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Development Model of Increasing Business Performance of Road Transport Enterprises of Eastern Economic Corridor (EEC) in Thailand

Phitphisut Thitart[1] and Chattrarat Hotrawaisaya[2]*

Abstract

The objectives of this article are 1) to study the level of variables in a model of an improvement, and 2) to study the effects of innovation, green logistics, and sustainable organization development on business performance of road transport enterprises in the EEC of Thailand. The population of the study was all of road transport enterprises in Thailand's EEC. Questionnaires were distributed to a sample of 336 enterprises. A statistical software was used to analyze the collected data, using Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM). Results showed that all variables level were high, and the model fitted well with empirical data. All these factors positively correlated. Factors that had the highest direct, positive effect on business performance of road transport enterprises were innovation, followed by green logistics and sustainable organizational development. Moreover, it was found that innovation and green logistics indirectly and positively affected the performance of road transport enterprises. The data suggested that road transport enterprises in the EEC should consider and implement innovations relevant to their business. Moreover, there is a need to move towards environmentally friendly logistics, to sustainably develop the business, improving the performance, and increase their competitiveness.

Keywords: Model development, Business performance, Road transport enterprises, Eastern economic corridor

Type of Article: Research Article

*Corresponding author

[1-2] College of Logistics and Supply Chain, Suan Sunandha Rajabhat University, E-mail: s61484923016@ssru.ac.th, chattrarat.ho@ssru.ac.th

ผ่านการรับรองคุณภาพจากศูนย์ดัชนีการอ้างอิงวารสารไทย (TCI.) อยู่ในกลุ่ม 1 สาขามนุษยศาสตร์และสังคมศาสตร์

การพัฒนาแบบจำลองการเพิ่มประสิทธิภาพในการดำเนินธุรกิจของผู้ประกอบการขนส่งทางถนนในพื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออกของไทย

พิชญ์พิสุทธิ์ ทิศอาจ[1] และ ฉัตรรัตน์ โหตระไวศยะ[2]*

บทคัดย่อ

บทความนี้มีวัตถุประสงค์ 1) เพื่อศึกษาระดับของตัวแปรในการเพิ่มประสิทธิภาพการดำเนินธุรกิจของผู้ประกอบการขนส่งทางถนนในพื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออก และ 2) เพื่อศึกษาอิทธิพลของนวัตกรรม โลจิสติกส์สีเขียว และการพัฒนาองค์กรที่ยั่งยืน ที่มีผลต่อประสิทธิภาพในการดำเนินธุรกิจของผู้ประกอบการขนส่งทางถนนในพื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออก โดยประชากรที่ศึกษา ได้แก่ ผู้ประกอบการขนส่งสินค้าทางถนนในพื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออกของไทย ใช้วิธีการสุ่มตัวอย่างแบบแบ่งชั้นภูมิพื้นที่ ซึ่งกำหนดตัวอย่างจำนวน 336 บริษัท เก็บรวบรวมข้อมูลด้วยแบบสอบถาม ใช้โปรแกรมทางสถิติทำการวิเคราะห์ข้อมูล โดยใช้สถิติเชิงอนุมานด้วยการวิเคราะห์องค์ประกอบเชิงยืนยัน และเทคนิคโมเดลสมการโครงสร้าง ผลการวิจัยพบว่า ตัวแปรทั้งหมดอยู่ในระดับสูงและปัจจัยทั้งหมดมีอิทธิพลเชิงบวกเป็นไปในทิศทางเดียวกันและปัจจัยที่มีอิทธิพลทางตรงเชิงบวกต่อประสิทธิภาพในการดำเนินธุรกิจของผู้ประกอบการขนส่งทางถนนมากที่สุด ได้แก่ นวัตกรรม รองลงมา คือ โลจิสติกส์สีเขียว และการพัฒนาองค์กรที่ยั่งยืน นอกจากนี้ยังพบว่า ปัจจัยนวัตกรรมและโลจิสติกส์สีเขียวยังส่งผลทางอ้อมเชิงบวกต่อประสิทธิภาพในการดำเนินธุรกิจของผู้ประกอบการขนส่งทางถนน จากการวิจัยค้นพบว่าประสิทธิภาพในการดำเนินธุรกิจของผู้ประกอบการขนส่งทางถนนในพื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออกของประเทศไทย ควรให้ความตระหนักรู้และการปฏิบัติที่เน้นนวัตกรรมที่เกี่ยวข้องกับธุรกิจ นอกจากนี้ มีความจำเป็นต้องดำเนินกิจกรรมโลจิสติกส์ที่เป็นมิตรกับสิ่งแวดล้อม เพื่อให้เกิดพัฒนาการพัฒนาองค์กรที่ยั่งยืนส่งผลให้ประสิทธิภาพในการดำเนินธุรกิจเจริญเติบโตและยกระดับศักยภาพในการแข่งขันได้อย่างยั่งยืน

