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Adaptation of Road Goods Transportation Entrepreneurs to Enhance Firm's Performance in the Eastern Economic Corridor (EEC) Areas of Thailand

Piyamas Klakhaeng*

Abstract

This research aims 1) to study adaptation of road goods transportation entrepreneurs that influences firm's performance and 2) to build an adaptation model of road goods transportation entrepreneurs and provide implementation guidelines to executives. The research was designed as mixed methods research. The sample was stratified randomly selected consisting of 26 companies for questionnaire survey and purposive selected consisting of 9 companies for in-depth interview. Data were analyzed using Structural Equation Modeling (SEM) and Path Analysis. The findings show that (1) adaptation of entrepreneurs (AOE) has direct positive effects to firm's performance (FP) (0.61) but has no indirect effects due to indirect influence value (0.21) which is not statistical significant,

(2) adaptation of entrepreneurs (AOE) effects to both agility of business and organization (ABO) (0.98) also flexibility of transportation operations (FTO) (0.95), and (3) agility of business and organization (ABO) and flexibility of transportation operations (FTO) both has no positive direct effects to firm's performance (FP) (0.61, 0.40) with no statistical significance. Secondly, for building an adaptation model, findings revealed that the model must consist of 2 main components which are; (1) the adaptation of entrepreneur (ABO) including two subcomponents namely, agility of business and organization (ABO) and flexibility of transportation operations (FTO), due to these subcomponents both have positive direct effects to adaptation of entrepreneur, (2) for firm's performance (FP) and implementation guidelines, the entrepreneurs must first focus on building abilities in both responsiveness (RS) (0.84) also resources and vehicles management (RM) (0.88) which will benefit in increasing income successively (II) (0.81).

คำสำคัญ: Adaptation, Road goods transportation entrepreneurs,

Eastern economic corridor (EEC), Small and medium enterprises (SME)

Type of Article: Research Article

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ผ่านการรับรองคุณภาพจากศูนย์ดัชนีการอ้างอิงวารสารไทย (TCI.) อยู่ในกลุ่ม 1 สาขามนุษยศาสตร์และสังคมศาสตร์

การปรับตัวของผู้ประกอบการขนส่งสินค้าทางถนนเพื่อเพิ่มผลการดำเนินงานของผู้ประกอบการในพื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออกของประเทศไทย

ปิยมาส กล้าแข็ง*

บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อ 1) ศึกษาการปรับตัวของผู้ประกอบการขนส่งสินค้าทางถนนที่ส่งผลต่อผลการดำเนินงานของบริษัท และ 2) สร้างโมเดลการปรับตัวของผู้ประกอบการขนส่งสินค้าทางถนนและให้ข้อเสนอแนะในการนำไปใช้ในเชิงปฏิบัติการแก่ผู้บริหาร โดยใช้รูปแบบการวิจัยแบบผสม ซึ่งกลุ่มตัวอย่างได้แก่ ประชากรผู้ซึ่งเป็นผู้ประกอบการขนส่งสินค้าทางถนนในพื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออกของประเทศไทย จำนวน 26 บริษัท และสัมภาษณ์เชิงลึก 9 บริษัท ทำการวิเคราะห์โมเดลสมการโครงสร้างและการวิเคราะห์เส้นทาง ผลการวิจัยพบว่า 1) การปรับตัวของผู้ประกอบการ (AOE) ส่งผลกระทบบางอย่างโดยตรงต่อผลการดำเนินงานของบริษัท (FP) (0.61) แต่ไม่ส่งผลทางอ้อม 2) การปรับตัวของผู้ประกอบการ (AOE) ส่งผลต่อความไว้วางใจด้านธุรกิจและองค์กร (ABO) (0.98) และส่งผลต่อความยืดหยุ่นด้านการปฏิบัติงานขนส่ง (FTO) (0.95) 3) ความไว้วางใจด้านธุรกิจและองค์กร (ABO) ความยืดหยุ่นด้านการปฏิบัติงานขนส่ง (FTO) ไม่ส่งผลเชิงบวกโดยตรงต่อผลการดำเนินงานของบริษัท (FP) (0.61, 0.40) และ 2) การสร้างโมเดลการปรับตัว ประกอบด้วย 2 องค์ประกอบหลัก ได้แก่ (1) การปรับตัวของผู้ประกอบการ (AOE) ได้แก่ ความไว้วางใจด้านธุรกิจและองค์กร (ABO) และความยืดหยุ่นด้านการปฏิบัติงานขนส่ง (FTO) (2) ผลการดำเนินงานของบริษัท (FP) และข้อเสนอแนะในการนำไปใช้ต้องเน้นสร้างความสามารถในการตอบสนอง (RS) (.84) และด้านการจัดทรัพยากรและยานพาหนะ (RM) (.88) ก่อนเป็นลำดับแรกซึ่งจะส่งผลดีต่อการเพิ่มรายได้ (II) (.81) ตามมา

Keywords: การปรับตัว ผู้ประกอบการขนส่งสินค้าทางถนน ระเบียงเศรษฐกิจพิเศษภาคตะวันออก
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1. Introduction

