

# EVALUATING AND ENHANCING PERFORMANCE AND COMPETITIVENESS FOR TRUCK OPERATOR IN THAILAND

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## Abstract

Today, logistics industry is increasingly recognized as important role for economic growth in Thailand. As truck business facilitates door-to-door transportation, and it is fierce competition. In Thailand, it has currently 823,820 trucks as most of them are small and medium enterprises (SME). They have many problems and barriers to operate in dynamic businesses. The paper examines problematic situations and evaluate competitiveness of Thai truck companies. It also analyses factors influence to enhance their competitive advantage. The literature is reviewed in area of truck performance and competitiveness. The questionnaire survey is conducted through 280 samplings and 232 returned with response rate at 82.8 percent. In-depth interview is conducted through 35 owners and top management. The validity and reliability are examined. The result reveals that most of them are SMEs and sufficiently lack logistics knowledge and skills, including access to financial resource and business networks. The study shows that knowledge, standard, network and professional are key success to increase their competitive advantage. As a result, they would effectively facilitate cost reduction, increasing responsiveness and higher service quality to customers. It also provides recommendations to facilitate Thai truck entrepreneurs to develop their higher standard and performance, including enhancing competitiveness.

**Keywords:** Truck, Performance, Measurement, Competitiveness, Thailand.

## 1. INTRODUCTION

Today, logistics industry is widely recognized as important role for economic growth in Thailand. It increasingly plays a significant role to support Thailand economic growth. It also facilitates, as a driving force for improving service quality and reducing the costs of trade and investment. Truck business is a part of physical flow activity, as truck business facilitates door-to-door transportation. In Thailand, it has currently 823,820 trucks (Department of Land Transport, 2023), as most of them are small and medium enterprises (SME) with less than 20 trucks. They have many problems and barriers to operate in dynamic businesses. Fierce competition is major factor in this business operations. The survivors in this business would have vision in dynamic business environments, excellent logistics knowledge and understanding, effectively managing operating costs, providing excellent service quality with global network, and effective utilizing information technology.

The paper examines current situations of Thai truck companies. It studies problematic situations and evaluate competitiveness of Thai truck companies. It also analyses factors influence to enhance their competitive advantage. Finally, it develops a model to facilitate Thai truck companies to develop their higher standard and performance, including enhancing competitiveness.

## 2. LITERATURE REVIEW

Today, logistics industry is increasingly recognized as important role for economic growth in Thailand. Effective logistics systems and truck business can reduce total costs and improve service levels so that products can be sold with lower prices and higher responsiveness to global markets. As road transport accounts for 79.7% of all goods moved within Thailand. As truck business facilitates door-to-door transportation, and it is fierce competition. Generally, most of them small and medium enterprises (SME) (Hausman, Warren H, Hau L. Lee and Uma Subramanian, 2005) There are two main categories of vehicles used in the commercial road transport. These *are* (i) privately-owned truck, which are used for the transport of the owner's own goods, and (ii) commercial truck by general haulage companies that are not running on fixed schedules. Krungsri (2022) reveals that as of the end of 2020, a total of approximately 1.2 million trucks were registered in Thailand and of these, 0.82 million (68% of the total) were privately owned, with the total number of trucks operated by haulage companies coming to a further 0.38 million vehicles (32% of the total) (Department of Land Transport, 2023). Thai manufacturers thus tend to rely on in-house transportation facilities when distributing goods domestically.

As truck businesses are critical to the movement of the nation's freight. (Sathapongpakdee, P., 2022; Krungsri, 2022) These vehicles, which currently consume about 10 percent of the Nation's oil, are characterized by high fuel consumption, fast market turnover, and rapid uptake of new technologies. (US Department of Energy, 2009) Improving the fuel economy of trucks will dramatically impact both fuel and cost savings. The study shows the importance of heavy trucks to the Nation's economy, and its potential for fuel efficiency gains and cost reduction.

Over the period 2022-2024, researches show that the road freight transport industry is expected to enjoy growth rates that will average 3-5% per year. The industry will benefit from growth in manufacturing and trade. (CARANA Corporation, 2005) Both domestically and internationally, the road transport industry plays a crucial role in distributing goods to markets, which they accomplish via their role moving goods through all stages of the supply chain, from upstream raw materials to midstream processes and the downstream distribution of finished products.

At the same time, price competition will intensify on the large and rising number of companies active in the market, higher labor costs, and the rising fuel cost from the war in Ukraine. (Krungsri, 2022) New entrants to the market from overseas and large domestic players will also look to offer comprehensive and integrated transport services by increasing their operating efficiency, which they will accomplish by stepping up their investments in new technology and extending their partnership networks. The stiff competition and the cost of transport fuel and labor will drag on profits, especially for smaller players and those that are not part of wider partnership networks. As a result, smaller operators and those stranded outside extended business network will come under increasing pressure.