คำสำคัญ: การพัฒนาแบบจำลอง ประสิทธิภาพในการดำเนินธุรกิจ ผู้ประกอบการขนส่งทางถนน พื้นที่ระเบียงเศรษฐกิจพิเศษภาคตะวันออก

ประเภทบทความ: บทความวิจัย

*ผู้รับผิดชอบงานหลัก

[1-2] อาจารย์วิทยาลัยโลจิสติกส์และซัพพลายเชน มหาวิทยาลัยราชภัฏสวนสุนันทา, อีเมล: s61484923016@ssru.ac.th, chattrarat.ho@ssru.ac.th

ผ่านการรับรองคุณภาพจากศูนย์ดัชนีการอ้างอิงวารสารไทย (TCI.) อยู่ในกลุ่ม 1 สาขามนุษยศาสตร์และสังคมศาสตร์

1. Introduction

During the implementation of Thailand's 13th National Economic and Social Development Plan BE 2566-2570 (2023-2027), Thailand will still be facing impactful global trends. The government had thus outlined natural resource development plans, where a focus was shifted from addition of economic values and income towards sustainable economic development. Thus, economic development in the future cannot separate economic and social activities from the environment. Moreover, Thailand's national strategy regarding special economic zone places an emphasis on developing and pushing Thailand towards becoming South-East Asia's distribution hub. Therefore, for Thailand, the Eastern Economic Corridor (EEC) is an important economic zone. It is a basis for investments that plays key roles in driving the nation's economy. The Corridor include three provinces of Chachoengsao, Chonburi, and Rayong. In 2021, the combined gross provincial product of the three provinces was as high as 1.5 trillion THB, which was 14 percent of the national economy. Especially in the manufacturing sector, logistics is an important business component, and is one of the targets of the government's development plan. Therefore, to drive development in a direction in accordance with the government's plan, rapid supports to buttress the EEC in all dimensions are called for. This is in order to increase the competitiveness on the national and international level, using modern innovations and environmental consciousness as bases, in a move towards Thailand's sustainable future (Office of the National Economic and Social Development Council, 2021).

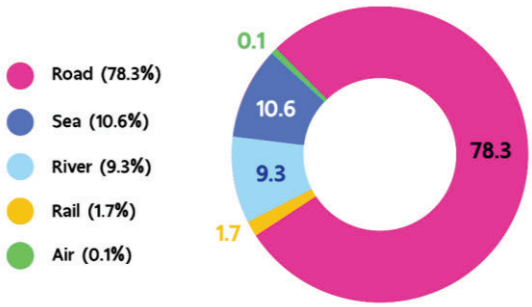


Figure 1 Volume proportion of domestic transportation in 2020
Source: Ministry of Transport (2020)

During the Covid-19 pandemic, popularization of online shopping has made the transportation sector grow at a rapid rate. In 2020, road transport made up 78.3 per cent of overall national transportations (Ministry of Transport, 2020). Therefore, it is imperative to continuously support the transport business. However, current business development strategies must consider a growing list of factors, including environment, society, health and safety, and modernity. Road transport enterprises in Thailand consist mostly of small- and medium-sized businesses, who lack international competitiveness in terms of capital, internal management know-hows, innovation and technology, or human resources. This unavoidably affects Thailand's economy. The problems made some

businesses lacking competitiveness have closed or been taken over by foreign corporations. Moreover, even though the government have introduced some logistics development plans, no concrete strategies policies that support road transport enterprises have been made. Therefore, the businesses have had to rely on themselves in finding ways to develop and modernize their organizations and to innovate new management approaches that could reduce costs and improve their operation efficiency, to fulfil the needs of customers and improve competitiveness in the international level, sustainably develop their businesses, and improve their business outputs.

