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มหาวิทยาลัยราชภัฏพิบูลสงคราม

## A Confirmatory Factor Analysis of Employee Work Engagement: A Case Study of Thai Airways International Public Company Limited

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### ABSTRACT

During the COVID-19 pandemic, many aviation organizations around the world are trying to maintain their organizational performance. Employee work engagement represents contextual organizational performance. This study aims to conduct confirmatory analysis and verify the construct validity of employee work engagement by looking at a case study of Thai Airways International Public Company Limited. A questionnaire concerning employee work engagement is used as the research tool, and data is analyzed using Confirmatory Factor Analysis techniques. The results indicated that the components of employee work engagement consisted of nine indicators. The standardized factor loading of these items were between .366 - .869 consistent with the empirical data considering the chi-square values = 57.40,  $p = 0.00$ ,  $df = 21$ ,  $CFI = 0.98$ ,  $TLI = 0.97$ , and  $RMSEA = 0.07$ .

**Keyword:** Confirmatory Factor Analysis, Employee work engagement, Human resource management, Thai Airways International Public Company Limited.

### Introduction

Organizational performance is a critical issue. Richard et al (2009) define organizational performance in two different perspectives (a) objective performance; and (b) subjective performance. This concept of employee engagement is considered subjective organizational performance. The study of employee work engagement has expanded increasingly among organizations, consulting firms, and practitioners due to the positive affect on both individual and organizational performance. In terms of operational measurement issues, employee work engagement has been used to reflect organizational effectiveness. Additionally, social exchange theory (SET) explains that employees contribute more positive behaviors if they perceive organizational support. Employee work engagement is exhibited through the degree of job involvement and how much employees commit to the organization (Kahn, 1990).

Organizational crises give rise to financial and personnel issues (Dutton, 1986). An organizational crisis may impact on psychological factors of employees such as work engagement (Teo et al., 2020; Ruiz-Frutos et al, 2021). Although there is extensive research on employee work engagement in organizations (Schaufeli, 2012), more evidence is required to explain the variation in employee work engagement during an organizational crisis; especially when an organization is confronted by global change such as during the COVID-19 pandemic. Managing employee work engagement during such crisis can help an organization identify the most effective procedures to manage individual issues.

### Background of the Study

Thai Airways International was founded in 1960 as a joint venture between Thailand's domestic carrier, Thai Airways Company (TAC) and Scandinavian Airlines System (SAS). It operates domestic, regional and

intercontinental flights from its home base in Bangkok to key destinations around the world and within Thailand. On June 25, 1991, the Thai Cabinet approved a resolution enabling THAI to list its shares on the Stock Exchange of Thailand (SET) (About THAI, 2020) and change its name to *Thai Airways International Public Company Limited* (THAI). In October 2019, THAI had to face a critical financial crisis despite of its great success for decades (Thodsapol Hongtong, 2019).

In September 2020, The Central Bankruptcy Court approved THAI's debt restructuring plan. This approval is the first step in the process of organizational transformation which may take years. According to Ashworth (2020), THAI has also been facing its biggest challenge: bankruptcy during a global pandemic with a lockdown policy in many countries around the world. Flights were canceled in April 2020 in accordance with COVID-19 prevention measures. According to the company's July 2020 statement, at the end of June 2020 the company's total liabilities added up to 332.2 billion baht and THAI had to default on loans and bonds totaling 85 billion baht. For the first half of the year, the airline reported a net loss of 28 billion baht.

### Significance of the Study

Although THAI is undergoing sweeping changes, employee work engagement dimensions are still unclear Kulikowski (2017). This study aims to measure employee work engagement, analyze the elements of work engagement, and to assess the construct validity of a structural model of work engagement of employees at Thai Airways International Public Company Limited.

### Literature Review

This section will review the existing literature on employee work engagement.

#### Employee Work Engagement

Work engagement refers to the work-related activities (Kahn, 1990). It has been operationalized most often with the Utrecht Work Engagement, UWES (Lesener, 2020). Schaufeli and Bakker (2004) define work engagement as a positive attitude toward work activities. They propose three dimensions of work engagement: (1) Vigor - a high level of energy and mental capacity while working and the willingness to contribute and make an effort to work effectively; (2) Dedication - a sense of inspiration and willingness to face challenging work; and (3) Absorption - a high level of concentration and happiness at work. From the organizational performance perspective, employee work engagement reflects what employees contribute to the organization, both physically and mentally.

