- **H2:** Electronic Customer Relationship Management (E-CRM) affects Customer Satisfaction

METHODOLOGY

The format of the survey was drawn from 1,143,935 industrial PEA electrical customers (PEA, 2010).

Data collection: This study collected samples from 500 industrial PEA electric customers using Probability Sampling and Simple Random Sampling.

Questionnaires design: Questionnaire was constructed to be a tool to measure concept definition and practice. The instrument or questionnaire used the 7-Point Likert scale as the measurement scale and the conceptual framework for determining the internal consistency measured by coefficient alpha. (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient was found that alpha coefficients ranged from 0.725-0.856, which is considered a highly reliable. All values lower than 0.50 were eliminated from the measurement.

Scale

Dependent variables: Firm performance analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert scale (Likert, 1970) and have been constructed with the scales developed enabling measurement of Service Satisfaction, CRM satisfaction and Overall Satisfaction (Eskildsen and Kristensen, 2008; Joo and Sohn, 2008; Sohn *et al.*, 2008).

Independent variables: Electronic Customer Relationship Management (E-CRM) analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert scale (Likert, 1970) and have been constructed with three aspects (Table 1) including Basic Services, Customer-Centric Services and Value-Added Services (Loiacono *et al.*, 2002; Thiwalai and Liampreecha, 2012).

Service Quality analysis used a measurement instrument or questionnaires utilizing a 7-Point Likert scale (Likert, 1970) and have been constructed with five aspects (Table 1) including Trust, Customer Service, Confidence, Customer Care and Physical Appearance (Parasuraman *et al.*, 1985).

RESULTS AND ANALYSIS

Partial Least Squares has been applied for analysis of quantitative data by the researcher. It is data analysis for Confirmatory Factor Analysis (CFA) relating to the determination of Manifest Variable and Latent Variable and testing of research hypothesis exhibiting in structural model analyzed by using the applications of PLS-Graph (Chin, 2001).

Table 1: Statistic values presenting convergent validity of reflective scales of latent variables

Variables	Construct/Item	Loading	t-stat
Service quality			
Q_TRUS	Trust	0.920	63.491
Q_RES	Customer service	0.978	79.979
Q_CON	Confidence	0.955	69.320
Q_EMT	Customer care	0.936	66.490
Q_AMP	Physical appearance	0.930	87.115
Electronic customer relationship management			
CRM_F	Basic services	0.976	88.666
CRM_C	Customer centric services	0.968	102.106
CRM_V	Value added services	0.971	84.915
Customer satisfaction			
CRM_SAS	Service	0.460	6.340
CRM_SYSTEM	Service system	0.969	134.881
CRM_Total	Overall satisfaction	0.964	151.632

According to the analysis result of scale validity and reliability, scale investigation has been conducted using internal consistency measurement coefficient alpha. (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient was found that alpha coefficients ranged from 0.725 to 0.856, which is considered to have high reliability.

In case of measure variables with reflective analysis, convergent validity has been conducted. Loading is used as consideration criteria and must be positive quantity and indicator loading has been more than 0.707 and all values have been statistically significant ($|t| > 1.96$) representing convergent validity of scales (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) quoted in (Piriyakul, 2010) and analysis results as shown in Table 1.

Service Quality factors (QUALITY) are the factors underlying the external variable Trust (Q_TRUS) Customer Service (Q_RES), Confidence (Q_CON), Customer Care (Q_EMT) and Physical Appearance (Q_AMP) with values loading from 0.707 and a significant level of confidence percentage 95 ($t\text{-stat} > 1.96$), which considers such factors. These factors affect Customer Satisfaction.

Electronic Customer Relationship Management (E-CRM) factors underlying the external variable are Basic Services (CRM_F) Customer Centric Services (CRM_C) Value Added Services (CRM_V) and Customer Care (Q_EMT), with values loading from 0.707 and a significant level of confidence percentage 95 ($t\text{-stat} > 1.96$), which considers such factors. These factors affect Customer Satisfaction.

Customer Satisfaction factors underlying the external variables are Service system (CRM_SAS), Service System (CRM_SYSTEM) and Overall Satisfaction (CRM_TOTAL) with values loading from 0.707 and a significant level of confidence percentage 95 ($t\text{-stat} > 1.96$), which considers such factors. These factors affect Customer Satisfaction.

So, the researchers took the variables, Trust (Q_TRUS), Customer Service (Q_RES), Confidence (Q_CON), Customer Care (Q_EMT), Physical Appearance (Q_AMP), management basic (CRM_F) Customer-Centric Services (CRM_C), Value added Services (CRM_V), Service (CRM_SAS), Service System (CRM_SYSTEM) and Overall Satisfaction (CRM_TOTAL) were used to analyze the structural equation.