The trend of sustainability and environmental conservation have resulted in new environmentally friendly logistics management strategies, which have led to development of management approaches that focus on multiple dimensions, including service quality, society awareness, and environmental conservation. The business development strategies reflect the businesses' responsibility to the society, improving their brand images, creating opportunities, and improving the service quality towards international standards. By adapting modern innovations to suit their business and to improve their logistics management, a business could reduce cost and increase the capacity for fulfilling customer requirements, both in terms of time and quality, improving the overall business performance. The national development strategy focuses on road transport business – one of the most crucial to the nation's economy – especially those in the EEC, which is the country's main manufacturing hub. Road transport enterprises within the EEC would benefit from strategies for development towards international competitiveness. Therefore, this study focuses on the impacts of innovation, green logistics, and sustainable organizational development strategies. It develops a model of business performance improvement of road transport enterprises in the EEC. This could be a prototype model for improving business performance for transport businesses that accounts for long-term, sustainable social, economic, and environmental development.

2. Research's objective

1. To study the level of variables in a model of an improvement in business performance of road transport enterprises in the EEC.

2. To study the effects of innovation, green logistics, and sustainable organization development on business performance of road transport enterprises in the EEC.

3. Hypothesis

H_1: Innovations have a positive, direct effect on sustainable organizational development. (Stal et al., 2022; Ch'ng et al., 2021; Imaz & Eizagirre, 2020; Silvestre & Tirca, 2019)

H_2: Green logistics has a positive,

direct effect on sustainable organizational development. (Aroonsrimorakot et al., 2022; Dzwigol et al., 2021; Trivellas et al., 2020; Vienažindiene et al., 2021; Richnák & Gubová, 2021; Jermsittiparsert et al., 2019)

H_3: Sustainable organizational development has a positive, direct effect on business performance. (Jawaad & Zafar, 2020; Janphotanukul et al., 2018; Vidal et al., 2018)

H_4: Innovations have a positive, direct effect on business performance. (Arsawan et al., 2021; Udriyah et al., 2019; Herman et al., 2018)

H_5: Green logistics has a positive, direct effect on business performance. (Khan et al., 2022; Tommasetti et al., 2020; Chidchob & Pianthong, 2020; Wai Peng Wong & Chor Foon Tang, 2018)

H_6: Innovations have a positive, direct effect on green logistics. (D'Attoma & Ieva, 2022; Adebare et al., 2021; Wang et al., 2022; Seman et al., 2019)

H_7: Innovations have a positive, indirect effect on business performance via an effect on sustainable organizational development. (Tjahjadi et al., 2020; Udriyah et al., 2019; Herman et al., 2018; García-Granero et al., 2018;)

H_8: Green logistics has a positive, indirect effect on business performance via an effect on sustainable organizational development. (Androniceanu et al., 2020; Chidchob & Pianthong, 2020; Jawaad & Zafar, 2020; Wai Peng Wong and Chor Foon Tang, 2018)

4. Literature review

4.1 Business Performance

The components of business efficiency into three components: there were financial compensation, operational excellence, and marketing performance which corresponds to Exposito and Sanchis-Llopis (2018) mentioned to the components of business efficiency which are financial success and operational excellence. Tommasetti et al. (2020) also mentioned to solid financial performance for cost-effective supply chain operations, market share, and profit growth that increased on company performance.

Based on the literature review, found that business performance consisted of financial performance, operational performance, and marketing performance.

4.2 Sustainable Organizational Development

Hysa et al. (2020) studied three key circular economy indicators in the context of sustainable growth: economic, social and environment. Silvestre and Tirca (2019) studied innovation were the driver of sustainable development in three areas: economic, social, and environment, related to the study of Ch'ng et al. (2021); Cioca et al. (2019); Lee and Seo (2018); Siddh et al. (2018) mentioned that sustainable organizational development has three dimensions: economic, social, and environment.

Based on the literature review, found that sustainable organizational development consisted of economic performance, social performance, and environment performance.

4.3 Innovation

Exposito and anchis-Llopis (2018) mentioned product or service innovation, process innovation, and organizational innovation affected business performance. Wongwilai, S., & Hotrawaisaya, C. (2022) studied three variables in innovation, which were product or service innovation, process innovation, and technology innovation. It related to the study of Chege et al. (2020); Khan et al. (2022) mentioned to technological innovation had a positive influence on firm performance.

Based on the literature review, found that innovation consisted of product or service innovation, process innovation, technology innovation, and organization innovation.