This paper reviews roles of truck business as strategic tool in logistics systems. (CARANA Corporation, 2005; Sathapongpakdee, P., 2022; Virit, T., 2022) It points out how to reduce total logistics costs through effectively managing truck business system, including how to improve customer satisfaction and to increase profitability. Further, type of truck business is reviewed in order to generate understanding to truck business. The literature reveals that truck business and operation are categorized in different types, in countries. For example, some countries divide in 2 types, that are, private and commercial trucks. On the one hand, some countries divide in 4 types, that are agriculture, industrial, chemical and hazardous and general products. The key issue is which one would be most appropriate for categorizing type of truck business system in Thailand.

**Table 1: SMEs specific factors impacting logistics performance**

| Authors/years               | Country     | Sector | Approach | Age | Size | Retention | Training | Financial Support | Managerial Capability | Performance                      |
|-----------------------------|-------------|--------|----------|-----|------|-----------|----------|-------------------|-----------------------|----------------------------------|
| Mini and Rodriguez(2000)    | Philippines | SMEs   | MRA      | +   | +    | N/A       | N/A      | N/A               | N/A                   | technical efficiency indicator   |
| Lundvall and Battese (2000) | Kenya       | SMEs   | MRA      | X   | +    | N/A       | N/A      | N/A               | N/A                   | technical efficiency indicator   |
| Tran et al.(2008)           | Vietnam     | SMEs   | MRA      | X   | +    | N/A       | N/A      | +                 | N/A                   | Firm efficiency                  |
| Charoenrat et al.(2013)     | Thailand    | SMEs   | MRA      | -   | X    | N/A       | +        | N/A               | N/A                   | Firm efficiency                  |
| Jahur et al.(2012)          | Bangladesh  | SMEs   | MRA      | N/A | N/A  | +         | +        | +                 | +                     | Profitability/Leverage Liquidity |
| Al-Mahrouq (2010)           | Jordan      | SMEs   | MRA      | N/A | N/A  | +         | +        | +                 | +                     | Owner/manager's opinion          |
| Anggadwita,et al.(2014)     | Indonesia   | SMEs   | MRA      | N/A | N/A  | N/A       | +        | N/A               | +                     | Owner/manager's opinion          |
| Noreen and Junaid (2015)    | Pakistan    | SMEs   | MRA      | N/A | N/A  | N/A       | +        | N/A               | +                     | Owner/manager's opinion          |
| Mbugua et al.(2014)         | Kenya       | SMEs   | MRA      | N/A | N/A  | N/A       | N/A      | +                 | +                     | Revenue/Turnover                 |
| Moothy et al.(2012)         | Malaysia    | SMEs   | MRA      | N/A | N/A  | N/A       | +        | N/A               | +                     | Owner/manager's opinion          |

Source: adapted from CARANA Corporation, 2005; Sathapongpakdee, P., 2022; Virit, T., 2022; Krungsri, 2022

Note: MRA refers to multivariate regression analysis, DEA refers to data envelopment analysis "X" refers to that were found to be no significant. "-" refers to negative correlation variables. "+" refers to positive correlation variables, and "N/A" refers to variables not included in the study Technically-efficient production refers to the existing technology that produces the maximum level of output achievable given the input usage.

Table 1 show SMEs specific factors impacting logistics and truck performance. The literature review (Mini and Rodriguez, 2000; Lundvall and Battese, 2000; Tran et al., 2008; Charoenrat et al., 2013) has conducted in logistics businesses in countries. It shows that there are attributes effect to higher performance and success of SME companies, especially, in logistics industry. The attributes are consisted of age, size of business, training, financial support, and managerial capability.

It also reviews factors influence to future development and enhancing competitive advantage to Thai truck business. The literature (Beamon, B.M. 1999) points out that changing customer behavior with more focus on cost, time and speed, applying in logistics techniques (e.g., JIT, Postponement, Milk-Run) change working patterns of truck businesses and their operations and management, including more intense competition in this industry. These factors increasingly pressure to truck operators and owner for changing the way of doing their business.

To maintain and improve competitive advantage of truck businesses, it reviews how to measure status of truck performance, and competitiveness in term of cost reduction, responsiveness and service quality. (CARANA Corporation, 2005; Sathapongpakdee, P., 2022; Virit, T., 2022) The literature shows that transport managers have transport knowledge and but lack of understanding how to effectively apply to their operations and how to translate information to strategic actions. Finally, enhancing competitive advantage, especially truck sector, is increasingly pressuring and suffering to domestic truck owners. The industry becomes intense competition from foreign players. It recommends that domestic truck companies would evaluate status and competitive position and scan internal and external environments, and then define effective strategy and action plan.

The literature also led to the conclusion that a preparatory evaluation of the readiness of stakeholders within truck business is essential. The potential success of logistics competition is based on a win-win approach to negotiations that always takes into consideration the readiness and adaptability of stakeholders, especially Thai SME truck companies.

