

# Guidelines for Dealing with Thai Baht Volatility in Industrial Businesses

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**Abstract:** - Since Thailand switched the exchange rate to a floating system in 1997, Thai industries engaged in import and export activities have experienced profits and losses due to fluctuating exchange rates continuously. The objective of this research was to investigate strategies for managing the volatility of the Thai baht in the industrial sector and to develop a structural equation model based on these findings. The study employed a combination of qualitative and quantitative approaches. In-depth interviews were conducted with 9 experts to develop the quantitative research tools, and a group discussion involving 11 experts was held to establish a consensus on the study's model. As for the quantitative study, the data were collected from 500 industrial business executives awarded PRIME MINISTER'S EXPORT AWARD, using the developed questionnaires. Descriptive, referential, and multiple statistics were employed to analyze the data. The study revealed that 4 major guideline areas for handling the volatility of the baht in the industrial sector were found, prioritized as follows: risk control ( $\bar{x} = 4.36$ ), resource-centered ( $\bar{x} = 4.34$ ), analysis of the environment ( $\bar{x} = 4.31$ ), and innovation and technology ( $\bar{x} = 4.30$ ) respectively. The most important guideline item in each area was: always have the policy to review profit and loss from exchange rates, select personnel with financial and language skills to analyze and forecast the volatility of the baht, continuously analyze the GDP of the major currency country, connect the demand for products to digital technology and corporate partners, and respectively. As for the hypothesis testing results, it was found that small and medium-sized businesses, and large businesses differently prioritized guidelines to cope with baht volatility in the industrial sector at the statistical significance level of 0.05. The analysis of the developed structural equation model revealed that the evaluation criteria were consistent with the empirical data with its Chi-square Probability, the Relative Chi-square, Goodness of Fit Index, and the Root Mean Square Error of Approximation of 0.055, 1.148, 0.964, and 0.017, respectively.

**Key-Words:** - Structural Equation Model, Currency Volatility, Exchange Rate, Industrial Business Risk Control

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## 1 Introduction

Since 2019, the baht has appreciated about 5 percent against the US dollar, resulting from both external and beyond control factors, especially the change in the direction of monetary policy by the Federal Reserve and the trade war between China and the United States. Due to the mentioned situations, efforts have been made to reduce the importance of using the US dollar in the world market, [1].

Apart from those factors mentioned above, four main factors have been found to cause the Thai baht's appreciation current account surplus, large foreign currency inflow, political stability, and the increase of the Thai weight index by MSCI. As for the surplus factor, Thailand had a current account

surplus of 12 billion US dollars, and since 2019 the current account surplus has increased up to 29 billion US dollars, causing the appreciation of the Thai baht. Regarding the foreign currency inflow, it was found that Thailand has had a large inflow of foreign currency to invest in the stock market and bond market. Regarding political stability, after having an elected democratic government, Thai politics became more stable, resulting in many funds being invested in Thailand. The last factor, MSCI has increased the weight index of Thailand, and foreign investment fund had increased their investment in the stock market, [1].

Consideration of the currency fluctuation can be reflected in the country's competitiveness in

trade. Calculating the real effective exchange rate index (REER) shows the currency value compared with other currency values. When the REER is higher, the prices of Thai exports will increase and make Thai products less competitive (Bank of Thailand, 2019). Incidentally, a study on REER for the past 5 years was conducted by the Bank of Thailand. It was found that an appreciation of REER by 1% would cause Thailand's gross product (GDP) to decrease by about 0.02% in 1 year as shown in Fig. 1.

According to Fig. 1, in comparison with Thailand's major competitors, the Thai REER index was at a higher level. When looking at the REER from the weakest point to the strongest point during 2016-2020, the baht fluctuated by 12.36 units and was appreciated higher than other competitors in 2020, meaning that the baht has appreciated more than the currency of Thailand's major competitors.

As a result, Thai products decrease in competition over competitors in the region. On the other hand, if the REER index is lower compared to other competing countries, it will result in Thailand having an advantage in trade because importing countries can perceive cheaper costs of the products.

In taking into consideration the currency volatility between the strongest exchange rate and the weakest exchange rate in Fig. 2, the volatility of Thailand is the highest of all countries compared. The exchange rate of the baht against the US dollar fluctuated as much as 16.6% during the 5-year period from 2016-2020.

When ordering the average inter-quarter volatility of various currencies in Southeast Asia, Thailand's average inter-quarter volatility rate ranked 4<sup>th</sup> as shown in Fig. 3.