4.4 Green Logistics

Al-Minhas et al. (2020) studied on sustainable logistics management which consists of four components: there were transport, warehousing, packaging, and reverse transport. It related to the study of Kumar et al. (2019) that mentioned to green logistics management involves transportation and distribution and packaging material. Ceniga and Sukalova (2020) mentioned to element of green logistics which were transportation management and reverse logistics. Aroonsrimorakot et al. (2022) studied the development of environmental-friendly logistics in Thailand including warehouse, transport, storage, and packing. Moreover, Karaman et al. (2020) stated that green logistics consist of green packaging activity using environmentally friendly materials to promote recycling and save energy.

Based on the literature review, found that green logistics consisted of green transport, green warehousing, green reverse logistics, and green packaging.

5. Conceptual framework

From a review of theories and reported works related to the eight hypotheses, a conceptual framework for developing a model for an increase in business performance of road transport enterprises was formed, consisting of one exogenous latent variable, namely innovation: three endogenous latent variables, namely green logistics, sustainable organizational development, and business performance, as shown in Figure 2.

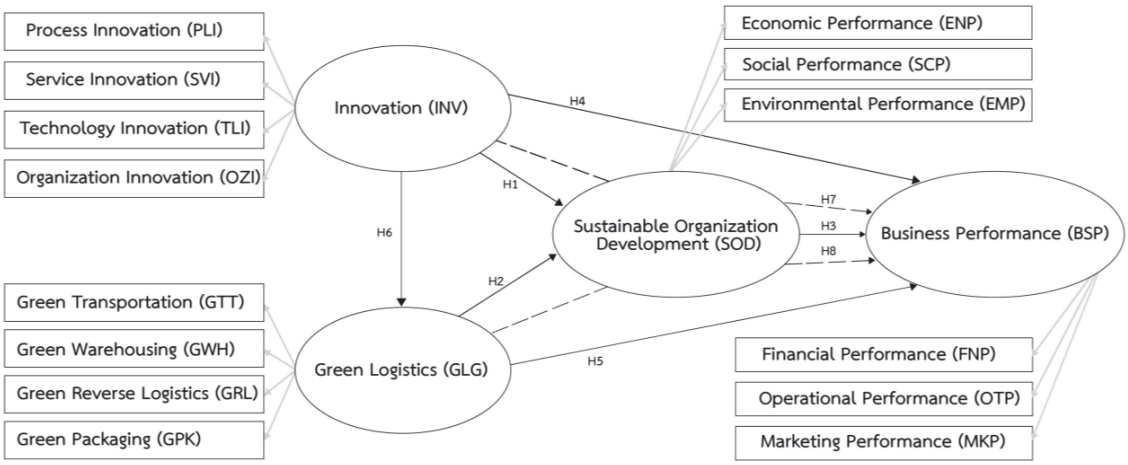


Figure 2 Conceptual Framework

6. Methodology

6.1 Research method

This study presents quantitative research where a questionnaire was used to collect data. For the quantitative method, we distributed questionnaires to collect a large amount of data.

6.2 Population and sample

The population consisted of all road transport enterprises in the EEC, Thailand. These consisted of enterprises in the provinces of Chachoengsao, Chonburi, and Rayong that had registered with the Ministry of Commerce, totaling 4,318 enterprises (Ministry of Commerce, 2022). The respondents were the business owner, managing director, manager, or head of transport of each enterprise.

The observed variable-to-sample size ratio of 1:20 was selected using the number of observed variables estimate. In this study, 14 observed variables were present. Therefore, 280 samples (14 observed variables times 20) were required to account for a possible low response rate, incomplete responses, or loss of data. We increased the initial sample size by an additional 20 per cent (Pintuma & Aunyawong, 2022), resulting in an initial sample size of 336. This was a sufficiently large sample size, exceeding the minimum requirement of the SEM analysis.

6.3 Research instruments

The questionnaire consisted of 64 questions, each using a 5-level rating scale. The questionnaire was assessed by a board of five experts, who evaluated and marked the questions based on the content. The index of item objective congruency (IOC) of the questions were at 0.89 which was between 0.60-1.00, higher than the 0.5 threshold. The reliability was assessed using Cronbach's alpha coefficient. An alpha coefficient of 0.923 (high than a threshold of 0.8) was obtained. So, the questionnaire was reliable and could be used

to collect relevant data This study had been approved by the Ethical Committee of the Institute for Research and Development, Suan Sunandha Rajabhat University. The Certificate of Exemption in the Consideration of Research Ethics Certificate Number: COE. 2-373/2022.