Lesener (2020) reveals that there are extensive studies emphasizing the antecedents of work engagement. The results show that work engagement is influenced by group-level resources, leader-level resources, and organizational-level resources. Group-level resources is interpersonal relationships which create respect among employees at work. Leader-level resources refers to leadership characteristics as well as the interaction between leader and employee. Organizational-level resources reflects physical factors that show how work is organized and designed. Individuals engage with work because of different factors but studies show that enhancing employee work engagement benefits the organization's performance.

Although there is more than one concept of work engagement, UWES serves as an umbrella term for the different types of engagement (Lesener, 2020). The measurement of Utrecht Work Engagement has been verified in different contexts, but the results were inconsistent. Loscalzo and Giannini (2019) analyzed and confirmed its reliability among 491 Italian university students. Similarly, Fong and Ng (2012) conducted a cross-sectional study in China to validate the work engagement measurement. The results confirmed that the three-

factor model of work engagement was valid. Meng and Jin (2017) confirmed the reliability and three-factor structure of the Utrecht Work Engagement Scale for nurse students in China. However, Willmer et al (2019) revealed a poor fit for all three factors of its measurement in their cross-sectional study among female respondents in Sweden.

## Methods

### Sampling and Procedure

The Thai translation of the short form of the Utrecht Work Engagement was used to collect data from 348 employees of THAI via a paper survey. Convenience sampling technique was deployed during August 2020 – November 2020. The respondents were 172 (49.6%) females and 175 (50.4%) males. Regarding age, 29.4% were aged between 25-30, 19.6% aged between 40-45, 15.3% aged between 30-35, 14.7% aged between 35-40, and 14.1% aged between 21-25. Of the respondents, 266 (76.7%) were in operations and the rest were in administration and other departments.

### Measurement

All nine items of UWES-9 were used to measure the level of employee work engagement (Schaufeli & Bakker, 2003). Example statements are “*At my work, I feel bursting with energy*”; “*At my work, I feel strong and vigorous*”; and “*I am immersed in my work*”. Reliability of the measurement was .90.

### Data Analysis

Descriptive statistics of the results from UWES-9 were calculated. Table 1 displays the item mean scores, standard deviations, skewness, and kurtosis values. Table 2 presents the correlation among items. Additionally, the Average Variance Extracted (AVE) and Construct Reliability (CR) are presented to reflect the accuracy of the measurement.

Table 1. Items Mean Scores, Standard Deviation, Skewness, Kurtosis

Item (subscale)	M	Standard deviation	Skewness	Kurtosis
v_1 At my work, I feel bursting with energy.	4.11	.97	.06	-.12
v_2 At my work, I feel strong and vigorous.	4.31	.95	.01	-.26
v_3 When I get up in the morning, I feel like going to work.	4.38	1.00	-.06	-.45
d_4 I am enthusiastic about my job.	4.38	1.01	-.31	.19
d_5 My job inspires me.	4.28	1.00	.04	-.77
d_6 I am proud of the work that I do.	4.31	.96	-.14	-.16
a_7 I feel happy when I am working intensely.	4.50	.97	-.28	.13
a_8 I get carried away when I am working.	3.50	1.08	.11	-.61
a_9 I am immersed in my work.	3.48	1.07	.14	-.45

Table 2. Means, Standard Deviation, AVE, CR, Correlation matrix among UWES-9

	AVE	CR	1	2	3	4	5	6	7	8	9
v_1	.63	.83									
v_2			.64**								
v_3			.54**	.72**							
d_4	.71	.88	.56**	.64**	.71**						