### **3. RESEARCH METHODOLOGY**

To achieve the research objective, this study developed its research data through two sources. First, a literature is reviewed in area of logistics performance, truck performance and competitiveness. This data source provided broad and deep view about competitive positioning of Thai truck companies. Secondly, relevant data was collected by questionnaire surveys and in-depth interviews. This part of the research focused on exploring the current status and capacity level of Thai truck companies. In-depth-interviews were used specifically to obtain deeper insight into the relevant opinions and concerns of executives and managers at Thai truck companies.

The questionnaire survey is conducted through 280 samplings and 232 returned with response rate at 82.8 percent. In-depth interview is conducted through 35 owners and top management. The validity and reliability are examined. (Sekaran, U., 2000)

**Table 2: Numbers of sampling sizes**

| No | Type of Thai truck companies | Targeting sampling | Actual Sampling | Rate of Response |
|----|------------------------------|--------------------|-----------------|------------------|
| 1  | Truck Operator               | 280                | 232             | 82.8             |

Table 2 shows numbers of targets and sampling sizes. After having developed sampling sizes for truck business sectors, this study gathers data by questionnaire survey. The 280 questionnaires are distributed by various methods, e.g., face-to-face, postal and e-mail. The rate of response generated was very good with 232 respondents or 82.8 percent in total. The data collection period took two months.

The study also conducted in-depth interview with 35 respondents. All interviews are conducted in Thai language, using a tape-recorder, in one to three hours sessions. The semi-structured questions are developed based on research questions and these same questions are repeatedly asked of all respondents. After all data from the in-depth interviews is transcribed and tabulated in appropriate formats, content analysis is performed.

Based on research questions, tentative hypothesis would be established in order to examine a relationship between variables. The variables related to competitive factors in truck business as independents (logistics knowledge, standard, network and professional) and competitiveness, as dependent in term of cost reduction, increasing responsiveness and higher service quality to customers. It investigated the relationship between degree of importance level which Thai truck companies are doing their business and logistics performance.

The paper lists major hypothesis as a framework for examining variables in this study as follows:

H<sub>0</sub>: There is no relationship between degree of importance level that competitive factors in truck business as independents (effective standard operating procedure, logistics knowledge and skills, logistics experience, accessibility to financial funds, and logistics professional), as dependent in term of cost reduction, increasing responsiveness and higher service quality to customers.

H<sub>1</sub>: There is a relationship between degree of importance level that competitive factors in truck business as independents (effective standard operating procedure, logistics knowledge and skills, logistics experience, accessibility to financial funds, and logistics professional), as dependent in term of cost reduction, increasing responsiveness and higher service quality to customers;

Research processes are structured to ensure that validity and reliability are carefully examined. (Sekaran, U., 2000) The research tools, i.e., questionnaires and interview questions, are designed to fit properly with targeting groups. The questionnaires use perceptual Likert scales (1), where targeted samples are asked to rate each item on a five-point scale, ranging from strongly disagree to strongly agree. If a variable is related to a complex concept (2), it is covered by multiple queries and its value corresponded to the mean value of the scale. In determining the measurement properties of the constructs

uses in the statistical analysis, reliability and validity are assessed respectively (1, 2) using Cronbach’s alpha. The alpha value of overall questionnaire is 0.92. The authors suggests that a value of reliability of 0.70 is acceptable, while over 0.80 is considered good.

#### 4. FINDING RESULTS AND DATA ANALYSIS

This study shows results covering four major issues. First, the demographic data of respondents is used to identify targeted groups and their characteristics. Secondly, the paper examines current situations of Thai truck companies. Third, it identifies problematic situations and evaluate competitiveness of Thai truck companies. Finally, it analyses factors influence to enhance their competitive advantage. Further, it shows other issues related to develop their higher standard and performance, including enhancing competitiveness.

**Table 3: Numbers of employees**

| Number of Employees  | Percent |
|----------------------|---------|
| Less than 10 persons | 60      |
| 11-50 persons        | 25      |
| 51-200 persons       | 15      |
| Total                | 100     |

Table 3 presents number of employees in Thai truck companies. This study identified companies by size. It revealed that most of Thai truck companies (85 percent) have less than 50 employees. It shows that Thai truck companies are small and medium enterprises.

**Table 4: Number of trucks**

| Number of trucks    | Percent |
|---------------------|---------|
| Less than 10 truck  | 52      |
| 11-50 truck         | 28      |
| More than 51 trucks | 20      |
| Total               | 100     |

Table 4 presents number of trucks in Thai truck companies. It reveals that most of Thai truck companies (80 percent) have number of trucks less than 50 trucks. It shows that it is difficult for them to take huge cargoes.

