Thailand's SMEs Firms on the Way of Sustainable Supply Chain Performance: The Path of Organization Determination and Green Initiatives

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Abstract:
Most of the small and medium-sized enterprises (SMEs) in Thailand are involved in green supply chain activities to enhance the sustainable supply chain performance (SSCP). However, these SMEs are facing the problems to adopt green supply chain. Therefore, the current study is an attempt to highlight various factors to enhance SSCP among the SMEs of Thailand. The objective of this study is to investigate the influence of green readiness, social responsibility, green compliance, reserve logistic and green procurement on SSCP. Data were collected form employee of SMEs in Thailand. 350 questionnaires were distributed among SMEs of Thailand. Results of the study revealed that green supply chain has major contribution to SSCP. Increase in the activities of green supply chain increases the SSCP which has significant influence on SMEs business industry. Various green initiative such as green readiness, social responsibility, green compliance, reserve logistic and green procurement has positive effect on SSCP. Therefore, in Thai SMEs, the issues in green supply chain adoption can be resolved by promoting green readiness, social responsibility, reserve logistic and green procurement.

Keywords: *Thai SMEs, Green supply chain, Green readiness, Social responsibility, Reserve logistic, Green procurement, Sustainable supply chain.*

INTRODUCTION

In the current decade, to protect the environment, green practices among various companies are most important. With the increase in environmental pollution, the adoption of green practices is most important. Among all other organizations, the green practices are most important in SMEs. Particularly, the green supply chain practices are key to promote environment and sustainable supply chain performance (SSCP). Green supply chain is already introduced among SMEs (Bu, Dang, Wang, & Liu, 2020; Govindan, Kaliyan, Kannan, & Haq, 2014), though, it is not discussed in respect to the SSCP.

However, SMEs are facing several issues in implementation of green supply chain. These SMEs of Thailand are also trying to adopt green supply chain, but these companies are also facing several issues. Thai SMEs are growing in rapid speed having contribution to the economic development. The overview of Thai SMEs is given in Figure 1

which shows consistency in the SMEs performance. These SMEs are really important for the economy of Thailand. As small business always shows positive role in economic development (Hamid, Shahid, Hameed, Amin, & Mehmood, 2019; Razzaq, Maqbool, & Hameed, 2019).
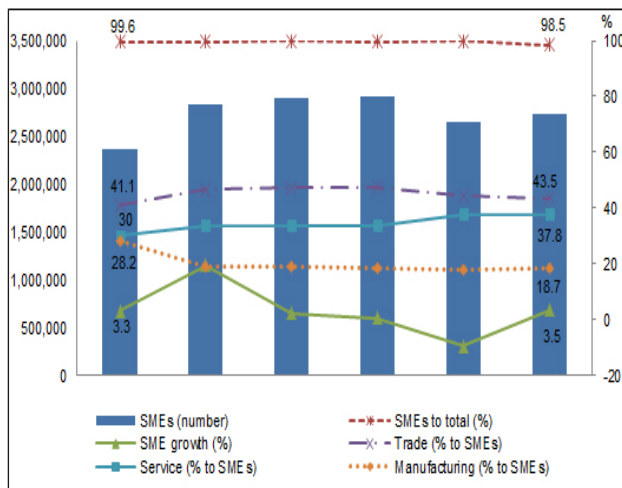

FIGURE I.
Overview of Thailand SMEs

The problems for Thai SMEs in green supply chain adoption can be reduce with the help of various green practices. According to the current study various green supply chain activities are required. Green supply chain includes; green readiness, social responsibility, green compliance, reserve logistic and green procurement. All these practices have positive effect on SSCP. Therefore, the objective of this study is to investigate the influence of green readiness, social responsibility, green compliance, reserve logistic and green procurement on SSCP. Different studies carried out on green supply chain (Zhang & Yousaf, 2020), however, Thai SMEs were not investigated by the previous studies.

II. LITERATURE REVIEW

Supply has pivotal role among all organizations because supply chain is the part of every operation. As supply chain is the part of every operation, that is why it has major influence in organizational activities from start to end. Proper supply of material is important to make products and

to distribute to the end users. Supply chain is one of the planned mechanisms used by the companies to maintain the accuracy of company by improving the quality of the operations. Therefore, supply chain has central importance for the operations of companies (Kerdpitak, 2019; Partanen, Kohtamäki, Patel, & Parida, 2020).