Thailand's Eastern Economic Corridor (EEC) focuses on development in 12 targeted industries (Eastern Economic Corridor, 2022) with area-based development that builds on the success of the Eastern Economic Development Plan or Eastern Seaboard. The EEC project has its main goal of promoting investment that will upgrade the country's industry to increase competitiveness. In the first phase, it has been implemented in three eastern provinces namely; Chachoengsao, Chonburi, and Rayong. Where new logistics infrastructure and facilities of these provinces have been developed and built for supporting the logistics networks. According to the government policy in the EEC development, integration of the whole-system linkage is the main strategy in the logistics system development that will integrate all the transportation platforms with the linkage of road, rail, ship, and air transportation. This can save travel time, reduce shipping time and logistics costs, increase travel safety, and increase the services potential according to the infrastructures and utilities action plan in EEC 2023-2027 (Eastern Economic Corridor, 2021) Since goods transportation is a service business that plays an important role in distributing products to both domestic and international markets. The EEC project will use the eastern seaboard area linking the rail system and road transport to connect with three ports. As a result, the EEC project will elevate Thailand into a world-class economic hub (The Office

of Industrial Economics, 2019) by having the convenient multimodal-transportation linkage.

The transport entrepreneur is a service provider for transporting goods, which in the overall sense means the movement of people, goods, or services from one location to another. In which the transportation management to talk about will focus on the transportation of goods or services is important. However, the competition and high labor and fuel costs may hold back business performance, especially small entrepreneurs and transport Small and Medium Enterprises (SME) without a network of partner. (Sathapongpakdee, 2022)

From study of road goods transportation entrepreneurs' problems in the EEC of Thailand, the problems are 1) intense competition due to high number of competitors and underprice lead to inability to compete in job offers from clients, 2) logistics personnel resources which require high potential development in every position (Pamornprawa, 2017), 3) trucks service providers to customers and distribution (Ketsarapong & Choo-ngern, 2015) due to old generation trucks require high fuel consumption, high maintenance costs lead to high risk of unprofitable management, 4) technology adaptation which is not yet ready in terms of transportation technology cause unreliability as well as technology investment is still costly.

According to research problems, this has greatly affected road goods transportation entrepreneurs in the EEC. Therefore, implementation of the adaptation concept which

is the concept of adjusting and changing to work suitably to current facing situations (Setthachotsombut & Sua-iam, 2020), will aid businesses to compete and survive. Where the adaptation concept's structure consists of (1) agility concept; it is speed and agility to change working methods and steps, venture in experimenting a new working styles or new services to increase survival chances and success, (Nakkasem & Pasunon, 2018) (2) flexibility concept; it is flexible organization response focused on network and mitigate risks by creating a variety of strategic alternatives to respond quickly to unforeseen environments (Tresirichod, 2021). The adoption of these concepts will be beneficial to the organization (Adomako et al., 2018) and the adaptation also has a noticeable effect on the growth of the organization (Eshima & Anderson, 2017).

Hence, this research will benefit road transport entrepreneurs in the EEC and can also implement research results to other companies within similar industry as well.

2. Research's objectives

1. To study the adaptation of road goods transportation entrepreneurs that affects firms' performance.

2. To build an adaptation model of road goods transportation entrepreneurs and provide implementation guidelines to executives.

3. Hypothesis

H1: Adaptation of entrepreneur (AOE) directly positively affects firm's performance (FP) and through agility of business and organization (ABO) and flexibility of transportation operations (FTO).

H2: Adaptation of entrepreneur (AOE) affects agility of business and organization (ABO).

H3: Adaptation of entrepreneur (AOE) affects flexibility of transportation operations (FTO).

H4: Agility of business and organization (ABO) directly positively affects firm's performance (FP).

H5: Adaptation of entrepreneur (AOE) directly positively affects firm's performance (FP).