6.4 Data collection

The questionnaire was distributed online. A Google Form containing the questions was made and sent to the respondents via e-mail or Line messenger. The follow-up and data collection period lasted one month.

6.5 Data analysis

The collected data was analyzed using a statistical software, using Confirmatory Factor Analysis (CFA) and Structure Equation Model (SEM).

7. Results

Statistical analysis on correlation of different variables regarding performances of road transport enterprises in the EEC were conducted.

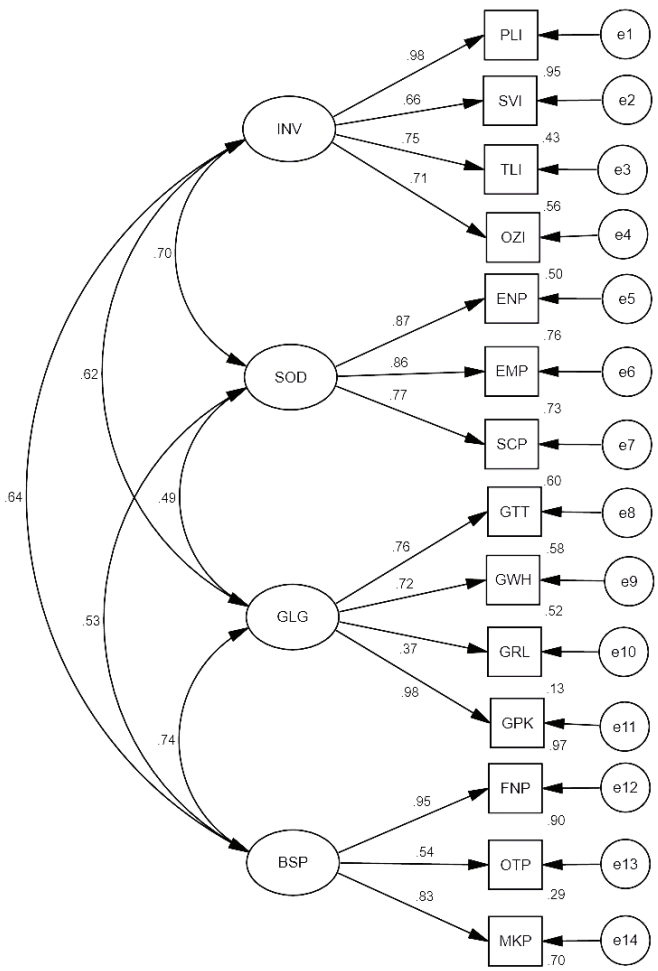
Table 1 Regression weights and correlation coefficients of the study's latent variables

Latent Variables	ρ_c>0.60	ρ_v>0.50	Observe Variables	Standardized Coefficients (β)	S.E.	C.R. (t)	r^2
INV	.97	.89	PLI	.976	.120	14.225***	.952
			SVI	.658	.041	14.225***	.433
			TLI	.747	.040	17.212***	.559
			OZI	.705	.047	16.078***	.497
SOD	.97	.91	ENP	.869	.066	13.390***	.756
			EMP	.857	.084	13.390***	.734
			SCP	.772	.065	14.442***	.595
GLG	.96	.88	GTT	.762	.046	16.195***	.580
			GWH	.722	.044	15.099***	.522
			GRL	.367	.044	6.368***	.135
			GPK	.983	.564	6.365***	.966
BSP	.97	.91	FNP	.951	.218	10.717***	.905
			OTP	.539	.040	10.717***	.291
			MKP	.834	.043	19.292***	.696

Note: *** p<0.001

Figure 3 shows the regressive weights of the observed variables used to measure the four latent variables, namely 1) innovation, 2) sustainable organizational development, 3) green logistics, and 4) business performance. Regression weights of between 0.37-0.98 was