Especially, supply chain is most important for SMEs. The operations among SMEs are majorly based on the supply chain activities. SMEs performance is based on the efficient supply chain activities. SMEs are divided in to manufacturing SMEs and service SMEs. Manufacturing SMEs are those SMEs which are producing various goods. The production of goods required the supply of material. Various elements for product development are always required and their supply chain is based on the supply chain efficiency. The delay in material supply delay the product development which causes to decrease in the product performance. It also decreases the company performance because delay in the products to the market has negative influence on all departments of the companies. Product development has the major role in company performance (Hong et al., 2019) which require efficient supply of material and other elements to make the product. Furthermore, SMEs are also based on the service sector. In service sector, SMEs also required proper supply chain to provide better and timely services to the customers. These services are very important to increase the customer satisfaction and customer satisfaction has influence on performance. Therefore, supply chain in both manufacturing and service SMEs is very important.

Now a day, to increase the performance of supply chain, companies are moving towards green supply chain activities. As the environmental pollution is increasing, that is why companies are focusing on environmentally friendly activities. Various nations are also encouraging the green supply chain to protect the environment. Environmental protection is the central concern of nations as well as companies. Green supply chain activities have the possible influence on environment

and company performance. Green supply chain can be described as integrating ecofriendly idea into supply chain to advance environmental sustainability with diverse green practices counting, green purchasing

activities, green distribution activities as well as warehousing, green transportation with practice of biofuels, green manufacturing procedures and the products' end-of-life management. These practices have important value for the companies as well as environment. Previous scholars are also showing the importance of green supply chain (Agyabeng-Mensah et al., 2020; Kerdpitak et al., 2019; Seman et al., 2019).

Green initiatives are important because these practices lead to the sustainable supply chain. As the trend among the companies is now changes and companies are moving towards green supply chain, that is the reason, focus on green supply chain lead to the sustainability in supply chain. Therefore, SSCP can be achieved with the help of including element of green in supply chain. This study is also an attempt to highlight the importance of green supply chain activities for the manufacturing and service SMEs of Thailand. Green supply chain is connected with different practices. These green practices involve; green readiness, social responsibility, reserve logistic and green procurement. It is considered that; green readiness, social responsibility, green compliance, reserve logistic and green procurement has positive influence on SSCP. Improvement in these practices improves the SSCP. As green supply chain has relationship with sustainability (Foo, Lee, Tan, & Ooi, 2018). In this direction, it is very important for the supply chain sector of Thailand to adopt various practices related to the green supply chain to enhance the sustainability in the operation and to achieve higher level of SSCP. In the current environment with the increase in population in whole world, it is very important to provide various green supply chain strategies. Figure 2 shows the relationship between green readiness, social

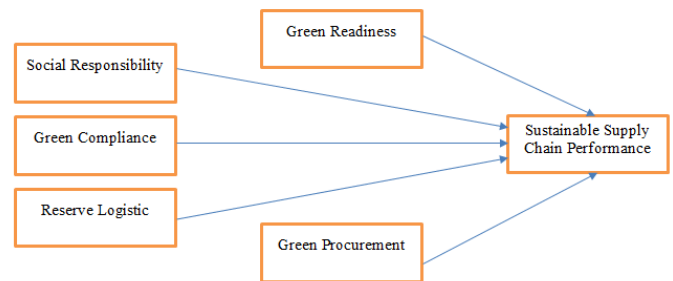responsibility, reserve logistic, green procurement and SSCP.

FIGURE II.