**Table 5: Value of revenue and fixed assets**

| Value of Assets            | Percent |
|----------------------------|---------|
| Less than 50 million baht  | 72.0    |
| 51-100 million baht        | 18.0    |
| 101-200 million baht       | 4.0     |
| More than 201 million baht | 6.0     |
| Total                      | 100     |



Table 5 shows value of fixed assets of surveyed companies. When considering size of business firms by value of fixed assets, this study referred to the definitions of Ministry of Industry, Thailand. Firms with fixed assets of less than 50 million baht or 50 employees or less are considered small-sized companies. Firms with fixed assets between 50-200 million baht are defined as medium-sized companies. The results in this area of the study are consistent with the result in Table 4-3, revealing that most of Thai truck companies (90 percent) have a value of fixed assets at less than 100 million baht. An overarching conclusion is that most of them are SMEs.

The paper presents the finding results which are conducted through the survey. The results are derived from principal factor analysis technique, and then examined relationships between variables by using regression analysis and Pearson’s correlation. In this section, the paper presents only key finding and results, including examining hypothesis.

**Table 6: Results of factor analysis –Truck performance and competitiveness**

| Characteristics of Truck performance and competitiveness | Variable No. | Mean | Std. Deviation | CV (%) | 1 <sup>st</sup> factor | 2 <sup>nd</sup> factor |
|--|--------------|------|----------------|--------|------------------------|------------------------|
| Effective Standard Operating Procedure                   | X1           | 3.98 | 0.76           | 19.10  | -                      | 0.761                  |
| Logistics knowledge and skills                           | X2           | 4.00 | 0.72           | 18.00  | -                      | 0.725                  |
| Logistics experience                                     | X3           | 4.01 | 0.77           | 19.20  | -                      | 0.694                  |
| Accessibility to financial funds                         | X4           | 4.08 | 0.79           | 19.36  | -                      | 0.631                  |
| Logistics professional                                   | X5           | 3.81 | 0.84           | 22.05  | -                      | 0.562                  |
| Global business networks                                 | X6           | 3.84 | 0.89           | 23.18  | 0.787                  | -                      |
| Strongly business relationship                           | X7           | 3.96 | 0.78           | 19.70  | 0.763                  | -                      |

Table 6 represents result of factor analysis for issues related to truck performance and competitiveness. The results of factor analysis produced structure more clearly with relatively meaningful and correlated attributes grouped within a dimension. It revealed that variables were mainly classified in two major components (or so-called “factor”). The first component (Xa) consists of five issues related with truck performance in term of effective standard operating procedure (SOP) ( $X_1$ ) that have high correlation of the attributes within the group. The component includes: Logistics knowledge ( $X_2$ ) and Logistics experience ( $X_3$ ) and Accessibility to financial funds ( $X_4$ ), including to logistics professional ( $X_5$ ). Within the component, it found that the variables closely tied with attributes of truck performance.

Further, it reveals that the second component (Xb) consists of two issues by the factor loadings shows that the two issues have high correlations within another group as follows: Global business networks ( $X_6$ ), and Strongly business relationship ( $X_7$ ). It found that those issues were supportive activities and they have dominantly influence for truck performance and competitiveness.

**Table 7: Model Summary**

| Model | R                  | R Square    | Adjusted R Square | Std. Error of The Estimate |
|-------|--------------------|-------------|-------------------|----------------------------|
| 1     | 0.655 <sup>a</sup> | <b>0.42</b> | 0.426             | 0.4977                     |

a. Predictors: (Constant), X<sub>2</sub>, Y<sub>1</sub>

Table 7 shows model summary that R Square or multiple coefficient is 0.42 that means dependent variable (Y<sub>1</sub>) correlated with of independent variables both X<sub>1</sub> and X<sub>2</sub>. Rather it can be used for significantly explaining changes on both variables (X<sub>2</sub> and X<sub>1</sub>) at 42.9 percent. On the other hand, other 58 percent, it probably correlates with other variables which are not being considered.

R value derived from  $\sqrt{0.42}$  is 0.655 that shows relationship of independent variables. Standard error of the estimate is 0.4977. The result reveals that 42 percent of the variance (R-square) in functional effectiveness has been significantly explained by the two independent variables or truck performance and competitiveness.

**Table 8: ANOVA Statistics**

| Model      | Sum of Squares | Df  | Mean Square | F      | Sig.                     |
|------------|----------------|-----|-------------|--------|--------------------------|
| Regression | 56.31          | 2   | 28.158      | 113.60 | <b>0.000<sup>a</sup></b> |
| Residual   | 74.81          | 301 | 0.248       |        |                          |
| Total      | 131.12         | 302 |             |        |                          |

a. Predictors : (Constant), X<sub>2</sub>, X<sub>1</sub>

b. Dependent Variable: Truck effectiveness

The study examines whether independent variables (X<sub>2</sub> and X<sub>1</sub>) correlate and influence on dependent variable (Y<sub>1</sub>) by using multiple regression analysis. The results of regressing the two independent variables against functional effectiveness can be seen in Table 8 to examine relationship between independent variables and dependent variable, tentative hypothesis is stated as follows:

$$H_0 : \beta_1 = \beta_2 = 0 \quad H_0 : \beta_i = 0 \text{ at least; } i = 1, 2$$

When SSR = 56.31, SSE = 74.812

$$MSR = 56.31/2 = 28.15; \quad MSE = 74.81/302 = 0.24$$

$$\text{So, } F = MSR/MSE = 113.12 \text{ or } P(F > 113.12) = 0.000$$

Table 8 shows analysis of variance (ANOVA) that compares means of more than two groups. The ANOVA shows that F value of 113.669 is significant 0.05 level. In the column **df** (degree of freedom) represents number of independent variables (2), the second number (302) is the total number of complete responses for all the variables in the equation (N), minus the number of independent variables (K) minus 1. (N-K-1) < 305-2-1 = 302). The F statistic produced (F = 113.60) is significant at the 0.05 level.