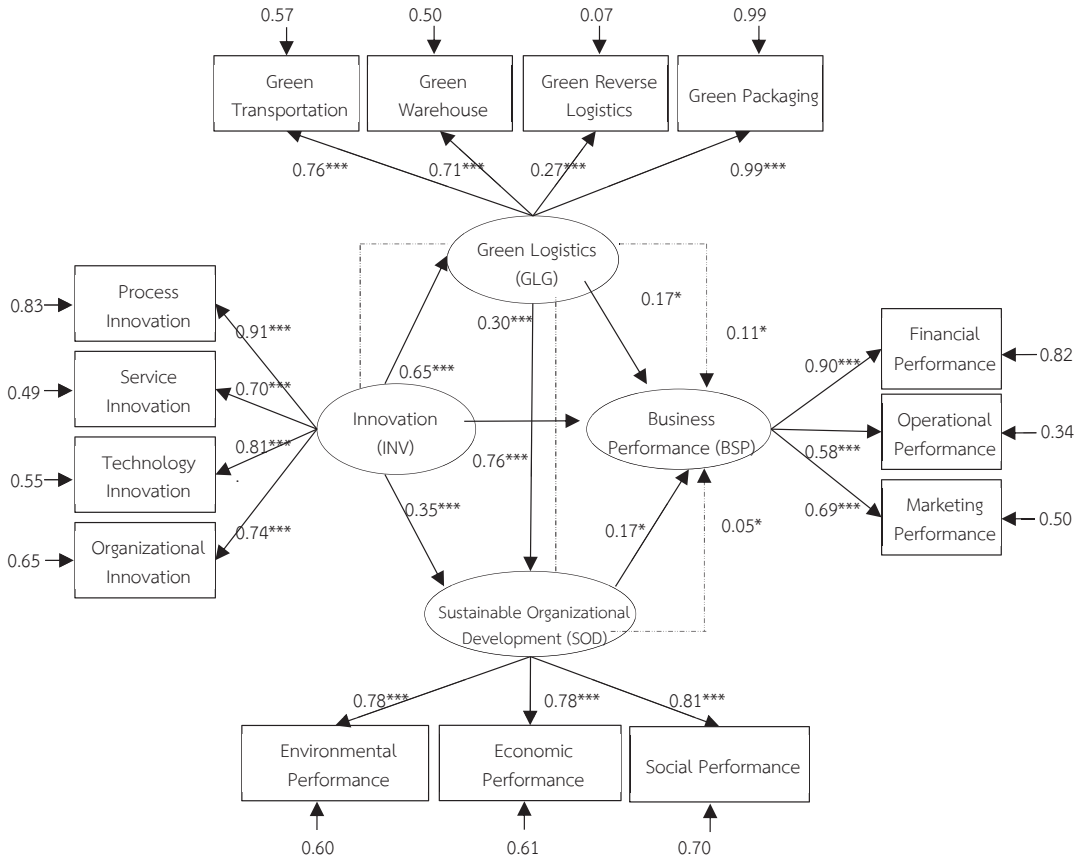
found. Moreover, the regression weights of all observed variables had critical ratios of >1.96. It was statistically significant that the regression weights were not equal to zero ($p < 0.001$). Thus, the observed variables were good proxies for the latent variables. The composite reliability (ρ_c) of the four latent variables were 0.97, 0.97, 0.96, and 0.97, respectively. All these values were higher than the specified threshold of 0.60. The average variance extracted (ρ_v) of the observed variables – indicating the overall variance of the observed variables used as proxies for the latent variables – were 0.89, 0.91, 0.88, and 0.91, respectively – higher than the threshold of 0.5 (Kaiyawan, 2022). Thus, the observed variables were good proxies. The regression weight (β) were all positive, having values between 0.367-0.983. The regression coefficients (r2) were between 0.135-0.966, having p-values < 0.001, as summarized in Table 1.



chi-square = 33.374, chi-square/df = 1.112, df = 30, p-value = .307, GFI = .986, AGFI = .951, CFI = .999, RMR = .005, RMSEA = .018

Figure 3 Analysis of components of a model of business performance improvement of road transport enterprises in the Eastern Economic Corridor of Thailand

Analysis of the agreement between the model of an improvement of business performance of road transport enterprises in the EEC and the collected empirical data resulted in the following parameter values: = 9.035, df = 15, /df = 0.602, P-value = 0.876, RMSEA = 0.000, RMR = 0.003, CFI = 1.00, AGFI = 0.974, GFI=0.996, NFI = 0.997, TLI = 1.011. These indicated a specified level of agreement, given the relative/df value below 2; RMSEA and RMR indices below 0.5, and CFI, GFI, NFI, and TLI above 0.95 (Suksawang, 2014). Thus, the model agreed with the empirical data. More details are presented in Figure 4.