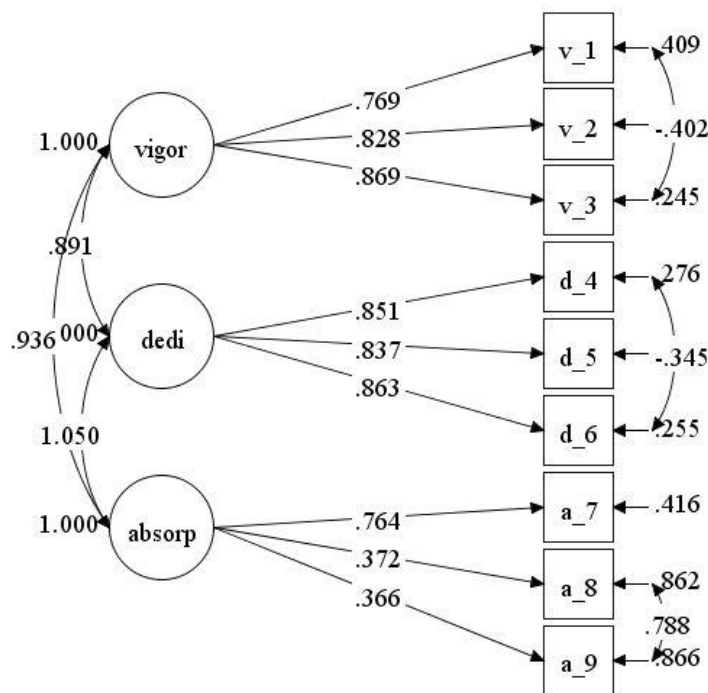
d_5			.60**	.61**	.64**	.70**			
d_6			.59**	.62**	.64**	.64**	.74**		
a_7	.40	.70	.49**	.62**	.64**	.69**	.65**	.69**	
a_8			.35**	.30**	.25**	.25**	.40**	.38**	.30**
a_9			.35**	.25**	.22**	.25**	.38**	.37**	.26**

Note: n = 348; \*\* p < .01

**Results**

**Confirmatory Factor Analysis.**

Psychometric properties of the UWES-9 were calculated by means of Confirmatory Factor Analysis (CFA) to evaluate its factor structure. More specifically, model fit of the three factors model was tested with the Maximum Likelihood Method (ML). Moreover, Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) which reference cut-off values are: < .90 lack of fit, .90 - .95 good fit, > .95 excellent fit (Hu & Bentler, 1999). Reeve et al (2007) propose that the Root Mean Square Error of Approximation (RMSEA) indicates and excellent fit for values below .05, and acceptable fit for values between .05-.08.



$\chi^2 = 57.10; df = 21; CFI = .98; TLI = .97; RMSEA = .07$

Figure 1: Result of confirmatory factor analysis of employee work engagement

**Discussion**

This current study tests the effectiveness of the UWES-9 in measuring work engagement among employees of Thai Airways International Public Company Ltd. Each of the three dimensions of UWES-9 - vigor, dedication, and absorption - contains three items. The results revealed that factor loadings of all items were

between .366 - .869. The first top three items with high factor loadings were item no. 3 (v\_3), item no. 6 (d\_6), and item no. 4 (d\_4) with values of .869, .863, and .851, respectively. During the COVID19, TG is in a critical condition and needs to adjust the working styles, such as working from home or do job rotation by employee take a turn to work in the office for some days. However, according to the results of the study, it showed that employees still have the enthusiasm and the desire to work. The two items with low factor loadings were item no. 8 (a\_8), and item no.9 (a\_9) with values of .372 and .366 at a significant level ( $p < .01$ ). The results were in line with the previous study of Loscalzo and Giannini (2019) and Willmer et al (2019). It could be implied that changing work styles in times of COVID19 affects the happiness of an employee as it is one of the conditions of employee work engagement. Naturally, the characteristic of aviation work is mainly concerning with customer service and involves teamwork, so working in real situations makes employees happy by developing a bond between colleagues.

The results indicate that human resource management in the organization should pay attention to positive psychology. The study analyzes the psychometric properties of the UWES-9 scale so that this tool can be used in future studies to examine psychological factors in other organizational contexts, especially in Thailand. As far as the psychometric properties of UWES-9 were concerned, the three model factors of UWES-9 fit with the data. However, the model was improved when correlating the residual items - v\_1 and v\_3, item d\_4 and d\_6, and item a\_8 and a\_9. Loscalzo and Giannini propose that there are external variables that are not included in the model that should be taken into consideration.

## Conclusion

The present study was conducted in Thai Airways International Company Limited which was in the process of transformation. The UWES-9 scale reveals that the three-factor model of employee work engagement yields conclusive results on factor structure. However, future research is needed to confirm its properties. Furthermore, results indicate that the UWES-9 can be applied in the business context of Thailand even though it is a time of turbulence in the business sector.