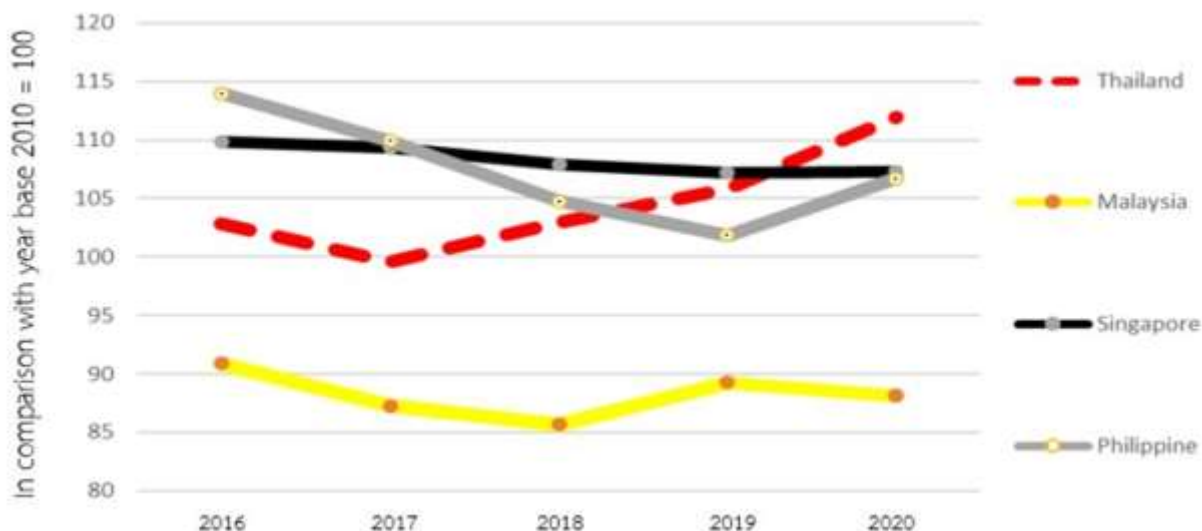


Fig. 1: Real Effective Exchange Rate Index, [1]

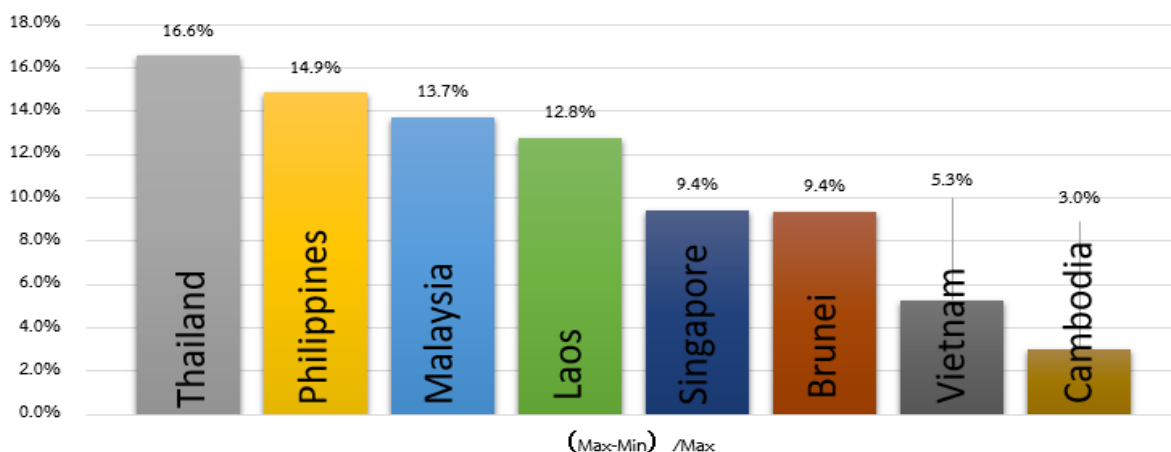


Fig. 2: Currency volatility of major competitors in Southeast Asia region during the year 2016-2020, [2]

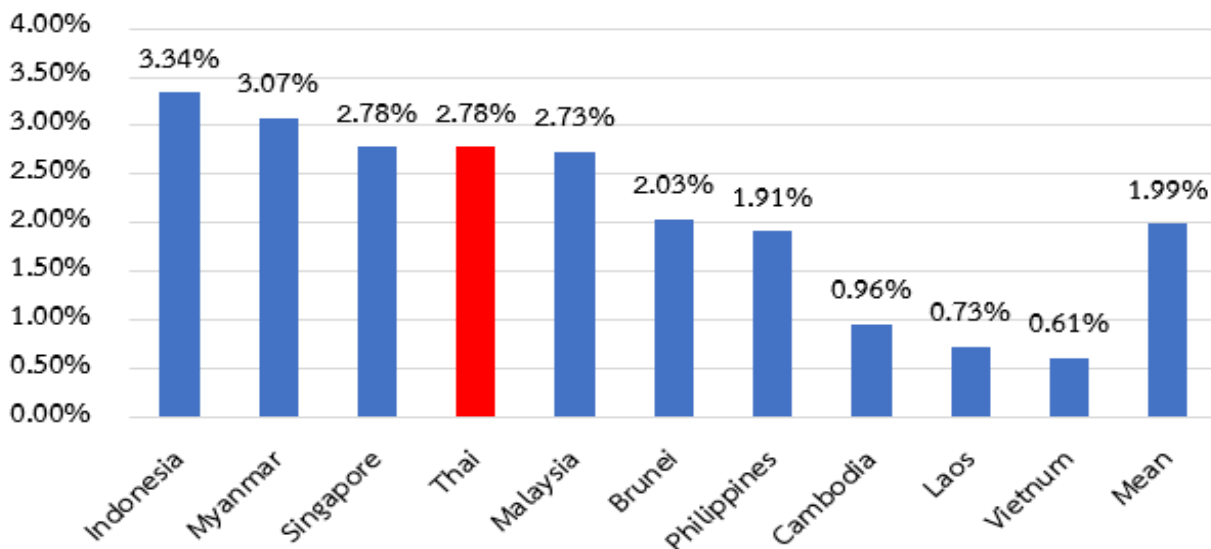


Fig. 3: Average volatility during the quarter, years 2016-2020

The above issues indicate that Thai industrial businesses are affected when exchange rates fluctuate. Researchers found that small to medium industrial businesses had more effect on their financial statements compared to large industrial businesses. Researchers aim to find relevant components that large industrial businesses use to handle their operations during the volatility of the baht. With these relevant components, the researcher uses them to construct guidelines for Thai entrepreneurs to increase their ability to analyze the direction of the currency, how to handle currency fluctuation, and resulting in improved business competitiveness.