χ^2 = 9.035, df = 15, χ^2 /df = 0.602, P-value = 0.876, RMSEA = 0.000, RMR = 0.003, CFI = 1.00, AGFI = 0.974, GFI=0.996, NFI = 0.997

Figure 4 Structural model of an improvement in business performance of road transport enterprises in the Eastern Economic Corridor

From Table 2, the analysis of DE, IE and TE between the causal and effect variables showed that innovation directly and positively affected green logistics, having a DE value of 0.650; it had a direct, positive effect on sustainable organizational development, having a DE value of 0.345; and it had a direct, positive effect on business performance,

having a DE value of 0.764 ($p < 0.001$). It was also found that innovation had an indirect, positive effect on sustainable organizational development, and business performance, having the IE values of 0.193 and 0.202, respectively ($p < 0.05$). Thus, the hypotheses H1, H4, H6, and H7 were accepted. Green logistics had a direct, positive effect of sustainable organizational development, having the DE value of 0.297; and had a direct, positive effect on business performance, having a DE value of 0.172 ($p < 0.001$). It was also found that green logistics had an indirect, positive effect on business performance, having an IE value of 0.049 ($p < 0.05$). Thus, we also accepted H2, H5, and H8. Also, sustainable organizational development had a direct, positive effect on business performance, having a DE value of 0.167 ($p < 0.001$). Thus, we accepted H3. And lastly, innovation could explain the variance of green logistics, sustainable organizational development, and business performance by 42.3, 34.1, and 97.9 per cent, respectively.

Table 2 The effect of between causal and effect variables

Effect Variables	GLG			SOD			BSP		
Casual Variables	TE	DE	IE	TE	DE	IE	TE	DE	IE
INV	0.650	0.650***	0.00	0.538	0.345***	0.193*	0.965	0.764***	0.202*
GLG	-	-	-	0.297	0.297***	0.00	0.222	0.172***	.049*
SOD	-	-	-	-	-	-	0.167	0.167***	0.00
BSP	-	-	-	-	-	-	-	-	-
R-Square	0.423			0.341			.979		
χ^2 = 11.334, df = 18, χ^2/df = 0.630, p = 0.880, RMSEA = 0.000, RMR = 0.004, CFI = 1.000, AGFI = 0.973, GFI = 0.995, NFI = 0.997									

TE=total effect, DE=direct effect, IE=indirect effect,

* p<0.05, *** p<0.001

Table 3 Hypothesis test results

No.	Hypothesis	Effect	Test Results
H_1	Innovations have a positive, direct effect on sustainable organizational development	TE=0.538 DE=0.345 IE=0.193	Accept
H_2	Green logistics has a positive, direct effect on sustainable organizational development	TE=0.297 DE=0.297	Accept

Table 3 Hypothesis test results (Cont.)

No.	Hypothesis	Effect	Test Results
H_3	Sustainable organizational development has a positive, direct effect on business performance	TE=0.167 DE=0.167	Accept
H_4	Innovations have a positive, direct effect on business performance	TE=965 DE=0.764 IE=0.202	Accept
H_5	Green logistics has a positive, direct effect on business performance	TE=0.222 DE=0.172 IE=0.049	Accept
H_6	Innovations have a positive, direct effect on green logistics	TE=0.650 DE=0.650	Accept
H_7	Innovations have a positive, indirect effect on business performance via an effect on sustainable organizational development	DE=0.11	Accept
H_8	Green logistics has a positive, indirect effect on business performance via an effect on sustainable organizational development	DE=0.05	Accept

8. Discussion and conclusion

The model of an increase in business performance of road transport enterprises in the EEC modelled 1) innovation factors, consisting of 1.1) procedural innovation, 1.2) service innovation, 1.3) technological innovation, and 1.4) management innovation; 2) green logistics factors, consisting of 2.1) green transportation, 2.2) green warehousing, 2.3) green reverse logistics, and 2.4) green packaging; and 3) sustainable organizational development factors, consisting of 3.1) economic performance, 3.2) environmental performance, and 3.3) societal performance. It was found that index = = 9.035, df = 15, /df = 0.602, P-value = 0.876, RMSEA = 0.000, RMR = 0.003, CFI = 1.00, AGFI = 0.974, GFI = 0.996, NFI = 0.997, TLI = 1.011. The model of an increase in business performance of road transport enterprises in the EEC was in agreement with the collected empirical data, showing that innovation, green logistics, and sustainable organizational development influenced the business performances of road transport enterprises in the EEC. Innovation played a key role in driving the country's transport sector, effecting the ability and opportunity to establish sustained economic stability.