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## Business Model Canvas Effecting to the Successful in Performance of Software Vendors Business in Thailand

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### Abstracts

The objectives of this research were to investigate the causal relationship structure Models for the Value Proposition, the Revenue Model and firm performance that influence the successful operations of software vendors. The sample of this research is software vendors in Thailand 206 software vendors. The research then uses a Mixed method. The quantitative method by means of data collection with a questionnaire to analyze the influence of parameters on the firm performance by analyzing a structural equation Model using LISREL on the sample of 206 software vendors and the qualitative method by means of data collection by in-depth interview with executive administration of software vendors. The empirical study found that the overall research framework and empirical data are consistent. Findings have shown that the value proposition is a component that affects the revenue Model, which in turn directly affects the firm's performance and the value proposition also directly affects a firm's performance that is an analysis of the performance as a whole (both real growth rate of earnings and comments-based data) have a statistically significant.

**Keywords :**Element of Business Model Canvas, Value Proposition, Revenue Model.

### Introduction

The software industry is one of the most important strategic industries in the country and it plays an important role in the development of other industries. Software supports the work process of businesses in every industry and facilitates the lifestyle and communication of the people in the present generation. For that reason, software has become a primary factor for leading one's life in the new era. However, the software companies in Thailand are still at the early stage of development where the business strategies, marketing plans, software quality need improvement to conform to the market demands. Moreover, the strategies for income generation



in various forms for smooth operation and survival are still lacking. From the reports of Software Industry Promotion Agency (Public Organization), the software producers still lack information to support the business for operational success and the strategies to create value to the software products to adapt to the changes in technological advancements are not much considered. There is also a lack of information to support a business operation plan for software producers and this leads to failure in business operation (Software Industry Promotion Agency, 2015). This coincides with the opinion of the Director of Software Park Thailand who said that, when there are rapid technological changes that are the challenges and opportunities for software business, the business may need to adapt themselves according to the technological changes by finding new business models for market expansion and effective operation that could lead to success.

To successfully run a business, there is an important concept that is accepted by the world-class technical specialist to be an effective concept for success. It is called Business Model Canvas or BMC created by a renowned scholar Osterwalkder et al (2010, p. 14) from the book called Business Model Generation. Osterwalkder's book explains business model concepts that consist of 9 elements for business success. These are Value Proposition, Customer Segment, Channel, Customer Relationship, Revenue Streams, Key Resources, Key Activities, Key Partnerships, Cost Structure. To adapt to the BMC concept and use it as a tool for business plans will help the businessman to have more understanding of the business in order to promote reasonable business operations to achieve the expected profits (Johnson, Christensen and Kagermann, 2008, p. 52) as planning with the business model helps to create value that affects the operational process and the successful firm performance. (Rajala, 2009 : Redis, 2009 : Zott, Amit and Massa, 2011). There are studies and experiments conducted on the business model concept as well as its elements that could lead to success in various context, which differ from country to country, with the focus on industries related to software and Internet that have rapid growth.

This research has the aim of finding a pattern of business model that could lead to success in a firm's performance and it was found to have an empirical result which implies that the elements of a business model canvas has a relationship with the firm's performance with statistical significance. The business model is the source of competitive advantage that leads to operational success in the form of attributes of their elements (Redis, 2009). There are also arguments about which attributes and elements of the business model that actually contributes to the success of a software firm (Zott, Amit and Massa, 2011, p. 5). Nevertheless, the researchers have tried to find out past research conducted on the concept of the Business Model Canvas in Thailand for software industry but failed as the research projects were conducted on other industries that did not study the concept of elements of business model canvas that contributes the operational success. Nonetheless, there are also arguments amongst the scholars about which attributes and elements of the business model that contributes to the success of software business and the information gathered about this will be the key information to promote the understanding of the software producer related to the concept of business models and the essential elements of business model that contribute to the overall success.

## Literature Review

Business model is an important subject in strategic management at present and is essential in the realm of business as it receives a lot of recognition from scholars and practitioners. One of the scholars described the formation of business model as a part of purchasing behavior and economic activity even before the classic era (Teece, 2010) but received recognition during the Internet era in the mid-1990s and has become popular ever since. After this, business models have continuously gained interest and many studies have been done on them for academic purposes and for business purposes, which can be seen by the increasing number of academic documents and seminars on the topic of business models.