The result shows that significance level is less than 0.05 (0.000), so it is rejected H<sub>0</sub> and accepted H<sub>1</sub>. This reveals that there is at least independent variable in which significantly correlates with dependent variable. However, it is not able to identify now which



independent variable correlates with dependent variable. It needs to examine further in below Table 9.

**Table 9: Regression Results**

| Model |            | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig.         | Collinearity Statistics |       |
|-------|------------|-----------------------------|------------|---------------------------|-------|--------------|-------------------------|-------|
|       |            | B                           | Std. Error | Beta                      |       |              | Tolerance               | VIF   |
| 1     | (Constant) | 0.81                        | 0.218      |                           | 3.744 | 0.000        |                         |       |
|       | X1         | 0.102                       | 0.070      | 0.090                     | 1.480 | 0.140        | 0.512                   | 1.945 |
|       | Y2         | 0.68                        | 0.070      | 0.591                     | 9.725 | <b>0.000</b> | 0.513                   | 1.945 |

a. Dependent Variable: Truck Effectiveness

Table 9 helps to explain which among the two independent variables are the most important in explaining the variance in functional effectiveness. In column of Unstandardized Coefficients consists of B and standard error (SE). The constant value is 0.818 and standard error of 0.218. It found that regression coefficient of independent variable ( $X_1$ ) =  $B_1 = 0.104$ , and  $SE = 0.070$ ; ( $X_2$ ) =  $B_2 = 0.681$ , and  $SE = 0.070$  respectively.

So expected regression equation is:

$$Y_1 = 0.81 + 0.102 X_1 + 0.68X_2$$

The column Beta under Standardized Coefficients, it found that highest number in the beta is 0.591 for  $X_2$  which is significant less than 0.05 (0.000), when  $X_1$  is constant. So, it is rejected  $H_0$ , and accepted for  $H_1$ . Rather, it reveals that  $X_2$  has significantly positive correlation with dependent variable ( $Y_1$ ) or functional effectiveness.

On the other hand,  $X_1$  has significance level over 0.05 (0.140), when  $X_2$  is constant, therefore it is accepted  $H_0$ . Rather there is no significantly correlation between  $X_1$  and  $Y_1$ . It is however seen that the only independent variable ( $X_2$ ) that is significant. The positive beta weight indicates that if Thai truck companies need to improve their performance ( $X_{1,2,3,4,5}$ ), they would increasingly provide higher competitiveness ( $X_{6,7}$ ).

In column of collinearity statistics is used to examine relationship among independent variables. It found that  $X_1$  has tolerance = 0.512, and VIF = 1.945;  $X_2$  tolerance = 0.513 and VIF = 1.945. The tolerance value oppositely varies with degree of relationship among independent variables. Rather, the more tolerance is, the lesser relationship between independent variables is. That is, independent variables have no relationship among others. The result obtained also lead to examine following tentative hypothesis:

**Hypothesis 1:** Hypothesis can be stated in the null and alternate as follows:

$H_0$ : There is no relationship between degree of importance level that competitive factors in truck business as independents (effective standard operating procedure, logistics knowledge and skills, logistics experience, accessibility to financial funds, and logistics professional), as dependent in term of cost reduction, increasing responsiveness and higher service quality to customers

Statistically expressed:  $H_0: \beta_1 / \beta_2 = 0$ ,  $H_0: \beta_2 / \beta_1 = 0$

When  $X_{(X_1, X_2)}$  is a degree of importance level that organizations put efforts and resources on PMS implementation and  $Y_1$  is functional effectiveness

$H_1$  : There is a relationship between degree of importance level that competitive factors in truck business as independents (effective standard operating procedure, logistics knowledge and skills, logistics experience, accessibility to financial funds, and logistics professional), as dependent in term of cost reduction, increasing responsiveness and higher service quality to customers

Statistically expressed:  $H_1 : \beta_1 / \beta_2 \neq 0$ ,  $H_1: \beta_2 / \beta_1 \neq 0$

According to hypothesis testing, the results show that significance level of  $X_1 = 0.140$  and  $X_2 = 0.000$ , when another independent variable is constant. It found that it is accepted for  $X_2$  that there is relationship with  $Y_1$  because its significance level is less than 0.05. It concludes that there is relationship between a degree of importance level that organization put efforts on truck performance ( $X_{1-5}$ ), and truck effectiveness ( $X_{6,7}$ )