### 1.1 Research objectives

- (1) To study the components of guidelines for coping with the volatility of the baht in the industrial sector
- (2) To develop a structural equation model for handling the volatility of the baht in the industrial sector.

## 2 Literature Review

### 2.1 Volatility

Volatility is the change in the performance of investment over time. It can be calculated by measuring the fluctuation of the return of investing in securities or the price of a particular type. The greater the volatility, the higher the risk of the asset. How to measure volatility can be made through various statistical tools. Standard deviation and average true range are popular statistical tools. The

volatility measure indicates how much the price moves beyond normal bounds, depending on the tool, [3].

### 2.2 Concepts and Theories Related to Environmental Analysis

The concept of environmental analysis refers to collecting information on how the external environment affects currency fluctuations. It can be useful in forecasting direction and used as a preparation measure to cope with currency fluctuations in the industrial sector effectively.

The study, [4], said that the factors that affect exchange rates are interest rates, economic growth, and demand of currency. In addition, when supply and demand do not match, there will be fluctuation in the exchange rate.

In, [5], the author states that the exchange rate is determined by the comparative price level and adjustments in exchange rates due to differences between changes in price levels.

In, [6], the authors investigated the need to use critical data to analyze and gain a competitive advantage in an intensely competitive marketplace. Four aspects of external situations, namely, politics, economic situations, social conditions, and technological change were analyzed. It was found that the economic situation and the social condition were extremely important for customers' purchasing power analysis.

### 2.3 Concepts and Theories Related to Resource Centric

At present, management and administration is an important process that every organization, society,

and nation will coordinate as a network, and use limited resources to enable the organization to move towards the desired goals efficiently.

According to, [7], to manage and administer work effectively as specified, executives or managers must rely on systematic management suitable for the environment of the organization. The resource-centered approach is the organization's management based on internal factors. When industrial business executives understand the strengths and the weaknesses of the organization, they will be able to create appropriate strategies for planning and responding to various events to reduce negative impacts effectively.

In, [8], the authors describe two issues of financial management: 1. Financial management in all businesses, either large or small, can be divided into 3 forms according to the nature of the business, namely, 1) sole proprietorship, 2) partnership, and 3) the owner holds approximately 80 percent of the business. 2. The components of capital consist of different types of debt, including preferred stock and common stock.

In, [9], the authors define human capital as a human factor in an organization that is related to knowledge, expertise, skills, and abilities that create good products for the organization. Human capital is an intangible asset but can increase in value through investment in development. Human resource development will result in people becoming valuable assets to the organization.

Moreover, [10], discuss resource-based theory and the relationship between organizational resources and organizational performance. They state that resources are assets that enable organizations to think and execute strategies. They add that the success of the organization depends very much on the intrinsic qualities of the organization.

Similarly, [11], reveals that medium and large industrial businesses employing large numbers can build effective work teams more easily than small industrial businesses. A focus on team building will help businesses have employees work more, so the owner and the manager's concepts and policies can be carried on. The employees will become a workforce that can help the business grow.

## **2.4 Concepts and Theories Related to Innovation and Technology**

Innovation refers to creating new things by developing the existing ones. This concept originated in the early 20<sup>th</sup> century with a focus on creativity, research, and development in science and technology, bringing new ideas, or utilizing the

existing ones in new ways to create economic benefits. Innovation is closely related to invention. The invention is the discovery of new things; new knowledge that no one has invented or discovered before. Such new knowledge or discoveries can be applied in the form of technology or other different forms. New inventions as well as those developed from the existing ones are so important that academics and practitioners should realize their values and make them more modern and effective as it will stimulate further research and sustainable supply chain innovations.

The study, [12], states that the adoption of innovation will help to achieve good, efficient, and effective work. In terms of engineering, it can extend processing techniques. The most important goal of the company's innovation strategy is to improve the quality of service and products, to increase market share, and to reduce production costs.

In, [13], the authors mention that technological advances have resulted in changes in many areas of organizational management, including building monitoring and control systems using real-time technology. This will increase administrative efficiency and reduce costs.

In, [14], the authors add that improving process quality such as reducing defects is an innovation process that aims to improve quality or a so-called "Quality Process Innovation." It meets the need for better coordination.

In, [15], the author claims that innovation can create new markets and manage existing markets, and it can also use new technologies or existing technologies which may lead to more innovations.

In, [16], the authors investigated the major problems and obstacles of online trading business operators. They found that the problems and obstacles that needed an urgent solution were unfavorable state regulations on electronic transactions which caused the operators' inability to use modern technology conveniently, resulting in a slow adjustment to use technology for business development.

## **2.5 Concepts and Theories Related to Risk Control**

Risk refers to an opportunity/event that is uncertain or causes the current plan or action to fail to achieve the set objectives, eventually resulting in impact or damage to the organization, such impacts can affect both monetary and the image and reputation of the organization. Enterprise risk management is a process performed by the board of directors, executives, and all personnel in the organization to

formulate and implement strategies. The risk management process is designed to identify events that may occur and have an impact on the organization, and able to manage those risks within the acceptable level to gain reasonable assurance in achieving the objectives set by the organization, [17].