Theoretical framework of the study showing the relationship between green readiness, social responsibility, reserve logistic and green procurement

2.1. Hypotheses Development
2.1.1. Green Readiness and SSCP

Green readiness in supply chain is the process of being prepared for green activities in supply of products and services. Green readiness is the practices of supply chain companies which are adapting to enhance the performance. The trend of green supply chain is now increasing among the companies. Along with the supply chain activities, the green practices are also increasing in all other departments and all other organizations because it is one of the major corporate responsibility. It is the major social responsibility of the companies to protect the environment. Companies are now ready to produce green products and green services. To decrease the population in the environment, green products and services are most important. Particularly, among the SMEs of Thailand, the green practices are now spreading among all companies. SMEs are moving towards the supply of production related to green elements which are more environmentally friendly than conventional services and products. As there is significant connection between green supply chain and environment (Li, Jayaraman, Paulraj, & Shang, 2016; Vanalle, Ganga, Godinho Filho, & Lucato, 2017). Sudden shift of SMEs from conventional products to the green products increases the competition in the market.

Because SMEs are increasing their performance by producing greener products and services. Therefore, the competition to increase the green products is increasing which has positive role in SSCP in Thailand.

Hypothesis 1. Green readiness has positive effect on SSCP.

2.1.2. Social Responsibility and SSCP

Social responsibility is one of the ethical frameworks as well as proposes that an individual has the duty to act for the advantage of society at large. Social responsibility is one of the duties every individual has to accomplish so as to preserve a balance between the economy as well as the ecosystems. Environment is the major concern of the companies which is the major part of social responsibility. Involvement of supply chain firms in social responsibility by increasing the green practices is also key. Focus of supply chain firms on social responsibility has significant role in SSCP. Social responsibility has crucial role in SSCP by producing green products. Literature also shows the relationship between supply chain and social responsibility (Gulsun, Yilmaz & Aslan 2015; Quarshie, Salmi, & Leuschner, 2016; Zhu & Lai, 2019).

Hypothesis 2. Social responsibility has positive effect on SSCP.

2.1.3. Green Compliance and SSCP

In general, compliance denotes conforming to a rule, like a requirement, policy, standard or law. Regulatory compliance defines the objective that organizations aim to attain in their efforts to guarantee that they are attentive of and take steps to fulfil with relevant laws, policies, as well as regulations. Green compliance is conforming to a rule for green practices for the protection of environment. It shows the process of following the rules to protect the environment. In supply chain activities, there are various rules and regulations to enhance the green practices and to develop various green products to save the environment from harmful substances. Green compliance has positive role in supply chain and sustainability of supply chain. As it has positive role to enhance SSCP among the supply chain firms. Previous studies also investigated the relationship between green compliance and supply chain (Mardani et al., 2020; Zimon, Tyan, & Sroufe, 2020). Therefore, it is apparent from the preceding studies that green compliance among the different organizations has important role in SSCP.

Hypothesis 3. Green compliance has positive effect on SSCP.

2.1.4. Reserve Logistic and SSCP

Reverse logistics is operations in organizations are connected to the reuse of various products and materials. It is "the procedure of moving different goods from their distinctive final destination for the objective of capturing value, or appropriate disposal." Therefore, proper disposal lead to the green practices. It shows positive influence on green practices of the companies. The reserve logistic has significant connection with sustainable supply chain. The reservice logistics has various characteristics and advantages, however, this study is concerned only with the environmental benefits related to the green practices of supply chain. Various studies shows that reserve logistic has importance for supply chain (Entezaminia, Heidari, & Rahmani, 2017; Guneri & Yildiz 2019; Sriyakul, Umam, & Jermsittiparsert, 2019). Reservice logistic has possible potential to enhance SSCP by supporting green supply chain. Therefore, for the proper growth of supply chain firms in Thailand, these companies should focus on reserve logistic to move towards green activities.

Hypothesis 4. Reserve logistic has positive effect on SSCP.

2.1.5. Green Procurement and SSCP

Procurement is the procedure of finding as well as agreeing to various terms, and buying goods, different services, or works from other external sources, often via an offering or competitive bidding

procedure. Procurement usually includes making buying decisions under conditions of scarcity. Involvement of green practices in buying goods, different services, or works from other external sources lead to the green procurement which is now increasing among the companies due to the increase in environmental concerns by the nations. In Thailand, green Procurement are also increasing among various firms. SMEs in Thailand are also increasing the concern towards green procurement. Along with the other green practices, SMEs are focusing on green procurement. Increase in green procurement increases the sustainable supply chain. It is evident form previous studies that green procurement is increasing among supply chain in various organization (Nagel, 2000; Salam, 2008). Hence, increase in green procurement increases the SSCP.