**Table 10: Evaluating competitive levels of Thai truck companies**

| Capability levels   | Mean        |
|---|-------------|
| 1. Maintaining vision in dynamic business environments                                  | 3.46        |
| 2. Excellent logistics knowledge and understanding                                      | 3.10        |
| 3. Effectively managing operating costs   | 2.87        |
| 4. Readiness to access for resources and capital  | 2.72        |
| 5. Providing excellent service quality  | 3.36        |
| 6. Ability to effectively access local target markets                                   | 2.78        |
| 7. Strong management  | 2.66        |
| 8. Providing services via one-stop service centre                                       | 2.48        |
| 9. Achieving higher performance through logistics staff                                 | 3.36        |
| 10. Sufficient resources of information technology (hardware, software and people-ware) | 2.48        |
| 11. Organizational culture that responds well in a dynamic business environment         | 2.54        |
| 12. Having a strong global business network   | 1.84        |
| <b>Aver. Score</b>  | <b>3.34</b> |

Table 10 reveals results of capability and competitive levels of Thai truck companies in dynamic times. The results reveal that most of Thai truck companies rated their performance and capacities of conducting businesses at higher level than normal standard level (at 3.0 with full 5.0 scale). They identify that they have strong vision (3.46), and well logistics knowledge (3.10). Further, they identify that they can effectively manage operating costs (2.87), and they have higher service quality than foreign competitors (3.36), with strong capability to locally serve to domestic markets (2.78).

However, some issues are becoming weak points. Those issues include: providing services via one-stop service (2.48), weak management talents and competencies (2.66), and low availability of IT for logistics (2.48), in particular, lack of global business networks (1.84).

**Table 11: Problems, opportunities and challenges in Thai truck Business**

| Problems and Opportunities occurring  | Mean        |
|---|-------------|
| 1. Having increasingly cut the prices in logistics industry                   | 4.42        |
| 2. Having intense competition in logistics industry                           | 4.44        |
| 3. Importers and exporters have more alternatives for Thai truck companies    | 3.88        |
| 4. Having higher integration and effectively allocating resources             | 3.64        |
| 5. Thai truck companies compete to improve higher service quality             | 3.94        |
| 6. Improving higher potential for importing and exporting to foreign markets. | 3.32        |
| 7. Thai truck companies can expand their business to foreign market           | 2.52        |
| 8. Foreign truck companies increasingly expand the market to Thailand         | 4.26        |
| <b>Aver. Score</b>  | <b>3.38</b> |

Table 11 shows problems, opportunities and challenges in truck industry. Most of Thai truck companies identifies that price war is increasingly using in truck and logistics industry (4.42) and it increase intense competition in logistics industry (4.44) in next few years. Under the circumstances, logistics users have more alternatives with best services.

However, even though domestic market has intense competition, but Thai truck companies insist that they have not any plan to expand their businesses to other countries (2.52). They also believe that foreign truck companies increasingly expand their investment in Thailand market (4.26).

**Table 12: Strategic factor analysis summary of Thai truck companies**

| No.            | SFAS   | Weight | Score | Weighted Score | Comment  |
|----------------|--|--------|-------|----------------|--|
| S <sub>1</sub> | 1. Establishing in strategic locations, covering geographical areas.                                 | 0.12   | 4     | 0.48           | Thai Warehouse providers have expertise, but lacking knowledge in Vehicle Routing and Scheduling                                 |
| S <sub>2</sub> | 2. Very close to international airport, main harbor with easily access by roads and rails.           | 0.10   | 4     | 0.40           | Even though they are SME firms, but lacking effectiveness and productivity.  |
| S <sub>2</sub> | 3. Having well knowledge and understanding in Thai rules and regulations.                            | 0.08   | 3     | 0.24           | In near future, this advantage might change by using EDI or internet transmission.   |
| W <sub>3</sub> | 4. Lack capabilities to supply full ranges of services, because of limitation of capital investment. | 0.08   | 2     | 0.16           | Under intense competition, customers need higher service quality, only cheaper prices cannot respond to customer requirements.   |
| W <sub>2</sub> | 5. Lack of knowledge and skill of logistics management, including lack of capital investment.        | 0.12   | 2     | 0.24           | Limitation of logistics knowledge and skills, management lack creative idea to combine full services for fulfill customer needs. |