4. The research framework

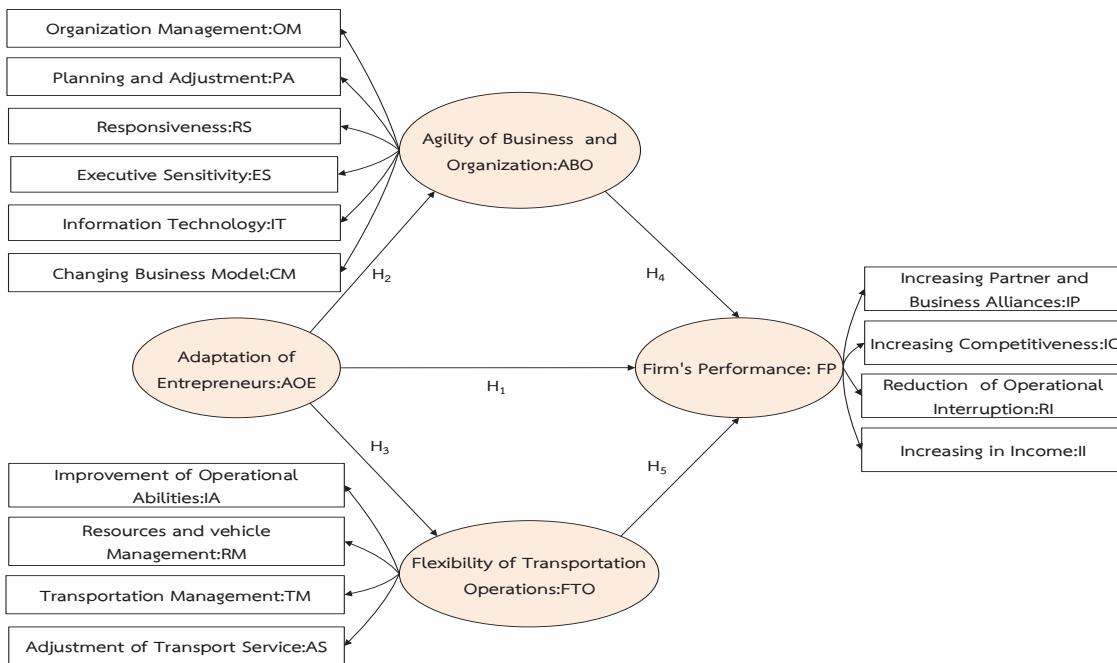


Figure 1 Research framework

5. Literature review

5.1 Adaptation of entrepreneur

Adaptation of entrepreneur (AOE) is an adaptation to fit the current concept for a competitive advantage with adjustments in various aspects of the company's operations to suit the environment (Setthachotsombut & Sua-iam, 2020). The adaptation consists of two key components namely, agility of business and organization (ABO) and flexibility of transportation operations (FTO). Therefore, the adaptation of entrepreneur in the EEC is the ability to adapt in operations by using flexibility in adapting to cope with and respond to changing circumstances, as well as a quick response to changes according to customer requirements. It is the way to help entrepreneurs

to survive in competition. Moreover, it is the way the organization, executives, and employees adapt to maintain the results in accordance with the needs to achieve the goals.

5.2 Agility of Business and Organization

Agility of Business and Organization is the agility to change methodologies, procedures, and risk tolerance in experimenting with new working styles or new services. Moreover, practicing learning and applying knowledge to the business development of the organization can increase the chances of success (Setthachotsombut, 2015). It consists of the several variables explained as follows:

1. Organization management (OM) is the integration of people who can face various

problems by formulating the right solutions, where every person in the organization must obtain equal compensation or reward. Also, efficiency in the operations of the organization must achieve maximum performance and productivity (Shouchupol, 2020).

2. Planning and adjustment (PA) is setting of the desired future goals as well as operation procedures in advance. In addition, to achieve those predetermined goals or objectives, firstly the internal environment must be analyzed to seek strengths and weaknesses, in parallel with external environment must also be analyzed to find opportunities and threats (Namagembe, 2020).

3. Responsiveness (RS) is a holistic strategic response to improve business performance which can respond to customers' needs and guarantee products availability in on time delivery and maintain costs efficiency (Somanawat, 2017).

4. Executive sensitivity (ES) is the sensitivity of that executive. Executives must conduct self-analysis without self-centered. Sensitive to recognize and adapt to diverse cultures effectively, will benefit an organization as well as whole society resulting in achieving the predetermined goals quickly (Auephunsirikul & Narintarangkul Na Ayudhya, 2018).

5. Information technology (IT) is a significant part in strategic information systems which can affect organizational performance. It is also a tool that can be used to drive

sustainable development, (Setthachotsombut et al., 2017).

6. Changing Business Model (CM) is changing operational or business processes to gain better results such as a road transportation company changing shipment from 1 time per day to several times per day, where the obtained results can be compared to average labor-productivity in the same industry. Moreover, the change might include the relationship analysis between production skills and labor, (Khunthongjan, 2017).

Agility has always been important for companies and sensitivity to change, methods, procedures, and risk tolerance in experimenting with working styles and practice to learn and bring knowledge to the business development of the organization can increase the chances of success.

5.3 Flexibility of transportation operations (FTO)

Flexibility of transportation operations (FTO) is flexible organization response focused on network and mitigate risks by creating a variety of strategic alternatives to respond quickly to unforeseen environments (Petchinda & Malisuwan, 2017). It consists of the several variables explained as follows:

1. Improvement of operational abilities (IA) is the development of employee's skills and work processes including administrative abilities that improved by comparing the development from past performance. However, the development might focus on personnel, organization management structure, facilities,

management skills, equipment, tools, technology, and transportation vehicles. As a result, these developments will increase organization's competitiveness (Office of the National Economic and Social Development Council, 2020) as well as raise the higher service level.

2. Resources and vehicles management (RM) is resources, vehicles, and operational processes management to enhance transportation and provide appropriate customers services. It aims to develop conceptual skills and increase theoretical knowledge as well as various capabilities for resources and vehicles management and transportation operations. (Rahbari et al., 2019).

3. Transportation management (TM) is planning, operational guidelines, control, follow-up of transportation work, and report results in order to achieve the goal of transportation management in terms of low cost, on-time delivery, no damage, and no loss shipment. It might have different delivery management guidelines according to the type of goods, transportation, or may use holistic management, (Zhang & Yu, 2020). However, the management must focus on improve quality of shipment to be efficient enough to continuously meet the needs of various customers (Jaruthirasarn, 2020).

4. Adjustment of transportation service (AS) is change or adjusting transporters's service styles, adjusting working methods to facilitate in every step of the way, and create the good coordination in every step of the shipment, (Zhang & Yu, 2020). However, to

adjust transportation service, a company must focus on providing high quality services whether short or long term to response to customers needs which changed dynamically. This will lead to building customer loyalty to bind to the company products and services, (Thawmaey & Nopanatwongsakorn, 2020).

Flexibility of transportation operations (FTO) is a consideration of the organization's responsiveness to network-focused flexibility and risks reduction by making a variety of strategic options to respond quickly to unforeseen environments.

5.4 Firm's Performance (FP)

Firm's Performance (FP) is annual performance measurement which reflect the organization's efficiency and productivity. The performance measure is also a significant tools to indicated success or failure in business, (Ramnat & Boonyoo, 2019). The firm's key performance indicators measurement consists of the several variables explained as follows:

1. Increasing partner and business alliances (IP) is adding trading partners and business alliances to expand the scope of business operations of the company. Having good and increasing number of trading partners and business alliances can help the company in several aspects. Moreover, It will also help the company to expand its business to grow even more through cooperation between organizations and resulting in increasing business strength and increasing competitiveness (Swangkong & Jadesadalug, 2018).