Hypothesis 5. Green procurement has positive effect on SSCP.

III. RESEARCH METHOD

The current study examined the effect of green readiness, social responsibility, green compliance, reserve logistic and green procurement on SSCP. This study selected the Thailand SMEs to examine this relationship. The reason to select Thai SMEs is that; most of the SMEs in Thailand are involved in green supply chain activities to enhance the SSCP. However, these SMEs are facing the problems to adopt green supply chain. The issues in the adoption of green supply chain shows negative role in SSCP. In this way, the current study is an attempt to highlight various factors to enhance SSCP

among the SMEs of Thailand. Hence, to examine the nature of this study, the cross-sectional design of research was selected for this investigation. Therefore, a quantitative research was used to examine the relationship among variables. Finally, this study developed a questionnaire for the purpose to collect the data. A survey questionnaire was used for data collection (Bowling, Bond, Jenkinson, & Lamping, 1999). SMEs of Thailand including both manufacturing and services are selected as the population of the study. Employees of these SMEs were the ultimate respondents of the study. Thus, questionnaires related to the scale items of green readiness, social responsibility, reserve logistic, green procurement and SSCP were send to the SMEs. Simple random sampling technique was preferred in this study to collect the data (Siuly, Li, & Wen, 2011). By using simple random sampling for questionnaires distribution, 350 questionnaires were sent to the SMEs of Thailand and employees were asked to respond. Finally, 170 valid questionnaires were returned.

IV. FINDINGS

Before data analysis, this study evaluated the collected data. Data evaluation was carried out to check the missing value in the data (Aydin & ŞENOĞLU, 2018). It was also evaluated to check the outlier. The results of data evaluation are given in Table 1. All the missing values and outlier in the data was removed before to start the formal data analysis.

TABLE I.
Data Statistics

	Mean	Median	Min	Max	SD	Kurtosis	Skewness
GR1	2.56	4	1	5	1.172	-0.529	-1.544
GR2	3.502	4	1	5	1.18	-1.713	-0.421
GR3	3.696	4	1	5	1.303	-0.452	-0.849
GR4	3.597	4	1	5	1.366	-0.752	-1.716
GR5	2.623	4	1	5	1.362	-0.535	-0.86
SR1	3.458	4	1	5	1.164	-1.697	-0.381

SR2	3.473	4	1	5	1.249	-0.834	-1.453
SR3	3.667	4	1	5	1.285	-0.418	-0.837
SR4	2.604	4	1	5	1.344	-0.653	-0.77
SR5	3.52	4	1	5	1.145	-0.451	-1.542
GC1	3.538	4	1	5	1.17	-1.657	-0.472
GC2	3.604	4	1	5	1.371	-0.602	-0.82
GC3	2.56	4	1	5	1.163	-0.473	-0.576
GC4	3.513	4	1	5	1.18	-0.648	-0.488
GC5	3.414	4	1	5	1.217	-1.548	-0.614
RL1	2.421	4	1	5	1.238	-0.701	-1.517
RL2	3.326	4	1	5	1.24	-0.843	-0.408
RL3	3.465	4	1	5	1.281	-0.758	-0.532
GP1	3.509	4	1	5	1.193	-1.535	-0.543
GP2	3.52	4	1	5	1.113	-0.438	-1.524
GP3	2.656	4	1	5	1.323	-0.757	-0.655
SSCP1	3.593	4	1	5	1.198	-0.449	-0.64
SSCP2	3.597	4	1	6	1.303	-1.866	-0.489
SSCP3	3.498	4	1	6	1.136	-0.439	-0.478
SSCP4	2.557	4	1	5	1.228	-0.806	-1.478
SSCP5	3.546	4	1	6	1.237	-1.594	-0.462

GR = Green Readiness; SR = Social Responsibility; GC = Green Compliance; RL = Reserve Logistic; GP = Green Procurement; SSCP = Sustainable Supply Chain Performance