The study, [18], classified the types of exchange rate risks into 3 categories: namely, transaction risk, translation risk, and economic risk. She proposed 8 ways to manage foreign exchange risk as follows: 1) Transfer currency risk to other companies, 2) Netting, 3) Diversification, 4) Forward contract, 5) Futures contract, 6) Options to buy or sell foreign currency, 7) Hedges by using the money market, and 8) Foreign exchange contracts (Swap).

### 3 Methodology

#### 3.1 Synthesis of Components

Based on the mentioned concepts and theories, four guideline components for dealing with the volatility of the baht in the industrial sector can be induced: environmental analysis, resource centric, innovation and technology, and risk control.

#### 3.2 Population and Samples

The quantitative part of the study was conducted using a survey technique. The population used in this research was executives responsible for accounting and finance at the manager level upward from small, medium, and large enterprises awarded PRIME MINISTER'S EXPORT AWARD during the year 1992-2020, and the industry award during the year 1993-2021. According to the Ministerial Regulations on the Characteristics of Small and Medium Enterprises B.E. 2562, the enterprises classified as small and medium enterprises must have a total income of no more than 500 million baht a year, while the large ones earn more than 500 million baht. The suitable size of the sample groups as specified by, [19], was 500 and so 500 executives with the specified characteristics were obtained and were sub-divided into 250 from small and medium businesses, and another 250 from the large ones.

#### 3.3 Research Tools

The tool used in this study was a 5-point rating scale questionnaire constructed according to the Likert method, [19]. The created questionnaire draft was assessed by 5 experts to determine the quality of the tool. It was found that the calculated Index of Item-Objective Congruence (IOC) ranged from 0.60-1.00,

where the appropriate value is 0.50 or more, [20]. Then the questionnaire was tried out with 30 informants with similar characteristics to the studied population. The purpose of the trial was to find its values of discrimination, standard deviation, correlation, and reliability. The calculation showed that the discrimination of the questionnaire varied from 0.45-3.17 while its reliability was 0.99 greater than the normal criteria of 0.80. It was, therefore, considered as a good and appropriate tool for the study, [21]. Then the constructed questionnaire was used to collect the data from the set sample group.

#### 3.4 Data Analysis

Researchers use both descriptive and referential statistics to analyze the data via SPSS software while a structural equation model was developed with AMOS. The analyzed data shows that there are differences in concern for the items between large enterprises and small and medium enterprises. Lastly, the researcher uses AMOS to finalize the model to verify the relevance of components and their observation, the data-model fit was assessed using the following four criteria, included: 1) Chi-squared Probability > 0.05, 2) Relative Chi-squared < 2.00, 3) Goodness of Fit Index > 0.90, and 4) Root Mean Square Error of Approximation < 0.08, [22].

### 4 Results

- (1) The analysis of the Environmental Analysis component found that the entrepreneurs realized the importance of analyzing the environment at a high level with a mean of 4.31. When considering each aspect, it found that continuous analyzing of the GDP of the major currency countries" was of the highest level with an average of 4.60.
- (2) The analysis of Resource Centric component found that entrepreneurs realized the importance of resource-centric at a high level with a mean of 4.34. When considering each aspect, it was found that the "selection of personnel with knowledge and skills in finance and language to analyze and forecast the volatility of the baht" gained the highest level of importance with a mean of 4.50.
- (3) The analysis of the Innovation and Technology component found that entrepreneurs realized the importance of innovation and technology, as a whole, at a high level with a mean of 4.30. When considering each aspect, it was found that "Digitally sharing of demand for products to

partners” gained the highest level of importance with an average of 4.51.

- (4) The analysis of Risk Control components found that entrepreneurs realized the importance of risk control, as a whole, at a high level with an average of 4.36. When considering each aspect, it was found that “Set policy to review profit and loss from exchange rates regularly” with the mean of 4.56 was: always provide a policy to review profit and loss from exchange rates.

Table 1. Comparison of the importance level of the guidelines for dealing with Thai baht volatility in the industrial sector, categorized by industrial business sizes, as a whole and by aspect

Guidelines for dealing with Thai baht volatility in the industrial sector	t-Value	P-Value
The importance level of the components as a whole	-3.78	0.00*
Environmental Analysis	-5.38	0.00*
Resource Centric	-3.65	0.00*
Innovation and Technology	-3.36	0.00*
Risk Control	-1.89	0.06

\*The statistical significance level of 0.05

Table 1 shows that the importance level of the overall guideline components for dealing with Thai baht volatility in the industrial sector, categorized by industrial business sizes, were different at the statistical significance level of 0.05.

As for the development of a structural equation model (SEM) on guidelines for coping with the volatility of the baht in the industrial sector, Multivariate Statistics analysis and advanced statistical analysis software called AMOS were used to analyze the data. The model and the latent variables were adjusted until they were all consistent with the empirical data and the four criteria; namely, Chi-square Probability: CMIN-p, Relative Chi-square: CMIN/DF, Goodness of Fit Index: GFI, and Root Mean Square Error of Approximation: RMSEA). The results of the analysis of the structural equation model are as follows:

- (5) The analysis of the study concerning objective 1, that is, to study the components of the approaches to deal with the volatility of the baht in the industrial sector, revealed that there were 4 major components: namely, environmental analysis, resource centric, innovation and technology, and risk control. All four were derived from reviewing relevant literature. It appeared that they were consistent with the empirical data with p-value = 0.055, CMIN/DF = 1.148, GFI = 0.954, and RMSEA

= 0.017, all of which passed the specified criteria with the statistical significance level of 0.001 as shown in Table 2 and Fig. 4.