The literature review for the implication of business model finds that the scholars have defined the business model differently according to the context of their research. The first definition found was from Timmers (1998, p.4), who defined business model in 3 ways, which are (1) Business Model is the architecture or structure for a product, service and information system as well as explaining various contexts related to business (2) An effective explanation of advantages of business to the customers (3) An explanation of the source of various incomes of the company that conforms to Rajala and Westerlund (2005, p. 3) who explained that business model is the process of creating value to the customers and is the guideline that the business can put into practice for efficient results and then there is Amit and Zott (2001, p. 2) , who described business model as the model that is Transaction-based. This is an explanation of the story behind running a business to create value through business opportunities and this is similar to the definition of Magretta (2002, p. 4) who believes that business model is simply an explanation of the operation of that specific business.

Apart from the above-mentioned definitions, some scholars have also defined business model by considering its elements and real operations. Business model is the main logic for creating organizational value and (Masanell and Ricart, 2007, p. 2) have concluded that business model is an explanation of the essential elements that are specially selected by looking at the management and operational process of that particular business and this matches the definition of Osterwalder, Pigneur and Tucci (2005, p.2) who have defined it as a tool for showing the ideas that has related elements and showing specific business reasons. It is an explanation of value that the business presents to the customers in one part or many parts of the market and is a creative way of showing values. Johnson (2010, p. 22) defined business model as a model that consists of various parts of the related elements to create and deliver value to the customers, this definition conforms to the one given by Osterwalder and Pigneur (2010, p. 14), who said that business model is a reasonable explanation of the method that the organization use to deliver value through 9 elements. This set of definitions of business model is more precise as they focus on the elements for business operation instead of explaining the story, details and methods to run a business.

## Element of Business Model Canvas

The study on business model after the literature has been reviewed found that there are essential business model elements presented by the scholars through their intense research and experiments in various contexts. Each of them focused on explaining the elements of business model that contributes to the success in

business operation. Osterwalkder and Pigneur (2010) from the book *Business Model generation*, explained that business model is a reasonable explanation of the method that an organization uses to create, deliver and gather value and the business model consists of various elements that cover the 4 major business scopes which are 1) Base resource - explains the main ability, connections for supporting the business models and the reasons that would maximize mutual benefits 2) Proposal - explains the business offers that differ from the competitors 3) Customers - explains the types of customers and relationship-building strategies as well as distributing channels to the customers 4) Finance - explains the source of income of the business and the balance between investment and income. It can further be distinguished into 9 elements which are Value Proposition, Customer Segment, Channel, Customer Relationship, Revenue Streams, Key Resources, Key Activities, Key Partnerships, Cost Structure. These are known to be the original elements in business model canvas that contributes to success (Osterwalkder, 2013 : Ching and Fauvel, 2013). Apart from that, there are also studies on the elements of BMC from the scholars of many countries. These scholars have different determination of business model elements in different contexts for example; the analysis is from a different industry or different country, which leads to a difference in analysis of business model to find out the essential elements for operational success. However, Spanz (2012) has an interesting and more important point of view that the original BMC is the appropriate model for business at an early stage and the businessmen worldwide have accepted these elements for business development. While businessmen are in need to create a competitive advantage, they also need to focus on the essential elements that are the key indicators of operational result and are difficult to duplicate. Ching and Fauvel, (2013) also has a theory that conforms to the previously mentioned study. It was found that the properties of business model (consists of business's position in the value chain, type of customers and type of income) has an influence over cash flow with a 5 year increase in total cash (Redis, 2009) and the operational success will come from the determination of value in the proposal presented to the customers and the delivery method as well as new revenue mechanisms that are the base for overall operation for the customers and the organization's ability to create income (Santos and Spector and Heyden, 2009). We can see that there is much research that still has arguments about the elements that could lead to operational success and it is argued that product value proposition and revenue model are the essential elements of BMC as most of the researchers, both qualitative and quantitative research have concluded that the aforementioned elements have statistical significance with the operational success of a business (Osterwalkder and Pignuer, 2010)

**Value Proposition** is an overall perspective of product or service that represents value to the customers by explaining how the organization can differentiate themselves from their competitors and provide reasons why the customers should buy products from them (Hager, 2006, p.16). This creates benefits or values that the customers can get from the technological products and services (Rajala, 2009, p. 23) and to explain or point out the beneficial values of the products and services that the customers need (Hager, 2006, p. 16) and this proposal must be the one that the organization shows their eagerness to create value which would help the customers to achieve their needs and find solutions to their problems (Johnson, 2010, p.25). Nevertheless, the elements of value proposition are talked about by Osterwalkder and Pignuer (2010, p.22) that it is the set of benefits that the businesses present to their target customers in the form of products and services or either one to respond to the

needs of that particular customer group in qualitative or quantitative terms such as Newness, Performance, Customization, Customer Co-Creation ,Low Cost, Cost Reduction ,Risk Reduction ,Accessibility and Convenience/Usability.