Analysis of the effects of innovation, green logistics, and sustainable organizational development on business performances of road transport enterprises in the EEC showed

that the variable with the highest impact was innovation, consisting of procedural, service, technological, and management innovations. The total effect value of innovation was 0.965. Innovation had a DE value of 0.765 on business performance, 0.655 on green logistics, and 0.345 on sustainable organizational development. Moreover, innovation had an indirect, positive effect on business performance, with an IE value of 0.202, and had an indirect, positive effect on sustainable organizational development, within IE value of 0.139. It was also found that innovation could explain the variances of business performance, green logistics, and sustainable organizational development by 97.9, 42.3, and 34.1 per cent, respectively, in agreement with Hermundsdottir and Aspelund (2021), who also elaborated on the relationship between innovations related to sustainability and competitiveness and found a positive correlation between the two. Silvestre and Tîrca (2019) reviewed innovations that could lead to sustainable changed in individuals, organizations, supply chain, and societies, highlighting that innovations are key to sustainable development. In addition to innovation, green logistics and sustainable organizational development also affected business performance, both directly and indirectly. Green logistics consisted of green transportation, green warehousing, green reverse logistics, and green packaging. It had a TE value of 0.222, consisting of a DE value of 0.172 on business performance and of 0.297 on sustainable organizational development. Furthermore, green logistics had an IE value of 0.049 on business performance. This finding agreed with Yingfei et al. (2022), who studied the relationship between infrastructures and performance of environmentally friendly transportation in the service sector. They found that performance of environmentally friendly logistics had a positive influence on trade and environment.

Moreover, Trivellas et al. (2020) showed that information sharing of logistics and transportation networks was the most influential factor for a business' sustainability and a supply chain's performance. They studied the relationship between environmentally friendly supply chain management and performance, similar to a study by Teixeira et al. (2018), which focused on the roles of environmentally friendly transportation and purchasing in environmentally friendly supply chain management, aiming to reduce waste, negative environmental and social impacts, and maximize profit. This was related to the uses of innovations that aligned with green logistics' strategy, which led to a reduction of carbon-dioxide emission by using alternative energy sources, reducing operating costs, improving transport processes, investing in training and education, improving internal communications, to increase business competitiveness and sustainability. Sustainability was in fact an important global agenda, where member countries have conferred under the topic of environment and sustainability have issued a consensus regarding

the importance of the environment and issued the agenda 21 as a model scheme for sustainable social, economic, and environment development. The United Nations Brundtland Commission defined sustainable development that "meet the needs of the present without compromising the ability of future generations to meet their own needs." In line with this definition, Trivellas et al. (2020); Vidal et al. (2018) elaborated on how green logistics management affected sustainable business development and positively influenced business operations. Sustainability had a significant impact on operational performance when adopted in the long run.

From the model, innovation, green logistics, and sustainable organizational development had influences on business performance of road transport enterprises in the EEC. To make a difference and impact on environmental conservation and organizational sustainability, fulfilling consumers' demands while considering these factors is important for business operation as well. Therefore, innovation, green logistics, and sustainable organization development will play bigger roles and become more important in sustainable supply chain operations that considers the outputs of sustainable business operations that consisted of economy, society, and environment, by integrating the relationship and build an organization's performance for business competitiveness.

9. Recommendation

9.1 Recommendations for implementing

- Innovation should be promoted because it could have a significant impact on business performance
- Sustainable organizational development should be promoted to ensure a comprehensive development and long-term improvement in business performance
- Governments should promote environmentally friendly developments in the logistics sector, by introducing tax breaks and grant certain privileges to businesses that move towards a greener operation.

9.2 Future research direction

- Studies on effects of the components of the innovation variable – namely, business innovation, product innovation, and distribution innovation should be conducted.
- Studies on digital technology, innovation, green logistics, and sustainable organizational development that could affect business performance in road transport enterprises.
- Studies on innovation process, green logistics, and sustainable organizational development that could affect business performance in other industrial sectors should be conducted.

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