2. Increasing competitiveness (IC) is the business competitive ability of the company when comparing with its competitors. It is necessary to analyze the business environment (Pimonratnakan, 2021) in order to find a way to assess, develop, and build superior abilities than competitors. However, if entrepreneurs can reduce costs lower than others, it is considered to increase costs competitiveness as well.

3. Reduction of operational interruption (RI) is business operations planning and collaboration integration (Stewart et al., 2017) that are adapted to changing environment to increase working flexibility. This working flexibility can help reduce interruption or discontinue. Also, it can help generate smooth coordination among several parties to achieve the goals in specified time (Business Continuity Management Plan (Rubber Authority of Thailand, 2016). However, reducing operational interruptions during transport operations, it will help the company to manage the cargo continuously, reduce negative impacts, and reduce opportunities and risks that will cause operational disruptions.

4. Increase in income (II) is increasing income from sales and services which is usually derived from the growth of the organization's business (Pleumchitphaiboon, 2014). In addition, the company's performance, profit (Wang et al., 2020) and increased revenue will make the company more financially stable in the future with better cash flow and liquidity (Srijunpetch & Phakdee, 2019).

Firm's Performance (FP) is reflecting on the efficiency and effectiveness of the organization's operations. To development needs to measure performance. It is considered a performance measurement and is an important tool for organizations to measure the success or failure of a variety of businesses.

6. Research methodology

6.1 Research Design

This research use mixed methods research between quantitative and qualitative method. The quantitative research was conducted first followed by qualitative research. The questionnaires was distributed, collected, and analyzed, where the questions with high average and influence weights were interviewed to collect in-depth information.

6.2 Population and sample

The research population was the road transportation goods entrepreneurs in the EEC of Thailand (Chachoengsao, Chonburi, and Rayong provinces), consisted of 3,832 companies which registered with the office of small and medium enterprises (SME) in year 2019 (Office of Small and Medium Enterprises Promotion, 2021).

From the target sample the survey was conducted on the 26 companies, 820 responses have been used for all the analysis. The sample size was 20 times the research variables (41 variables x 20 times = 820 people). The samples were then selected with equal probability using stratified random sampling method, (National Statistical Office, 2013).

The 18 key informants at top management level who participate in the in-depth interview were selected purposively from 9 companies.

6.3 Research instruments

The research tool for quantitative research method used a questionnaire, divided into 3 sections, 13 pages, totaling 108 questions. The questionnaire passed content and validity tests by five experts with the Index of Item Objective Congruence (IOC) = 1.00. Then it was tried out to find reliability value, where the obtained Cronbach's alpha Coefficient (α) = 0.86 (more than 0.70, the questionnaire suitable to be used). While the research tool for qualitative research method was an interview form designed according to the research conceptual framework and the questions with high average and influence weight values.

6.4 Data collection

Data were collected from distribution the questionnaires both by mail or by online via Google form. The collection time was 3 months with 100% respond rate (820 samples, 820 responds in operation level and middle management level). While collecting data from in-depth interview used face to face interviews together with online interviews in top level management until all required data were obtained.

6.5 Data analysis

Quantitative data analysis used descriptive statistics, confirmatory factor analysis (CFA), structural equation model (SEM), and path analysis, while qualitative data analysis used only content analysis.

7. Results

7.1 Quantitative research results

1. Path analysis results are illustrated in Table 1.

Table 1 Path analysis results

Independent Variable	Effect	Dependent Variables			
		AOE	FTO	ABO	FP
FTO	DE	0.95 (36.86)*	-	-	-
	IE	-	-	-	-
	TE	0.95 (36.86)*	-	-	-
ABO	DE	0.98 (3.08)*	-	-	-
	IE	-	-	-	-
	TE	0.98 (3.08)*	-	-	-
FP	DE	0.61 (1.72)	0.40 (2.48)*	0.60 (1.37)	-
	IE	0.21 (0.60)	-	-	-
	TE	0.82 (3.19)*	0.40 (2.48)*	0.60 (1.37)	-

$\chi^2 = 40.490$, $df = 28$, $p\text{-value} = 0.060$, Relative $\chi^2 = 1.446$, $GFI = 0.993$, $AGFI = 0.972$, $RMR = 0.005$, $SRMR = 0.015$, $RMSEA = 0.023$, $NFI = 0.996$, $IFI = 0.999$, $CFI = 0.999$, $CN = 837$

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Table 1 Path analysis results (Cont.)