Fig. 4 showed the results of the analysis of the overall influence, the direct and indirect influences of the structural equation model on guidelines to deal with the volatility of the baht in the industrial sector in the standardized estimate mode after the model was improved. It was found that the highest overall influence was on the environmental analysis, and it affected the overall influence on innovation and technology with a standardized regression weight of 0.92.

Table 2. Observed variables for countermeasures against baht volatility in the industrial sector.

Abbreviation	Guidelines for Dealing with Thai Baht Volatility in Industrial Businesses
<b>Environmental Analysis</b>	
EA1	Continuously study and follow up government policies, especially on the economy and finance.
EA2	Analyze political situations that can affect the volatility of the baht.
EA9	Continuously study innovative technology in currency management to be competent and up-to-date.
EA10	Analyze risk factors arising from external threats such as epidemics, disasters, and wars.
EA13	Keep track of interest rate, policy, and economy of partner countries and owner countries of currency to be exchanged
EA15	Continuously analyze the inflation rate of the country's major currencies.
EA21	Analyze treasury reserve of trading partner currency.
<b>Resource Centric</b>	
RC1	Select specialized employee with good financial and language skills to analyze and forecast the volatility of the baht.
RC7	Reserve funding sources to cope with currency fluctuations.
RC10	Setup a collaboration team between sales and cost to continue evaluating appropriate selling prices when there is a high degree of volatility.
RC18	Choose leaders with vision and quick decisions to handle volatile situations.
RC24	Determine the properties of raw materials that can be easily substituted and used in conjunction with other products in the organization.
<b>Innovation and Technology</b>	
IT2	Adopt data management software to support real-time data analysis.
IT7	Utilize enterprise resource management (ERP) software to analyze company conditions in a timely manner.
IT13	Use digital currency to receive and pay for goods to cope with currency fluctuations
IT18	Use big data to forecast the direction of the currency.
IT21	Promote links and exchange of up-to-date information both inside and outside the organization.
IT23	Use real time technology to track data and analyze currency direction.
<b>Risk Control</b>	
RK1	Analyze risks related to the direction of baht fluctuations.
RK4	Continuously Review financial ratios.
RK5	Review business' foreign currency requirements ahead of the maturity date so that method to hedge against currency fluctuations can be chosen.
RK13	Set a policy to review profit and loss from exchange rates regularly.
RK19	Use forward contract tools.
RK23	Prepare a manual for money management in the organization in accordance with the goals in a currency volatility situation

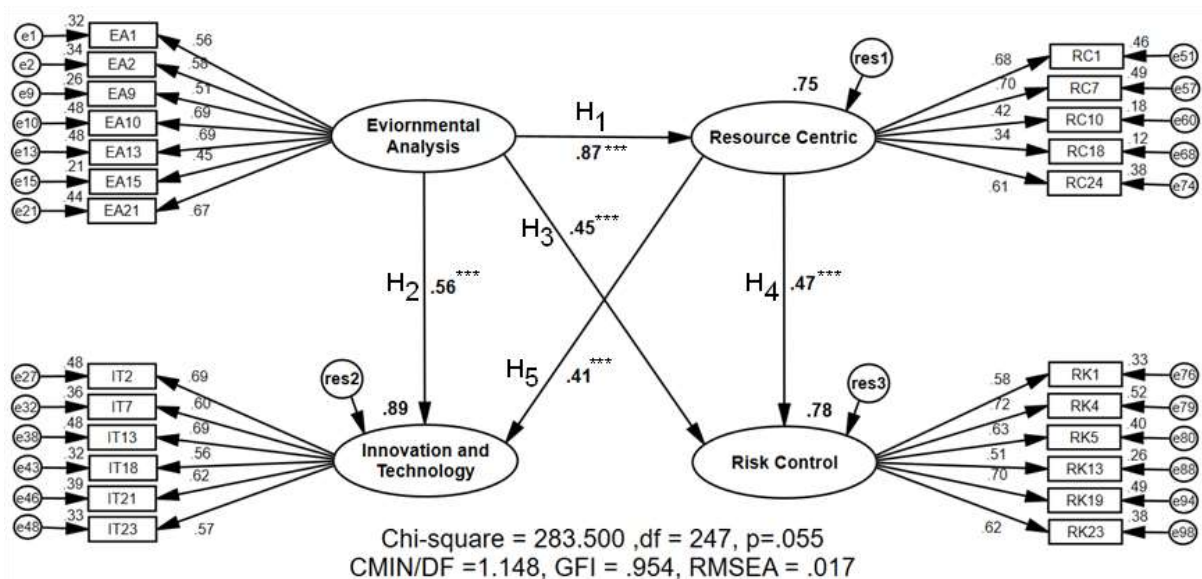


Fig. 4: Structural equation model for dealing with baht volatility in the industrial sector in standardized estimate mode after model improvement

### 5 Discussion and Conclusion

The research results can be concluded by using Descriptive Analysis and Structural Equation Model, and the result can be concluded as follows:

(1) According to the research results, when comparing the components of the studied guidelines as a whole and in 3 aspects; namely, environmental analysis, innovation and technology, and resource centric, it was found that large industrial enterprises placed the importance on them differently from those small and medium ones. This was confirmed with a statistical significance level of 0.05. However, no differences were found in the risk control component. This indicated that larger enterprises realized the importance of guidelines to deal with volatility more than small and medium ones. This finding was in accordance with the study by, [23], who investigated success factors of the development of large enterprises for future change. They stated that a significant factor in contemporary organization design to support changes from the unpredictable business environment was that there must always be a context to monitor and assess external factors continuously and regularly. The finding was also consistent with that of, [24], who stated that the cost-benefit assessment approach of large-scale projects required an integrated environmental assessment and monitoring model. This would provide executives and related parties with perspective in planning and making decisions that created the value of perfect and sustainable results. Furthermore, the research by, [25], also addressed a model for assessing the variable exchange rates of Nigerian small and medium-sized

agricultural enterprises from another perspective that although the country had a floating exchange rate policy, most small and medium enterprises still relied on management methods under fixed exchange rate data, taking into account and basing on the ease and speed of management for decision-making. The finding was also consistent with the study by, [26], in that the ability of large companies to manage the risk of currency volatility was greater while, [27], found that small and medium enterprises did not like to buy and sell derivatives to reduce currency risk.

(2) With respect to the results of one hypothesis test, it was found that the environmental analysis element had the highest direct influence on the innovation and technology component with a standardized regression weight of 0.92. This empirically showed that, for organizations to be resilient to currency volatility, it was necessary for them to analyze the factors that influenced organizational transformation drive, and to create innovations in terms of products or management innovation all of which would result in changes in technology suitable for any particular situation, competitive advantages, and ability to use technology or management innovation to reduce the impact of currency fluctuation. This finding was consistent with that of, [28], which stated that technology collaboration (TCN) in terms of the macroeconomic cycle, industry life cycle, and the age of the company, affected the innovation efficiency and success of small and medium enterprises (SMEs). It was also in line with the study, [29], in that when the integration of information technology, creativity, innovation, and



communication was applied, they not only boosted convenience and speed but also helped the management of the work and human system within the organization be more effective. Moreover, [30], mentioned in their study that due to rapid changes in technology, especially automation technology and modern machinery technology, industrial businesses focusing on speed and accuracy would naturally be pressured to adapt and invest in technology to enhance production efficiency.

(3) With regard to another hypothesis test, it was found that the environmental analysis component directly influenced the resource centric component the most with the standardized regression weight) of 0.87. This empirically showed that an organization had to find the internal strengths or strategic resources and analyze the external environment to create advantages to know the obstacles that the organization encountered. This would enable the organization to formulate strategic plans and provide personnel, knowledge, enhancement of administrative processes, raw material management, and investment in modern machinery suitable for business and economic conditions. In, [31], the authors investigated companies listed on the Pakistan Stock Exchange and found that factors such as GDP growth, and corporate tax rates, were related to financial decisions of business organizations. In, [32], this study focused on the analysis of internal and external factors of Honda Motor Company, Japan. It found that changes in currency values and interest rates were important variables that affected cash flow. Normally, Honda traded derivatives to reduce volatility and to create a strategy for managing liquidity in converting assets into cash effectively. Both studies were in line with the present study.

(4) The component of risk control in the study entitled guidelines for dealing with the volatility of the baht in the industrial sector gained the highest mean of 4.36. This reflected the importance of risk control management, which was an important factor in preparing for currency fluctuation handling. Having a good risk management system would result in smooth business management. Results of organizations' risk studies could be used to create organizational strategic plans that would allow the organization to go through the crisis with minimal impact. This was in line with a study by, [33], on having a strong enterprise risk management (ERM) system. They found that good enterprise risk management could create corporate strategies. An organization with a good ERM system would result in good business performance and reduce the likelihood of business failure. In addition, many

studies compared the performance of companies with and without exchange rate risk, such as the one conducted by, [34], who found that hedged companies Increased profitability, resulting in a reduction in the chances of business bankruptcy. In addition, studies by, [35] [36], [37], [38], also stated in the same direction that firms with hedged derivatives had higher enterprise values than those without hedging policies. This was so because financial instruments could help reduce the risk of fluctuating exchange rates, the negative impact of investment, and the likelihood of a financial crisis, but increase the economic value of the business.

(5) As it was found in the study on guidelines for coping with the volatility of the baht in the industrial sector the continuous analysis of major currency countries' GDP gained the highest importance rate with a mean of 4.60, the finding supported that GDP was the most important to the country economy. In the economic system, there must be a circulation of income and expenditures of households, business sectors, and governments domestically and internationally. This means that people have jobs and income to spend on goods and services, and to pay taxes to the government. In addition, if people have some money left, they can save it in financial institutions, or invest in businesses or the stock market as well as in various mutual funds. GDP is considered an indicator of the growth of the domestic economy each year and how much it has grown or decreased. GDP, however, remains one of the most important indicators that organizations should look at when examining the fundamental health of the economy. In addition, forecasting the exchange rate can be used to analyze the GDP direction of the currency. This is consistent with the study on predicting exchange rates using GDP as a variable by, [39], who employed the ANFIS method for forecasting exchange rates. They collected GDP and currency data of 36 countries and found that between the rises and falls in exchange rates, the GDP data of those countries was very useful for comparing and predicting the exchange rate. The finding was also in accordance with the study by, [40], who investigated the effects and relations of the exchange rate of the USD and the Rupee. They observed and collected data on the effects of macroeconomic variables such as GDP, interest rates, inflation, and exchange rates against the US dollar using annual data from years 1996 to 2014. They designated exchange rate fluctuations as dependent variables and found that GDP and exchange rate were related to each other. This supported the idea that the GDP variable can be used to forecast exchange rates.