According to the investigations of previous studies Structural Equation Modeling (SEM) with the use of PLS is most suitable to test the primary and to examined the effect of one variables on other (Henseler & Chin, 2010; Henseler et al., 2014; Henseler et al., 2009; Iqbal & Hameed, 2020). To apply PLS-SEM, first the factor loadings was examined which is given through Figure 3 and results are given in Table 2. Green readiness measured through five items and all items have factor loadings above 0.7. Green procurement is measured through three items and social responsibility is measured through five items and results shows that all these items have facto loadings above 0.7. Moreover, all items for green compliance and reserve logistic have factor loadings above 0.7. Finally, SSCP is measured by using five scale items with factor loadings above 0.7. Hence, all variables; green readiness, social responsibility, green compliance, reserve logistic and green procurement and SSCP haver factor loadings above minimum threshold level.
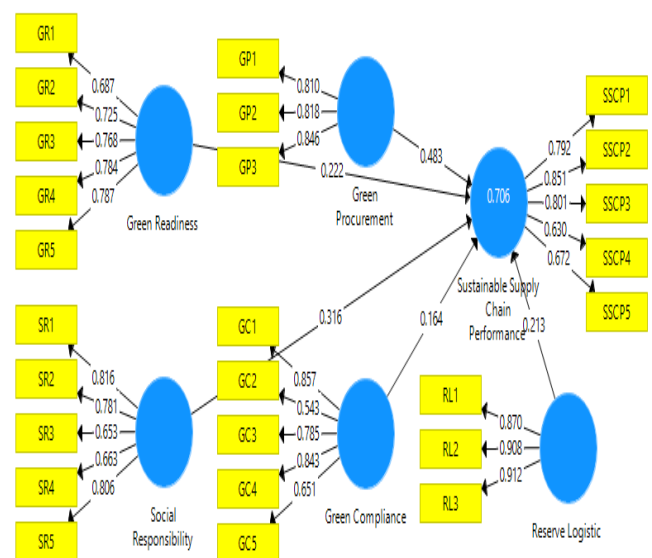

FIGURE III.
Measurement Model

TABLE II.

Factor Loadings

	Green Compliance	Green Procurement	Green Readiness	Reserve Logistic	Social Responsibility	Sustainable Supply Chain Performance
GC1	0.857					
GC2	0.543					
GC3	0.785					
GC4	0.843					
GC5	0.651					
GP1		0.81				
GP2		0.818				
GP3		0.846				
GR1			0.687			
GR2			0.725			
GR3			0.768			
GR4			0.784			
GR5			0.787			
RL1				0.87		
RL2				0.908		
RL3				0.912		
SR1					0.816	
SR2					0.781	
SR3					0.653	
SR4					0.663	
SR5					0.806	
SSCP1						0.792
SSCP2						0.851
SSCP3						0.801
SSCP4						0.63
SSCP5						0.672

GR = Green Readiness; SR = Social Responsibility; GC = Green Compliance; RL = Reserve Logistic; GP = Green Procurement; SSCP = Sustainable Supply Chain Performance

To examine the discriminant validity, cross-loadings was examined as given in Table 4. To examine the reliability, composite reliability (CR) was examined. All the values are given in Table 4. It is found that; green readiness has CR 0.866, social responsibility has CR 0.862, reserve logistic has CR 0.925, green procurement has CR 0.865 and SSCP has CR 0.867. Hence, all constructs achieved the minimum level of reliability. Average variance extracted (AVE) for all variables; green readiness, social responsibility, reserve logistic, green procurement and SSCP are above 0.5. These values achieved the minimum level according to the recommendations of Hair, et al., (2017).

TABLE III.
Reliability and Convergent Validity

	Alpha	rho_A	CR	(AVE)
Green Compliance	.792	.804	.859	.556
Green Procurement	.766	.77	.865	.68
Green Readiness	.808	.805	.866	.564
Reserve Logistic	.878	.878	.925	.804
Social Responsibility	.799	.806	.862	.558
Sustainable Supply Chain Performance	.809	.83	.867	.569

GR = Green Readiness; SR = Social Responsibility; GC = Green Compliance; RL = Reserve Logistic; GP = Green Procurement; SSCP = Sustainable Supply Chain Performance