|                |   |             |   |             |  |
|----------------|---|-------------|---|-------------|--|
| W <sub>3</sub> | 6. Lack of alliance and foreign networks and No integration in term of one-stop service; OSS  | 0.10        | 2 | 0.20        | Lack global vision and networks. Including no additional investment in related activities.   |
| O <sub>1</sub> | 7. Rapidly changing of customer behavior, and easily access foreign markets because of opening trade liberalization.                                      | 0.08        | 3 | 0.24        | Opening trade liberalization encourages national trade and investment. It builds an opportunity to Thai WSPs.                                |
| O <sub>2</sub> | 8. Truck industry in Thailand growths 10-20 percent annually. Changing a direction to increasingly employ outsourcing companies.                          | 0.10        | 3 | 0.30        | Thai firms outsource some non-core activities, especially warehouses and transport.  |
| T <sub>1</sub> | 9. Having high risk of operations of access to the market. Further, Nationalism of firms, e.g., Japanese firms.   | 0.12        | 3 | 0.36        | This sector has heavily investment in hardware, software and people ware. Japanese firms always commit to Japanese warehouse firms.          |
| T <sub>2</sub> | 10. Customers have higher bargaining power, and Rapid and continuous change of customer behavior. New logistics trends make some changes in the industry. | 0.10        | 2 | 0.20        | Under circumstances, customers have higher bargaining power. New logistics techniques (e.g., JIT) changes business operations and practices. |
|                |   | <b>1.00</b> |   | <b>2.82</b> |  |

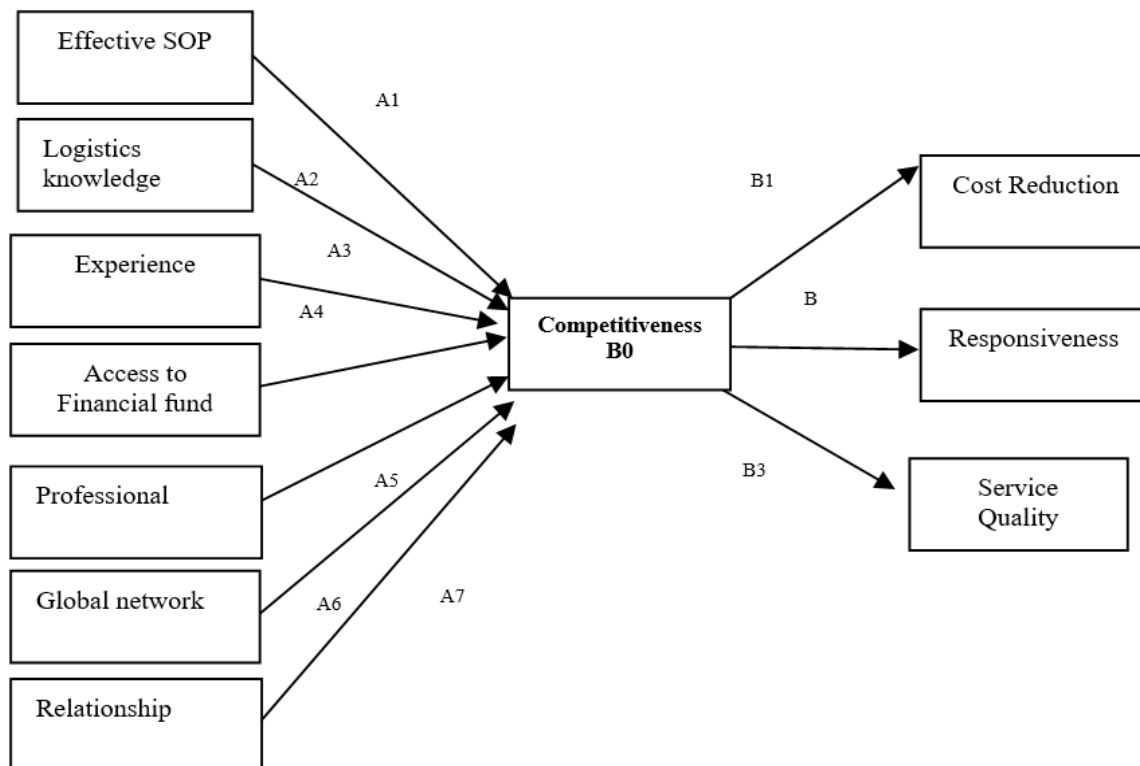
Table 12 shows strategic factor analysis summary (SFAS) of Thai truck companies. It identifies that Thai truck companies have capacity (at 2.82) lower than average score, compared with foreign warehouse companies. This study points out that most of Thai truck companies are small-to-medium-sized enterprises (SMEs). It identified that their strengths as commitments to: establishing in strategic location with linking multimodal transport. Further, they have well knowledge and understanding in Thai rules and regulations. However, they lack capabilities to supply full ranges of services, because of limitation of capital investment, including lacking knowledge and skill of logistics management, and Lacking of alliance and foreign networks and no integration in term of one-stop service; OSS.

When considering opportunities of Thai truck companies, the study shows that rapidly changing of customer behavior, and easily access foreign markets due to opening trade liberalization, it generates an opportunity to Thai firms to respond to the changes. Further, truck industry in Thailand present 10-20 percent growths annually, including having changing new direction to increasingly employ outsourcing companies. On the other hand, some firms are operating businesses with nationalism, e.g., Japanese firms. It reflects to difficulty for penetrating this market. Customers have higher bargaining power, and having rapid and continuous change of customer behavior. In addition, new logistics trends make some changes in the industry, e.g., JIT and postponement techniques.