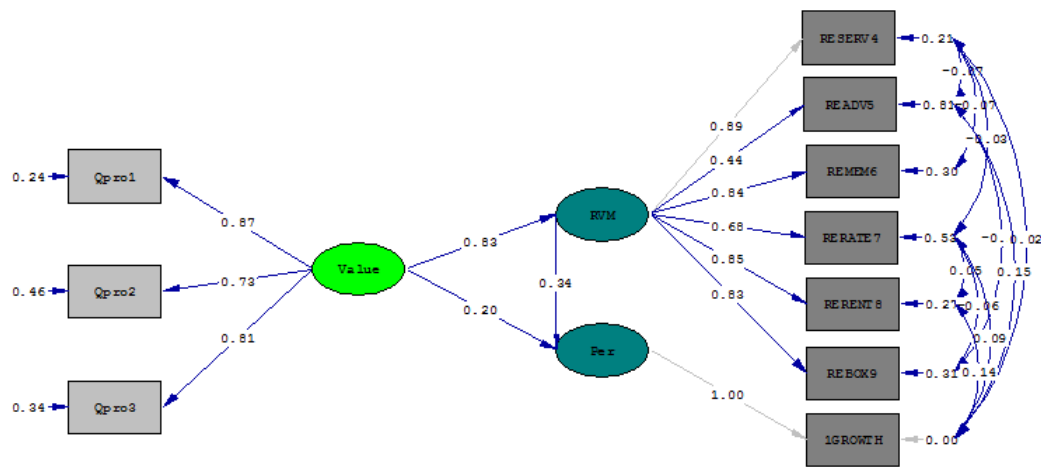
**Revenue model** is the form of business income model that comes from various sources of income determined by the organization (Redis, 2009, p. 297) and this is known to be the profit formula from the income generation through value proposition (Johnson, 2010, p. 31). The source of financial results comes from the product value proposition presented to the customers such as licensing, advertising and subscription, which varies and depends on the business's income generation method (Osterwalkder and Pignuer ,2010, p. 30). The revenue may be in the form of income determined by the business from the attributes of software transaction process that varies in different forms to enable to customer to choose according to their preference (Cusumano ,2008: Rajala ,2009, p. 23). With this, we can see that the attributes of value propositions vary and lead to different sources of income for each business. The business should try to adapt product value proposition to conform to the needs of the customers so as to determine the source of income that contributes to operational success. (Osterwalkder and Pignuer,2010 : Zott, C., Amit, R., Massa, L., 2011).

### Research Method

This is a Survey Research in the form of mixed method as it employs both qualitative and quantitative analysis to find the accurate solutions to the research purpose. The sample groups used for this study are 208 software producers who are the members of Software Association of Thailand and the research tool used is a questionnaire that consists of questions and answers with 5 rating scales in the form of fill in the blanks and multiple choice as well as open ended questions related to problems and barriers of business operation. As for statistics, Descriptive Statistics are used, which consist of mean, standard deviation, structural equation modeling and in-depth interview to examine the operational method of the value proposition and revenue model that contribute to success of software business operation and the practical framework of software producers for running a business.

### Research Result

The hypothesis testing according to the research framework of Causal Model that demonstrates the causal relationship of product value proposition and revenue model that affects the success firm' performance in picture 1.



Chi-Square=9.60, df=19, P-value=0.96217, RMSEA=0.000

From picture1 it was found that the path analysis result of Structural Model of the relationship between product value proposition and revenue model that affects the operational success in the rate of return on asset, market share and the value of products and services is consistent and met the discussed criteria. This means that the theoretical model that was developed conforms to the empirical data as shown in the path analysis of Structure Model in table 1.