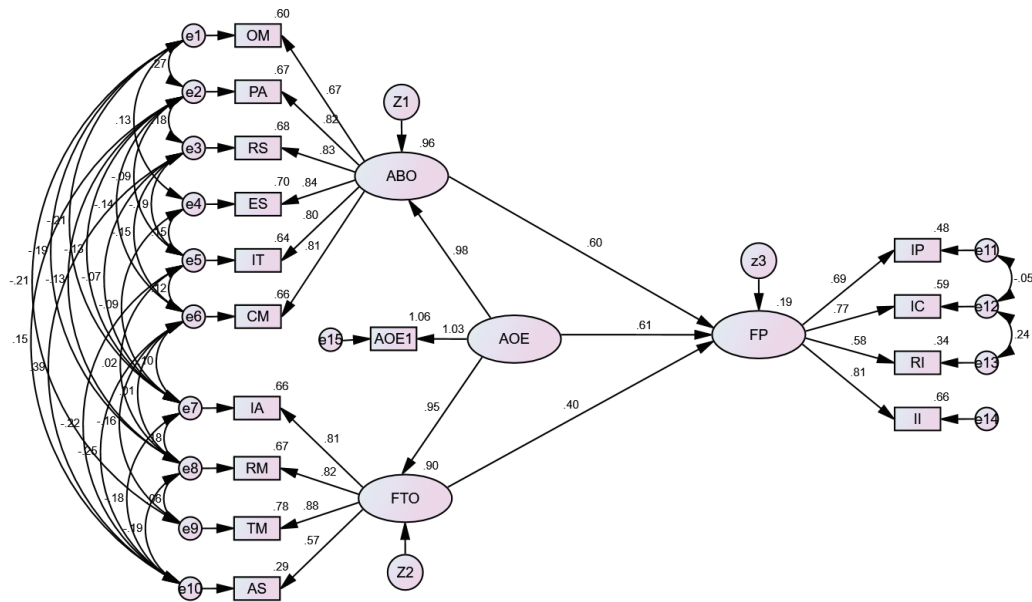
Independent Variable	Effect	Dependent Variables			
		AOE	FTO	ABO	FP
R ² for Endogenous Variable					
OM	PA	RS	ES	IT	CM
0.60	0.67	0.68	0.70	0.64	0.66
R ² for Endogenous Variable					
IA	RM	TM	AS		
0.66	0.67	0.78	0.29		
R ² for Exogenous Variable					
IP	IC	RI	II		
0.48	0.59	0.34	0.66		
R ² for Structural Equations					
ABO	FTO	FP			
0.96	0.90	0.19			
Correlation matrix of observed variables					
	AOE	ABO	FTO	FP	
AOE	1.00				
ABO	0.96	1.00			
FTO	0.92	0.85	1.00		
FP	0.37	0.32	0.43	0.89	

Remark: number in bracket is t-test values * p < .05 ([t] > 1.96)

From table 1, the analysis of the causal influence of agility of business and organization, flexibility of transportation operations, and firm's performance is illustrated. The researcher presents the results of direct effects (DE), indirect effects (IE), and total effects (TE). The obtained statistical test values are

$\chi^2 = 40.490$, $df = 28$, $p\text{-value} = 0.060$, Relative $\chi^2 = 1.446$, $GFI = 0.993$, $AGFI = 0.972$, $RMR = 0.005$, $SRMR = 0.015$, $RMSEA = 0.023$, $NFI = 0.996$, $IFI = 0.999$, $CFI = 0.999$, $CN = 837$ which pass the specified statistical criteria.

2. Results of SEM analysis Results of SEM analysis were illustrated in figure 2.



Chi-square=40.490,df=28,p-value=.060,Chi-square/df=1.446,
GFI=.993, AGFI=.972,RMR=.005, RMSEA=.023,
NFI=.996, IFI=.999, CFI=.999

Figure 2 Results of SEM analysis

The results of SEM analysis showed that all SEM's statistical values pass the specified standard criteria. These are Relative χ^2 (χ^2/df) equal to 1.446 (less than 2.00), Goodness of Fit Index (GFI) equals to 0.993 greater than 0.90, Adjusted Goodness of Fit Index (AGFI) equals to 0.972 (greater than 0.90), Root Mean Squared Residuals (RMR) equals to 0.005 (less than 0.05), Standardized Root Mean Squared Residual (SRMR) equals to 0.015 (less than 0.05), Root Mean Squared Error of Approxima-

tion (RMSEA) equals to 0.023 (less than 0.05), Normed Fit Index (NFI) equals to 0.996 greater than 0.90, Incremental Fit Index (IFI) equals to 0.999 (greater than 0.90), Comparative Fit Index (CFI) equals to 0.999 (greater than 0.90), and Critical N (CN) equals to 837 greater than 200.

3. Research hypothesis test results From the results of SEM and Path analysis, the research hypothesis can be answered as shown in Figure 3.

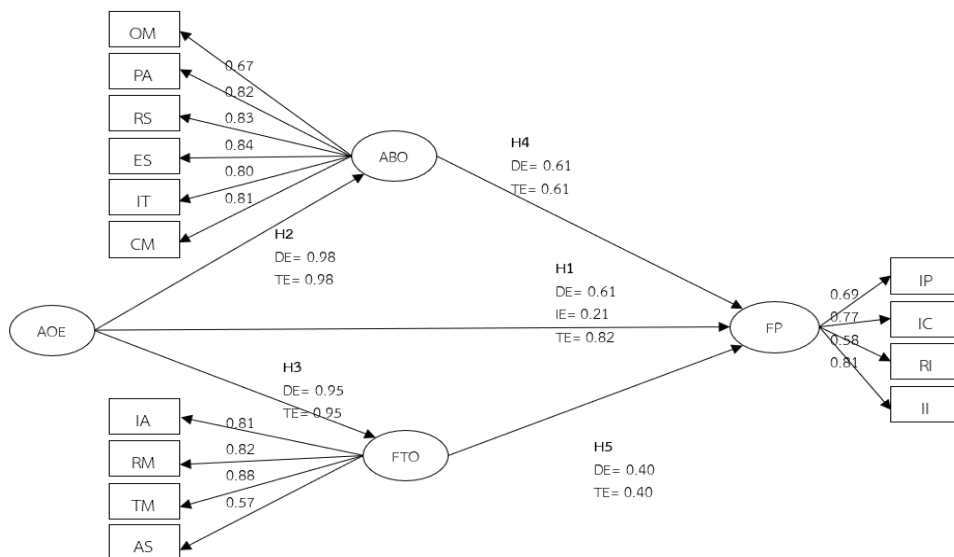


Figure 3 Results of hypothesis testing

Figure 3 presents the research results to answer the research hypothesis as follows:

H1: Adaptation of entrepreneur (AOE) has a direct positive effect on the firm's performance (FP) equal to 0.61, but has no indirectly effect on both business and organizational agility (Agility of business and organization: ABO) and flexibility of transportation operations (FTO). Also, Indirect effect of Adaptation of entrepreneur (AOE) on firm's performance (FP) is 0.21, total influence is 0.81, with statistical significance at .05 level. Therefore, the hypothesis was rejected.

H2: Adaptation of entrepreneur (AOE) has a direct positive effect on business and organizational agility (ABO) equal to 0.98 and total influence equal to 0.98. Therefore, the hypothesis was accepted at significant level of .05.

H3: Adaptation of entrepreneur (AOE) has a direct positive effect on flexibility of

transportation operations (FTO) equal to 0.95 and total influence equal to 0.95. Therefore, the hypothesis was accepted at significant level of .05

H4: Agility of business and organization (ABO) has a direct positive effect on firm's performance (FP) equal to 0.61 and total influence equal to 0.61. However it was not statistically significant, so the hypothesis was rejected.

H5: Flexibility of transportation operations (FTO) has a direct positive effect on firm's performance (FP) equal to 0.40 and total influence equal to 0.40. with statistical significance. Therefore, the hypothesis was accepted at significant level of .05.

7.2 Qualitative research results

1. Adaptation of Entrepreneur (AOE)

1) Agility of Business and Organization (ABO)

For responsiveness (RS), the results

of the interview revealed that transport entrepreneurs in the EEC area must focus on building response capability by using strategies to improve work efficiency within the company. These strategies are such as improving road freight services to meet transport standards, having more efficiently implement and control transport's operations procedures including storing customers' products. They must also manage to meet customer needs while building customer confidence in the EEC service area. To be more specific, customer needs are such as economical multimodal-transport services and transportation availability which can start work immediately whenever customers require. Moreover, they will need to increase their skills and ability to respond with on-time delivery, simultaneously maintaining low-cost performance and management of transportation resources to the best value.

2) Flexibility of Transportation Operations (FTO)

Transport entrepreneurs in the EEC area must emphasize on developing their ability for effective resources and vehicles management such as 1) having appropriate information systems for storing all resources and vehicles data for quick fleet management, 2) having a systematic transportation resources management such as truck consolidation services (caravans), transportation equipment and drivers management, 3) using transportation technologies as well as training how to use them to develop transportation personnel

up-to-date with modern technologies, 4) having necessary resources that are diverse and different in sufficient numbers to raise higher service level, 5) assessing outcome in terms of quality and time in every delivery operation, and 6) having effective vehicles maintenance systems.

2. Company's Performance (Firm's Performance: FP)

For increasing in Income (II), the results of the interview revealed that transport entrepreneurs in the EEC area should adapt to be more agile in business and more responsive organizations. Adaptation to have flexible transport operations regarding resource and vehicle managements, will help the company to benefit from increasing revenue. It will help building a good relationship with customers to keep customers loyal to use the services. In addition, adjusting the transportation services will allow adjustment of after-sales services and promotions to meet customer needs. Flexibility in logistics operations can change the business model, helping companies to win customers back to use products or services again and achieve the goal of increasing revenues. Moreover, Information technology can help companies reduce operating costs and adaptation will help increase the company's distribution channels which make it more accessible to customers.

8. Discussion and conclusion

Summarize and discuss the research results according to the objectives as follows:

1. Adjustments of road transport entrepreneurs that affect the firm's performance

The effect was found that

1) Adaptation of Entrepreneur (AOE) has direct positive effect on firm's performance (FP) with value of 0.61, but no indirect effects since there is an indirect influence value of 0.21. Therefore, it can be seen that adaptation directly benefits entrepreneurs, so entrepreneurs should apply this knowledge, which consistent with the qualitative research findings as; 1) agility of business and organization (ABO) must focus on building response capability by using strategies to improve work efficiency within the company. These strategies are such as improving road freight services to meet transport standards, having more efficiently implement and control transport's operations procedures including storing customers' products. They must also manage to meet customer needs while building customer confidence in the EEC service area. To be more specific, customer needs are such as economical multimodal-transport services and transportation availability which can start work immediately whenever customers require. Moreover, they will need to increase their skills and ability to respond with on-time delivery, simultaneously maintaining low-cost performance. This finding was confirmed by (Setthachotsombut et al., 2022) 2) Flexibility of transportation operations (FTO), must emphasize on developing their ability for effective resources and vehicles management such as 1) having appropriate

information systems for storing all resources and vehicles data for quick fleet management, 2) having a systematic transportation resources management such as truck consolidation services (caravans), transportation equipment and drivers management, 3) using transportation technologies as well as training how to use them to develop transportation personnel up-to-date with modern technologies.