TABLE IV.
Cross-Loadings

	Green Compliance	Green Procurement	Green Readiness	Reserve Logistic	Social Responsibility	Sustainable Supply Chain Performance
GC1	0.857	0.32	0.703	0.27	0.796	0.475
GC2	0.843	0.45	0.765	0.43	0.594	0.362
GC3	0.885	0.32	0.647	0.29	0.752	0.466
GC4	0.843	0.31	0.692	0.251	0.801	0.459
GC5	0.851	0.72	0.437	0.782	0.402	0.629
GP1	0.522	0.81	0.444	0.715	0.386	0.612
GP2	0.447	0.82	0.364	0.588	0.376	0.633
GP3	0.516	0.85	0.462	0.668	0.429	0.704
GR1	0.774	0.34	0.887	0.326	0.757	0.474
GR2	0.826	0.28	0.885	0.244	0.791	0.452
GR3	0.479	0.42	0.768	0.437	0.616	0.382
GR4	0.509	0.47	0.784	0.422	0.628	0.388
GR5	0.527	0.44	0.787	0.424	0.599	0.375
RL1	0.529	0.73	0.431	0.87	0.408	0.668
RL2	0.507	0.71	0.44	0.908	0.39	0.631
RL3	0.527	0.7	0.441	0.912	0.403	0.652
SR1	0.823	0.3	0.695	0.258	0.886	0.448
SR2	0.656	0.32	0.569	0.277	0.781	0.463
SR3	0.491	0.43	0.754	0.429	0.853	0.382
SR4	0.529	0.48	0.777	0.421	0.863	0.412
SR5	0.776	0.31	0.666	0.313	0.806	0.476
SSCP1	0.429	0.62	0.389	0.648	0.372	0.792
SSCP2	0.505	0.76	0.398	0.689	0.369	0.851
SSCP3	0.48	0.73	0.365	0.615	0.398	0.801
SSCP4	0.673	0.35	0.617	0.312	0.665	0.68
SSCP5	0.501	0.41	0.422	0.386	0.512	0.672

GR = Green Readiness; SR = Social Responsibility; GC = Green Compliance; RL = Reserve Logistic; GP = Green Procurement; SSCP = Sustainable Supply Chain Performance

PLS bootstrapping is the most valuable procedure to test the relationship among variables (F. Hair et al., 2014; J. F. Hair et al., 2012; Hameed et al., 2018; Ul-Hameed et al., 2018). Therefore, this study tested the effect on independent variables on dependent variable with the help of PLS structural model as given in Figure 4. The effect of green readiness, social responsibility, green compliance, reserve logistic and green procurement was examined on SSCP. The effect of green readiness on SSCP shows that green readiness has positive effect on SSCP. The direct effect of social responsibility on SSCP shows that; social responsibility has positive effect on SSCP. Moreover, the direct effect of green compliance shows that it has positive effect on SSCP. Furthermore, it is found that increases the reserve logistic increases the SSCP as reserve logistic has positive effect on SSCP. Finally, it is found that green procurement has positive effect on SSCP. Hence, green readiness, social responsibility, green compliance, reserve logistic and green procurement has positive effect on SSCP. The results of these relationship are given in Table 5. Finally, the histogram of all these relationships are given in Figure 5, 6, 7, 8 and 9.
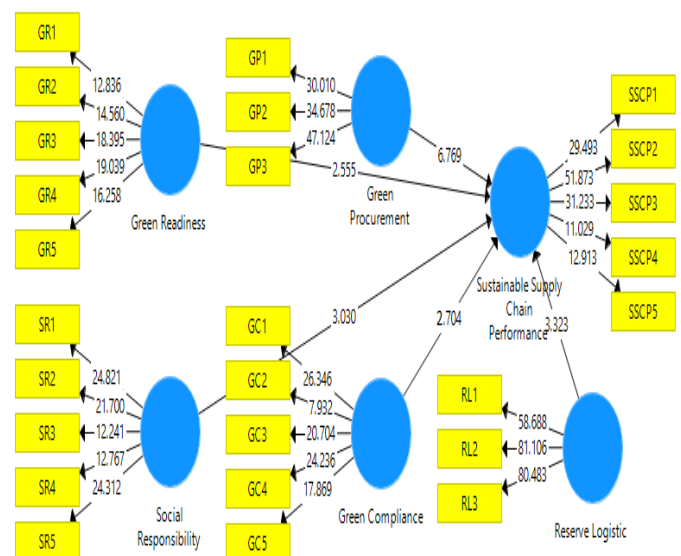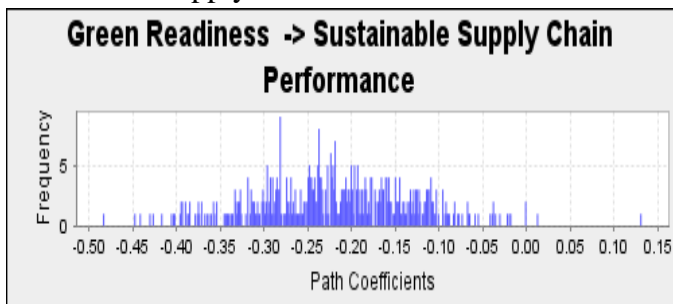