Path Diagram	Path Coefficients	Standard Errors	t-value
<b>LAMBDA-Y</b>			
PER -----> Growth	1.00**	-	-
RVM -----> RESERV	0.89**	-	-
RVM -----> READV	0.44**	0.07	5.73
RVM -----> REMEM	0.84**	0.06	13.44
RVM -----> RERATE	0.68**	0.06	9.86
RVM -----> RERENT	0.85**	0.05	15.18
RVM -----> REBOX	0.83**	0.05	14.52
<b>LAMBDA-X</b>			
Value -----> QPRO1	0.87**	0.06	14.20
Value -----> QPRO2	0.73**	0.06	11.03
Value -----> QPRO3	0.81**	0.06	12.83
<b>Gamma</b>			
Rvm -----> Value	0.83**	0.07	11.45
PER -----> Value	0.20	0.15	1.30
<b>Beta</b>			
PER -----> Rvm	0.34*	0.15	2.19

\*\* ที่ระดับนัยสำคัญ p-value < 0.01

### Finding and Concussion

The findings from the analysis model of product value proposition and revenue model that contribute to the operational success show that product value proposition is the main factor that contributes to the operational success of business. Therefore, it can be concluded that product value proposition is the essential element that affects the revenue model that affects the operation process of the company. This may be because the product value proposition gives rise to various sources of income, which means that when the value proposals increase, the revenue models also increase and this contributes to the operational result. This implies that if there are varieties of revenue sources, there will also be more success. The reason for this finding may be due to the fact that the value proposition elements are considered as the main factors to increase customer's satisfaction in software products of the business. If the business develops or improves the product value proposition, it will contribute more to the operational success. Apart from this, the interview conducted found that most of the software producers in Thailand do not have a long operational process and this kind of business is directly related to the changing technologies and works according to the customers' orders. This may lead to a lack of opportunity for new creativity; therefore, to create a unique selling point or to differentiate is a difficult task. These are the issues that businessmen realize and give a lot of importance to. Moreover, the revenue models are mostly in the form of lump sum per one software project and the service fees are included in the first value proposition or in the first year. As for the determination of revenue model in the form of lease, it is currently gaining popularity and the interview conducted also showed that the software business owners strive for revenue model in the form of lease more and more. At the same time, the revenue model in the form of advertising is not that widespread and popular with the present generation.

### Discussion

The findings of this research show that the product value proposition affects the revenue model and affects the process of operation of a business while the revenue model directly influences the process of operation of a business and the product value proposition also directly influences the process of operation. This implies that product value proposition gives rise to various sources of income, which means that when the value proposals increase, the revenue models also increases and this contributes to the operational result and it conforms to the research conducted by Osterwalkder and Pignuer (2010) which was a qualitative research. However, this research employed quantitative analysis method but the result conformed to the result using qualitative analysis which is a confirmation that revenue model and value proposition factor contribute to operational success of a business model

### Conclusion and Recommendation

This research is conducted with the purpose to present new aspects of understanding about the issue of original business model elements and the aspects of Business Model Canvas elements that are important for the operation of business. Moreover, the research also focuses on experimenting the elements of BMC and the attributes of those elements that contribute to operational result of software business in Thailand. The findings



of this research will assist the businessmen in the software industry to have vision on the strategic aspect in the operational process that should be given importance in order to find and develop new types of software that has never been launched in the market before. This will be the method of creating more value to the software products of that company. In addition to this, it will also help in developing the remote control system to help increase efficiency and strength of the operational process of software to promptly correct any problems that may occur.

However, the interviews conducted found that the software producers from various companies choose to produce software that they specialize or have long experience in, for example, one of them has a long experience in retail, stock system and billing system at the sales point. This software producer is well aware of the needs of the Point of Sale users, therefore, the company can be the first to produce the Point of Sale software and adapt it according to the preference of customers with varieties of software models for them to choose as well as having a remote control system which will lead the business to success. As for the revenue model, the businessmen should have more planning and determination of strategies in the field to develop and create new attributes of revenue models according to the product value presented to the customers especially for leasing model because the customers can use according to their preference and don't have to spend a lot each time. This enables them to use the software in the form of leasing which is easier and more convenient as they can choose to pay appropriately.

### Future Research

We recommend that the future research should use the factors of business model that has significant result for the study. Apart from the factors discussed in this research, there are also other factors that have significance; therefore, the next phase of research should also consider the factors that have not been studied in this research such as customers' relations, resources and procedure etc.

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