## 6 Suggestions

(1) Bank of Thailand should place importance on monitoring and supervising currency fluctuations by adhering to the harmonization of monetary and fiscal policies and preparing quarterly reports on monetary policy performance regarding: 1. Recent monetary policy performance, 2. Guidelines for the next phase of monetary policy, and 3. Forecasts of future economic conditions to notify the Minister of Finance. It should quarterly disseminate the monetary policy report and future monetary policy in general. This will increase awareness of the private sector to understand the MPC's monetary policy, which will be useful for future currency forecasting, and increase transparency and the efficiency of monetary policy in the future.

(2) The Federation of Thai Industries should promote and support the study of information on currency fluctuations as well as provision of training to educate Thai industrial business operators about the value of a currency and how to reduce the risk of currency fluctuation. It should also give advice and recommendations to the government in issuing monetary and fiscal policies concerning the exchange rate of the baht to be consistent with the Thai economy.

(3) The industrial business sector should focus on monitoring the environment in all aspects, including political, economic, social, and technological factors, to be able to accurately forecast the direction of the Baht. The appropriate risk management tools should be chosen.

(4) The industrial business sector should set indicators for monitoring, analyzing, and determining the interval for continuous monitoring of indicators. Information from indicators should be used to accurately predict the direction of the baht.

(5) The industrial sector should designate work positions or units to take care of currency risk management, keep track and analyze indicators, and be able to make decisions in implementing a forex maintenance plan, including coordinating strategy planning so that organizations can get the most out of currency fluctuations.

(6) For future improvement, if there will be research on a similar study comparing the component concerned with dealing with bath volatility of Small-Medium Enterprise and Large Enterprise, the researcher suggests studying specifically based on the business sector.

## References:

- [1] Bank of Thailand, *FX Hedging behavior of Thai entrepreneurs and relationship with exchange rate*, 2013, Available at [https://www.bot.or.th/Thai/FinancialMarkets/ForeignExchangeMarket/RelatedArticles/DocLib\\_ExchangeRateKnowledge/FAQ\\_84.pdf](https://www.bot.or.th/Thai/FinancialMarkets/ForeignExchangeMarket/RelatedArticles/DocLib_ExchangeRateKnowledge/FAQ_84.pdf), Access on 13 September 2020.
- [2] XE.com, *Currency Exchange Rates*, 2021, Available at [www.xe.com](http://www.xe.com), Accessed on 15 May 2023.
- [3] Thaimbrokerforex, *Forex Lessen: What is Volatility?*, 2022, Available at <https://thaimbrokerforex.com/what-is-volatility/>, Access on 24 July 2022.
- [4] Poonsateinsub, N. *How exchange rate affect investment?*, 2020, Available at <https://www.scb.co.th/th/personal-banking/stories/how-the-exchange-rate-affect-investment.html>, Access on 13 September 2020.
- [5] Hakwamroo, *What is Purchasing Power Parity?*, 2019, Available at <https://www.hakwamroo.com/purchasing-power-parity/>, Access on 24 July 2022.
- [6] Shabanova, L., Ismagilova, G., Salimov, L. & Akhmadeev, M. PEST-Analysis and SWOT-Analysis as the most important tools to strengthen the competitive advantages of commercial enterprises. *Mediterranean Journal of Social Sciences*. 6(3), 2015, pp. 705-709.
- [7] Cavallo, A., Ghezzi, A. & Ruales Guzmán, B.V. Driving internationalization through business model innovation: Evidences from an AgTech company. *Multinational Business Review*, 28(2), 2020, pp. 201-220.
- [8] Brigham, E. F. & Houston, J. F. *Fundamentals of financial management*. Cengage Learning, 2021.
- [9] Kucharčíková, A., et al. Human Capital Management and Industry 4.0. In SHS Web of Conferences. *EDP Sciences*, 90, 2021.
- [10] Chuang, S. H. & Lin, H. N. Performance implications of information-value offering in e-service systems: Examining the resource-based perspective and innovation strategy. *The Journal of Strategic Information Systems*, 26(1), 2017, pp. 22-38.
- [11] Gray, D. & Jones, K. F. Using organisational development and learning methods to develop resilience for sustainable futures with SMEs and micro businesses: The case of the business alliance. *Journal of Small Business*