FIGURE IV.
Structural Model

TABLE V.
Direct Effect Results

	β	M	SD	T Statistics	P Values
Green Compliance -> SSCP	0.164	0.165	0.06	2.704	0.004
Green Procurement -> SSCP	0.483	0.486	0.071	6.769	0
Green Readiness -> SSCP	0.222	0.22	0.087	2.555	0.011
Reserve Logistic -> SSCP	0.213	0.213	0.064	3.323	0.001
Social Responsibility -> SSCP	0.316	0.312	0.104	3.03	0.003

GR = Green Readiness; SR = Social Responsibility; GC = Green Compliance; RL = Reserve Logistic; GP = Green Procurement; SSCP = Sustainable Supply Chain Performance

FIGURE V.
Path Coefficient Histogram: Green Readiness -> SSCP

FIGURE VI.
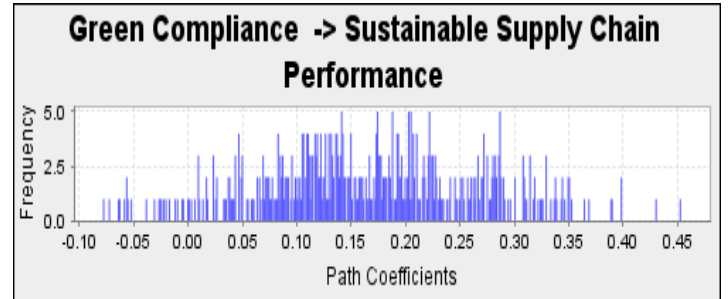Path Coefficient Histogram: Social Responsibility -> SSCP

FIGURE VII.
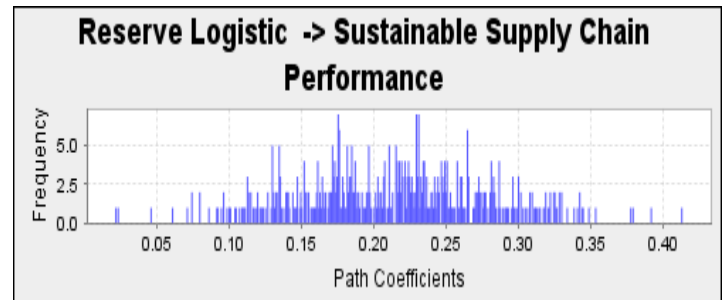Path Coefficient Histogram: Green Compliance -> SSCP