2) Adaptation of entrepreneur (AOE) has effects on the business agility and organization (ABO) (0.98) also the flexibility of transportation operations (FTO) (0.95). This means that the agility of business and organizational also the flexibility of transportation operations are suitable elements to be used for the adaptation of entrepreneurs.

3) Agility of Business and Organization: ABO

Flexibility of transportation operations (FTO) has no direct positive effect on firm's performance (FP) (0.61, 0.40), which is not statistically significant. But it directly effects the adaptation where the adaptation has a direct positive effect on the firm's performance, respectively. Therefore, it is an important element in building adaptation capability, which this finding was confirmed by (Procomet & Setthachotsombut, 2022).

2. Adaptation model of road transport entrepreneurs

The adaptation model was found to consist of two main components which are (1) Adaptation of entrepreneur (AOE) has two sub-components, namely agility of business

and organization (ABO) and flexibility of transportation operations (FTO) because these two sub-components have a direct positive effect on the adaptation of transport entrepreneurs, and (2) the firm's performance (FP).

9. Recommendation

9.1 Recommendations for implementing

For implementing results of the research, there are significant suggestions which are explained as follows:

1. Entrepreneurs must focus on building better responsiveness (RS) and the effective management of resources and vehicles (RM) first. This will have a positive effect on increasing income (II). Therefore, transport entrepreneurs in the EEC area must focus on building response capability by using strategies to improve work efficiency within the company. They must also manage to meet customer needs while building customer confidence in the EEC service area. To be more specific, customer needs are such as economical multimodal-transport services and transportation availability which can start work immediately whenever customers require.

2. Transport entrepreneurs in the EEC area must emphasize on developing their ability for effective resources and vehicles management such as 1) having appropriate

information systems for storing all resources and vehicles data for quick fleet management, 2) having a systematic transportation resources, 3) using transportation technologies as well as training how to use them to develop transportation personnel up-to-date with modern technologies, 4) having necessary resources that are diverse and different in sufficient numbers to raise higher service level, 5) assessing outcome in terms of quality and time in every delivery operation, and 6) having effective vehicles maintenance systems.

3. Transport entrepreneurs in the EEC area should adapt to be more agile in business and more responsive organizations. Adaptation to have flexible transport operations regarding resource and vehicle managements, will help the company to benefit from increasing revenue. Moreover, Information technology can help companies reduce operating costs and adaptation will help increase the company's distribution channels which make it more accessible to customers.

9.2 Future research direction

Future research direction should study research related to Green Logistics or Green Transportation in the EEC area, as well as development of Smart Logistics or Smart Warehouse in the EEC area.

เอกสารอ้างอิง

- Adomako, S., Danso, A., & Boso, N. (2018). Entrepreneurial alertness and new venture performance: Facilitating roles of networking capability. *International Small Business Journal*, 36(5), 453-472.
- Auephunsirikul, S., & Narintarangkul Na Ayudhya, S. (2018). The development of a conceptual framework for diplomats' competencies based on world class diplomatic service. *An Online Journal of Education*, 13(2), 501-515.
- Eastern Economic Corridor. (2019). *Infrastructure development action plan to support development Eastern Economic Corridor*. Retrieved 6 December 2020, From: <https://www.eeco.or.th/web-upload/filecenter/untitled%20folder/EEC009.pdf>.
- Eastern Economic Corridor. (2021). *Infrastructure and utilities action plan in Eastern Economic Corridor*. Retrieved 1 December 2022, From: <https://www.eeco.or.th/web-upload/filecenter/eec-development-plan/plan.pdf>.
- Eastern Economic Corridor. (2022). *Government initiative*. Retrieved 29 November 2022, From: <https://www.eeco.or.th/th/government-initiative/why-eec>.
- Eshima, Y., & Anderson, B. S. (2017). Firm growth, adaptive capability, and entrepreneurial orientation. *Strategic Management Journal*, 38, 770-779.
- Jaruthirasarn, P. (2020). Enhancement of transportation efficiency of trading business in Thailand. *Journal of Management Science Nakhon Pathom Rajabhat University*, 7(2), 81-95.
- Ketsarapong, P., & Choo-ngern, A. (2015). Transportations management of SME food processing plant with vehicle routing problem model. *Kasem Bundit Engineering Journal*, 5(2), 39-55.
- Khunthongjan, S. (2017). *Business Research*. Bangkok: Se-Education.
- Nakkasem, W., & Pasunon, P. (2018). Factors affecting the competitive advantage of service business entrepreneurs in Bangkok. *Veridian E-Journal, Silpakorn University*, 11(1), 2148-2167.
- Namagembe, S. (2020). Enhancing service delivery in humanitarian relief chains: The role of relational capital. *Journal of Humanitarian Logistics and Supply Chain Management*, 10(2), 169-203.
- National Statistical Office. (2013). *A survey of living conditions of civil servants 2012*. Retrieved 3 February 2022, From: <http://service.nso.go.th/nso/nsopublish/themes/files/cvFull55.pdf>.
- Office of Small and Medium Enterprises Promotion. (2021). *Entrepreneurs and freight forwarders in the Eastern Economic Corridor of Thailand Registered with the Office of Small and Medium Enterprises Promotion*. Retrieved 6 June 2021, From: <https://app.powerbi.com/view?r=eyJrIjoibNzkzZTAyMjctNTdhOC00NzA0LTgwZTctMGM0NzM4ODc0NDY3IiwidCI6ImExZmZmZj=MjhMiNWINQLTEZzZmMNDhiMC05NGRmLWYGUYYYYIOhIswINWINWINWI>.