- and Enterprise Development*, 23(2), 2016, pp. 474-494.
- [12] Gao, D., Xu, Z., Ruan, Y. Z. & Lu, H. From a systematic literature review to integrated definition for sustainable supply chain innovation (SSCI). *Journal of Cleaner Production*, 142, 2017, pp. 1518-1538.
- [13] Wantanakomol, S. & Silpcharu, T. Strategy for preventing corruptions in industrial business organizations with Delphi Technique. *Academy of Strategic Management Journal*, 19(3), 2020, pp. 1-7.
- [14] Mikalef, P. & Krogstie, J. Examining the interplay between big data analytics and contextual factors in driving process innovation capabilities. *European Journal of Information Systems*, 29(3), 2020, pp. 260-287.
- [15] Kennedy, R. Strategic Management. Blacksburg, VA: Virginia Tech Publishing, 2020.
- [16] Wantanakomol, S. & Woraphiwut, A. Problems and Obstacles of E-commerce Entrepreneurs through the Internet. *The Journal of KMUTNB*, 26(1), 2016, pp. 133-140.
- [17] Hayes, A. *Enterprise Risk Management (ERM): What Is It and How It Works?*, 2022, Available from: URL: <https://www.investopedia.com/terms/e/enterprise-risk-management.asp>, Access on 23 October 2022.
- [18] Kuntanbutr, C. *International Business Administration*. Bangkok: Chulalongkorn University Press, 2019.
- [19] Joshi, A., Kale, S., Chandel, S. & Pal, D.K. Likert scale: Explored and explained. *British Journal of Applied Science & Technology*, 7(4), 2015, pp. 396.
- [20] Turner, R. C., & Carlson, L. Index of Item Objective Congruence for Multiple Objective Measures. *Unpublished manuscript, University of Arkansas*, 2002.
- [21] George, D., & Mallery, P. *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4<sup>th</sup> ed.). Boston: Allyn & Bacon, 2003.
- [22] Arbuckle, J. L. IBM SPSS Amos user's guide. *Amos Development Corporation*, 2016.
- [23] Philipp, P., Tobisch, F. & Matthes, F. Challenges and Success Factors for Metrics in Large-Scale Agile Development. *AMCIS 2022 Proceedings 2*, 2022.
- [24] de Groot, R., et al. Framework for integrated Ecosystem Services assessment of the costs and benefits of large scale landscape restoration illustrated with a case study in Mediterranean Spain. *Ecosystem Services*, 53, 2022.
- [25] Nseobot, I. R., Udongwo, I. I. & Akang, A. U. Assessment of Exchange Rate Instability And Small And Medium Scale Agricultural Businesses Activities In Nigeria. *European Journal of Interdisciplinary Research and Development*, 1, 2022, pp. 29-37.
- [26] Amberg, N. & Friberg, R. Three Approaches to Risk Management—and How and Why Swedish Companies Use Them. *Journal of Applied Corporate Finance*, 28(1), 2016, pp. 86-94.
- [27] Álvarez-Díez, S., Alfaro-Cid, E. & Fernández-Blanco, M. O. Hedging foreign exchange rate risk: Multi-currency diversification. *European Journal of Management and Business Economics*, 25(1), 2016, pp. 2-7.
- [28] Fernández-Olmos, M. & Ramírez-Alesón, M. How internal and external factors influence the dynamics of SME technology collaboration networks over time. *Technovation*, 64-65, 2017, pp. 16-27.
- [29] Payomratanasin, S. & Aramtiantamrong, W. Effective Factors for the Information Technology usage in Public Sector Operations: A Case Study of Department of Industrial Promotion Ministry of Industry, *Journal of Arts Management*, 4(1), 2020, pp. 73-84.
- [30] Wattanakomol, S & Silpcharu, T. Second-order confirmatory factor analysis of auto parts manufacturing industry management guidelines for sustainable success. *Uncertain Supply Chain Management*, 10(3), 2022, pp. 905-912.
- [31] Rehman, Z. U., Khan, A. S. & Khan, A. External Factors and Capital Structure. *Journal of Business & Tourism*, 5(1), 2019, pp. 183-193.
- [32] Chong, S. C. An Analysis of the External and Internal Factors Affecting Honda Motor Company's Performance. *Munich Personal RePEc Archive*, 2019.
- [33] Wang, T. S., Lin, Y. M., Werner, E. M. & Chang, H. The relationship between external financing activities and earnings management: Evidence from enterprise risk management. *International Review of Economics & Finance*, 58, 2018, pp. 312-329.
- [34] Bodnar, G. M., & Wong, M. H. F. (2003). Estimating exchange rate exposure issues in

model structure. *Financial Management*, 32(1), 2003, pp. 35-67.

- [35] Allayannis, G. & Weston, J. P. The use of foreign currency derivatives and firm market value. *The Review of Financial Studies*, 14(1), 2001, pp. 243-276.
- [36] Clarke, E. & Mefteh, S. Foreign currency derivatives use, firm value and the effect of the exposure profile: Evidence from France. *International Journal of Business*, 15(2), 2010, pp. 183-196.
- [37] Allayannis, G., Lel, U. & Miller, D. P. The use of foreign currency derivatives, corporate governance, and firm value around the world. *International Economics*, 87, 2012, pp. 65-79.
- [38] Magee, S. The effect of foreign currency hedging on the probability of financial Distress. *Accounting and Finance*, 53, 2013, pp. 1107-1127.
- [39] Jovic, S., et al. Analysing of exchange rate and gross domestic product (GDP) by adaptive neuro fuzzy inference system (ANFIS). *Physica A: Statistical Mechanics and its Applications*, 513, 2019, pp. 333-338.
- [40] Megaravalli, A. V. & Vikram, K. Exchange Rate Volatility & its Impact on Macro Economic Factors with Respect to Indian Economy. *International Journal of Social Science & Management*, 4(6), 2016.

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The authors have no conflict of interest to declare.

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