Table 1 shows the discriminant validity of the internal latent variables and the correlation of variables. It also depicts the scale reliability which has been

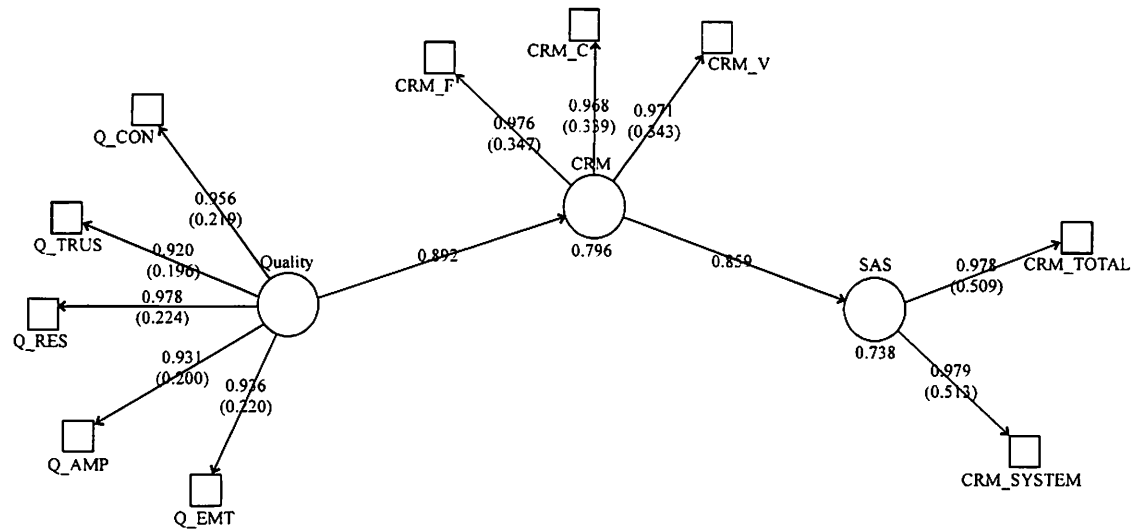


Fig. 1: Final model

Table 2: Results of Confirmatory Factor Analysis (CFA) for measurement model

Construct	CR	R²	AVE	Cross construct correlation		
				Service quality	E-CRM	Customer satisfaction
Service quality	0.979		0.892	0.9444		
E-CRM	0.981	0.796	0.944	0.8790	0.972	
Customer satisfaction	0.978	0.738	0.958	0.7680	0.852	0.979

Statistical significance level is at 0.01 and diagonal figures mean \sqrt{AVE}

analyzed from Composite Reliability (CR) as well as the Average Variance Extracted (AVE) and R^2 . The CR value should not go below 0.60 and the AVE values should also drop below 0.50 and R^2 values should not be under 0.20 (Lauro and Vinzi, 2004; Henseler *et al.*, 2009) quoted in Wingwon and Piriyaikul (2010).

Table 2 shows the results of factor analysis affecting the PEA organizational performance. The data also shows the CR values are higher than 0.60, with all AVE values higher than 0.50 for all values and R^2 values higher than 0.20, representing the reliability of the measurement. It found that data sets in the \sqrt{AVE} have higher values than all of the corresponding values in the 'Cross Construct Correlation' in the same column, representing discriminant validity of the measure in each construct and with a greater value than 0.50 of AVE as shown in Table 2.

Analysis results of Service Quality, Electronic-Customer Relationship Management affecting Customer Satisfaction on the Thai PEA appears in Fig. 1.

Results for the structural model are depicted as the independent variables 'Quality' which is Service Quality, 'CRM' which is Electronic Customer Relationship Management and the dependent variable 'SAS', which is Customer Satisfaction.

RESULTS AND DISCUSSION

Based on the research subject 'Thailand's Provincial Electricity Authority (PEA) Electronic Customer Relationship Management (E-CRM) System and how it affects customer satisfaction',

Service Quality, Electronic Customer Relationship Management (E-CRM) and Customer Satisfaction were studied to discover how the variables affect PEA customer satisfaction. Variables to be discussed are as follows:

- Service Quality factors affect E-CRM which is consistent with the study by Angelova and Zekiri (2011) 'Measuring Customer Satisfaction with Service Quality using American Customer Satisfaction Model (ACSI Model)', it was found that Service Quality and Customer Satisfaction are very important concepts. In a competitive environment it is crucial to deliver high quality service to maintain a sustainable competitive advantage
- Customer Satisfaction has a positive effect on the profitability of the organization and satisfied customers are the foundation of a successful business. Customer Satisfaction leads to brand loyalty and repeat purchases from word-of-mouth referrals
- The Service Quality perceived by the client is not satisfied. Expectations were higher than the recognition of customers satisfied with the service. The findings will provide additional information about the needs of the customer needs and satisfaction. It also leads to the researcher's measure the quality of service in the hospitality industry in Macedonia addition

Lewis and Soureli (2006) found that the perception of Service Quality has a direct effect on customer trust. This is consistent with the findings of Chao *et al.* (2009) who also found that Service Quality perception has a direct effect on the satisfaction and trust of customers. While research by Tsai *et al.* (2010), found that perceived Service Quality has a direct influence on customer loyalty. However, there are indirect costs to the service and customer satisfaction is a variable.

Electronic Customer Relationship Management affects Customer Satisfaction, which corresponds to Wangkananon and Sawmong (2012) 'A study of the strategy is to build loyalty in the industry of manufacturing in Thailand' found that the factors of customer relationship management affect customer satisfaction and loyalty to the service.

Chao *et al.* (2009) found that perceived service quality has a direct effect on the satisfaction and trust of customers. Additionally, research from, Lewis and Soureli (2006) found that perceived service quality has a direct effect on the trust of customers. While research from Tsai *et al.* (2010) found that perceived service quality has a direct effect on customer loyalty but there are indirect costs to the service.

CONCLUSION

This study examined the quality of electronic customer relationship management (E-CRM) affecting PEA customer satisfaction. What is important to Service Quality is the ability to respond in providing services to the customers with the use of Electronic Customer Relationship Management (E-CRM) systems. The E-CRM systems must be available and up to date and up to the needs of the user. PEA's E-CRM system must also have an easy-to-use navigation system which gives the customer the confidence to use the online service which is a key factor in improving the Service Quality of E-CRM services.

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