Thai truck companies have lesser degree of readiness and adaptability to logistics service liberalization. This is particularly true within SME sectors. They need capital, technology and know-how to improve their competitiveness. Accordingly, larger Thai large truck companies have a higher capacity and readiness for opening logistics liberalization.

They mostly lack understanding regarding the affects of logistics service liberalization. They capabilities are at relatively medium to low levels. There are other mitigating factors, e.g., outdated national laws and regulations, and unstable political and economic climates, impeding the growth of the Thai truck industry. In relation to Thai government agencies and their role in facilitating logistics operations, it is indicated they lack understanding and knowledge on how to effectively encourage, facilitate and offer incentives to Thai truck companies, so that they can better contribute and compete in the global logistics markets.

After analyzing the benefits and costs to liberalization, Thai truck companies in SME sectors have the most potential for adverse affects. On the other hand, logistics users (Thai importers and exporters) can reap the greatest benefits through higher responsiveness and lower costs. The study points out problematic issues to growth within Thai truck sectors, issues that are impeding international trade flow. It also provides recommendations on how to facilitate Thai truck companies to adapt and respond to the rapid changes of international logistics liberalization.



**Figure 1: Relationship between truck performance (X) and business competitiveness (Y)**

Table 1 shows summary of testing hypothesis and measuring a relationship between variables. The hypothesis bases on truck performance (X) would create business performance and competitiveness in term of cost reduction, responsiveness and higher service quality (Y). After testing the hypotheses, the results showed that there was a significantly positive relationship between the variables. It reflects that these variables have influence on others to some degree. It reveals that there is highly strong relationship between truck performance (X) and enhancing competitiveness (Y) at a statistically significant influence at the .05 level. (Sekaran, U., 2000; Silpcharu, T., 2017)

**Table 13: Result of hypothesis testing between truck performance (X) and business competitiveness (Y)**

| Variable    |           | B1   | B2   | B3   |
|-------------|-----------|------|------|------|
| Independent | Dependent |      |      |      |
| A1          | B0        | 0.57 | 0.55 | 0.62 |
| A2          |           | 0.62 | 0.58 | 0.59 |
| A3          |           | 0.72 | 0.54 | 0.75 |
| A4          |           | 0.58 | 0.63 | 0.95 |
| A5          |           | 0.76 | 0.72 | 0.78 |
| A6          |           | 0.69 | 0.65 | 0.62 |
| A7          |           | 0.78 | 0.62 | 0.65 |

In summary, the results show that:

- Most of Thai truck companies are small and medium enterprises (SME), with low potential and capability to adapt and flex to dynamic changes.
- Truck performance is a positive relationship with business competitiveness.
- Logistics experience, professional and closer relationship with clients is strongly relationship with truck business competitiveness in term of cost reduction.
- Logistics professional of Thai truck companies can facilitate for responsiveness.
- Logistics experience and professional can enhance higher service quality in truck business.
- Under dynamic competition, they need to develop themselves by establishing their effective standard operating procedure, logistics knowledge and Logistics experience and professional. In particular, accessibility to financial funds.
- However, in current business, Thailand economic growth depends on international trade and investment, so Thai truck companies need to build global business networks *and* strongly business relationship or developing supply chain collaboration.



## **5. CONCLUSION**

It is recognized that logistics industry is increasingly recognized as important role for economic growth in Thailand. As truck business facilitates door-to-door transportation, and this business is fierce competition. They reflect to many problems and barriers to operate in dynamic businesses. The study reveals the strengths of Thai truck companies. They have well knowledge and understanding of local rules and regulations, including operating with lower labor costs. However, they lack capabilities to supply full ranges of services, because of limitation of capital investment, including lacking capital investment. It emphasizes on labor intensive more than capital and technology intensive. The key weaken point is lacking alliance and foreign networks and no integration in term of one-stop service; OSS.

When considering opportunities in this industry, truck industry in Thailand grows 10-20 percent annually. As rapidly changing of customer behavior and changing a direction to increasingly employ outsourcing companies, they would consider a higher service quality in truck business. On the other hand, it has high risk of access the market, because of heavily investment. Customers have higher bargaining power, especially, nationalism of firms, e.g., Japanese firms always employ Japanese warehouses. Further, new logistics trends make some changes in logistics industry, in particular electrical vehicle (EV) operations and practices. The result reveals that they lack logistics knowledge and skills, including access to financial resource and business networks. The study shows that knowledge, standard, network and professional are key success to increase their competitive advantage. As a result, they would effectively facilitate cost reduction, increasing responsiveness and higher service quality to customers. It also provides recommendations to facilitate Thai truck entrepreneurs to develop their higher standard and performance, including enhancing competitiveness.

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