FIGURE VIII.
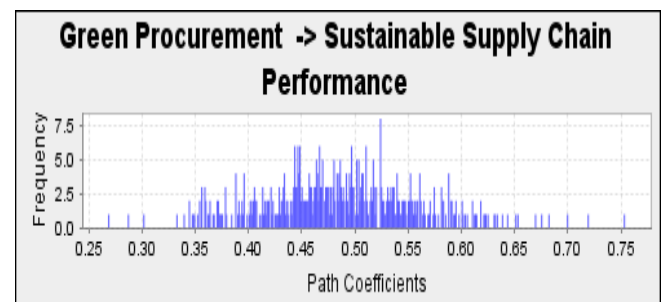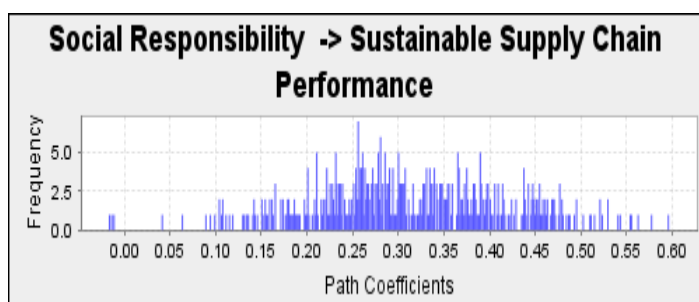Path Coefficient Histogram: Reserve Logistic -> SSCP

FIGURE IX.
Path Coefficient Histogram: Green Procurement -> SSCP

V. CONCLUSION

The objective of this study was to investigate the influence of green readiness, social responsibility, green compliance, reserve logistic and green procurement on SSCP. Data were

collected form employee of SMEs in Thailand. Structural Equation Modeling (SEM) was applied by using PLS to analyze the collected data. Results of the analysis shows that green practices among the supply chain firms has most significant role in performance of supply chain. Green supply chain activities could be the major instrument to enhance sustainability in supply chain. SSCP can be improved with the help of green supply chain.

Results of the study revealed that green supply chain has major contribution to SSCP. Increase in the activities of green supply chain increases the SSCP which has significant influence on SMEs business industry. According to the results, green readiness has the potential to improve SSCP, as a significant positive effect was found on SSCP. Social responsibility is also one of the crucial factors for supply chain efficiency. It is found that social responsibility has major role to increase SSCP. The third element, namely; green compliance increases the SSCP. Generally, every supply chain firm has rules and regulation in respect to the safety of environment and to promote green initiatives which has positive effect on performance. Therefore, green compliance has the ability to foster SSCP. Moreover, it is found that reserve logistic provide the better platform to enhance SSCP. Reuse of recycling of various products lead to the environmentally friendly activities and causes to increases SSCP. Finally, green procurement has positive effect on SSCP. Similar to the other green practices, green procurement increases the SSCP. Therefore, various green initiative such as green readiness, social responsibility, green compliance, reserve logistic and green procurement has positive effect on SSCP. Therefore, in Thai SMEs, the issues in green supply chain adoption can be resolved by promoting green readiness, social responsibility, green compliance, reserve logistic and green procurement and management of these issues will lead to the sustainable supply chain.

VII. IMPLICATIONS OF THE STUDY

The current study has several theoretical and practical implications. Theoretically, this study examined a valuable relationship between green supply chain activities and SSCP. Various studies are available among SMEs; however, previous studies have not examined the combine effect of green readiness, social responsibility, green compliance, reserve logistic and green procurement on SSCP. Particularly, the relationship between green readiness, social responsibility, reserve logistic, green procurement and SSCP is not examined among SMEs of Thailand. Therefore, this study has vital contribution by exploring the relationship between green practices and supply chain among Thailand SMEs. Practically, this study also has vital role for the SMEs of Thailand. As the current study provide various elements to promote green supply chain, therefore, the management of SMEs can take help to boost supply chain while making the strategies. This study is more important for the manufacturing and service sector SMEs of Thailand.

VII. LIMITATIONS OF THE STUDY

This study is limited to the SMEs sector of Thailand. The future studies should involve various companies having big size because these companies have major effect on environment and requires better strategies of supply chain. Therefore, the relationship between green supply chain and SSCP can be change among big companies. Moreover, this study is limited to the five green supply chain practices, namely; green readiness, social responsibility, green compliance, reserve logistic and green procurement. However, future studies should include other green supply chain practices to get better results. Although this study covered the SMEs working in whole Thailand, however, it is not possible to cover maximum population in short time and short resources. Hence, future study should take one city, or one state to cover the whole population and obtain the results. As this study could not cover

the whole population therefore, results have different results if the future studies consider a shorter area and cover the whole population. Hence, it is very important to conduct next research on short

population and cover the whole population rather than to cover the whole country.

VIII. REFERENCES

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