- Office of the National Economic and Social Development Council. (2020). *Economic and Social Journal*. Bangkok: Office of the National Economic and Social Development Council.
- Pamornprawa, S. (2017). *Criteria for the quality of government management, section 5, focusing on human resources*. Office of Human Resources Management, Royal Irrigation Department. Retrieved 14 October 2022, From: <https://www.sattahipbase.navy.mi.th/unit/pmqa/PMQA1-6/PMQA5.pdf>.
- Petchinda, N., & Malisuwan, S. (2017). Strategic flexibility and its influence on manager's perceived environmental uncertainty in fast clockspeed industries. *NIDA Development Journal*, 57(4), 31-47.
- Pimonratnakan, S. (2021). Increasing competitiveness, added value, and innovation management capability. of mango agricultural products for export in the context of Chachoengsao Province. *Southeast Bangkok Journal*, 7(1), 41-54.
- Pleumchitphaiboon, K. (2014). *Guidelines for the development of customer relationship management. For corporate customers of Internet business*. Independent Study of Master of Business Administration. Program in Bangkok University.
- Procomet, P., & Setthachotsombut, N. (2022). Enhancing cross-border transportation capabilities of road freight entrepreneur Chong Chom permanent border crossing, Thailand-Cambodia. *International Journal of Health Sciences*, 6(S5), 397-417. <https://doi.org/10.53730/ijhs.v6nS5.7838>.
- Rahbari, M., Hajiagha, S. H. R., Dehaghi, M. R., Moallem, M., & Dorcheh, F. R. (2019). Modeling and solving a five-echelon location-inventory-routing problem for red meat supply chain: Case study in Iran. *Kybernetes*, 50(1), 66-99.
- Ramnat, S., & Boonyoo, T. (2019). Influence of sustainable competitive advantage as interacting variable between market orientation and the performance of Thai frozen seafood industry. *Silpakorn University Journal*, 39(5), 145-158.
- Rubber Authority of Thailand. (2016). *Business continuity management plan risk management and internal control division corporate strategy department Rubber Authority of Thailand*. Retrieved 6 March 2022, From: <https://km.raot.co.th>.
- Sathapongpakdee, P. (2022). *Industry outlook 2022-2024: Road freight transportation service*. Retrieved 28 August 2022, From: <https://www.krungsri.com/th/research/industry/industry-outlook/logistics/road-freight-transportation/IO/road-freight-transportation-2022-2024>.
- Setthachotsombut, N. (2015). Mobility and flexibility in supply chains: Differentiation and integration. *UBU Engineering Journal*, 8(2), 136-147.

- Setthachotsombut, N., Aunyawong, W., Areerakulkan, N., Kerdpitak, C., Poolsawad, K., Sritapanyad, K., & Bounnaphol, C. (2022). Optimization of Thai-Lao cross border transportation via R9 route for Thai shippers. *Uncertain Supply Chain Management*, 10(4), 1323–1330. <https://doi.org/10.5267/j.uscm.2022.7.007>.
- Setthachotsombut, N., & Sua-iam, G. (2020). The Resilience Development for the Entrepreneurs Tourism Sector (RDETS) from the 2019 Coronavirus crisis in Thailand. *African Journal of Hospitality, Tourism and Leisure*, 9(2), 1-14.
- Setthachotsombut, N., U-on, V., & Kaewthammachai, R. (2017). Supply chain agility and supply chain resilience: An implementation for supply chain of computer industry in Thailand. *Phranakhon Rajabhat Academic Journal*, 6(2), 30-45.
- Shounchupol, A. (2020). Business organization management with artificial intelligence for business survival. *Valaya Alongkorn Review*, 10(3), 155-164.
- Somanawat, K. (2017). A study of factors affecting the operation and performance of dangerous good warehouse operators. *Silpakorn University Journal*, 10(2), 2024-2038.
- Srijunpetch, S., & Phakdee, A. (2019). Revenue from contracts with customers: Principles of revenue recognition. *Journal of Federation of Accounting Professions*, 1(1), 4-20. Retrieved From: <https://so02.tci-thaijo.org/index.php/JFAC/article/view/181280/131926>.
- Stewart, B., Schatz, R., Khare, A. (2017). Making sense of digital disruption using a conceptual two-order model. In A. Khare, B. Stewart, & R. Schatz (Eds.), *Phantom Ex Machina: Digital disruption's role in business model transformation* (pp. 3-21). Cham, Switzerland: Springer.
- Swangkong, K., & Jadesadalug, V. (2018). Business alliance strategies: An alternative for Thai tour operators. *Silpakorn University Journal*, 11(1), 150-167.
- Thawmaey, S., & Nopanatwongsakorn, R. (2020). Factors affecting service effectiveness of public bus drivers of Bangkok mass transit authority, bus area number 6. *Journal of Graduate MCU KhonKaen Campus*, 7(2), 260-271.
- The Office of Industrial Economics. (2019). *Industrial Index*. Retrieved 23 December 2019, From: <http://www.oie.go.th/academic/index>.
- Wang, L., Zhang, F., Wang, Z., & Qiu, T. (2020). The impact of rural infrastructural investment on farmers' income growth in China. *China Agricultural Economic Review*, 14(1), 202-219.
- Zhang, H., & Yu, L. (2020). Dynamic transportation planning for prefabricated component supply chain. *Engineering, Construction and Architectural Management*, 27(9), 2553-2576. <https://doi.org/10.1108/ECAM-12-2019-0674>.