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Governing Role of Trade Digitalization in Global Supply Chain Finance, Negotiation and SMEs Performance

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Abstract--- Thailand is witnessing a significant growth in Small and Medium Enterprises (SMEs) especially in manufacturing sector. Yet, their survival is totally based on their performance that can only be ensured through good supply chain practices. Supply chain finance and negotiation are some relevant practices that can have their say in improved SMEs performance but trade digitization is another important factor to be considered prior to conclude results. This study has analyzed the role of supply chain finance and negotiation in improving SMEs performance in moderating role of trade digitization. Around 35 SMEs of Thailand's manufacturing sector and their employees dealing in production department were surveyed through questionnaire and data was then analyzed through structural equation modeling. Results have indicated that both supply chain negotiation and supply chain finance have significant impact on SMEs performance while trade digitalization significantly moderate both the relationships. Study has originality due to moderating role of trade digitization between supply chain negotiation and SMEs performance. This research has its implications for SMEs operating in Thailand in any sector along with policy framework for government too.

Key Words: Supply Chain Finance, Supply Chain Negotiation, SMEs Performance and Trade Digitization

1. Introduction

Small and medium enterprises SMEs have a lot of significance for the economy of any country [29-31]. Due to recent changes in overall economy of the world, SMEs performance has been affected because of the difficulty in managing its financial situations. They are short of credit and face high rates for borrowing of money which makes it very difficult to run their processes effectively and improve their performance [32]. But as they are an integral part of the economy of any country, they are taking part in the development of the country's economy by adoption of innovation and improving the overall performance [1]. For all these processes, they really need to manage their finance in sense of credit availability and improvement in cash flows. For this purpose a new financing system, supply chain finance SCF has been introduced that has the ability to solve these problems faced by SMEs [2]. The following figure 1 shows the factors that affect SMEs performance:

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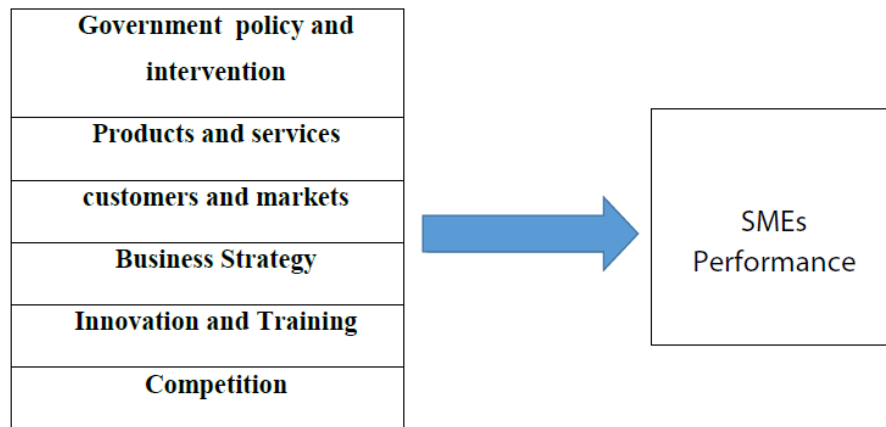
Figure 1: SMEs Performance

SCF is emerging as a new and revolutionized financial system that can meet the credit and borrowing needs of SMEs by providing solutions according to the needs of SMEs. Under this financial management system, SMEs can get easy credit and utilize it for the improvement of their performance [3]. SCF is further growing and new researches are being made in this regard. We can see two perspectives of SCF; one is supply chain-oriented perspective and the other is financial perspective. Supply chain-oriented perspective involves the decision making in supply chains for certain processes which in turn improves the financial condition of the organization. On the other hand, financial perspective involves the improvement of financial management and financial flow of the organization [4].

Supply chain Negotiation can be defined as the procedure to make compromise in which the needs of two parties of a supply chain can be managed [5]. It results in the betterment of relation between the actors of a supply chain and improvement in the overall performance. Negotiation in a supply chain is important because successful negotiations result in the positive impact on organization's performance and better coordination and collaboration of parties involved in the supply chain [6].

Information technology has revolutionized the overall economy of the world by introducing new technologies for the improvement in the processes of manufacturing of products and provision of services [7]. Trade digitization is the concept that has shifted the traditional organizational processes to digital

processes which has a strong positive impact on the performance of these organizations. As we have studied about SCF, which is also a digital program to provide financial services to SMEs for the development of their economy and improvement of performance [8;33]. SCF includes the flexible processes of credit and borrowing of money by the SMEs which is eventually beneficial for them to manage their finances. Trade digitization is improving the relation between parties of a supply chain that enhances supply chain performance [9]. Trade digitization results in better decision making and cost-efficient business practices. It also provides the information about the SMEs to financial institutions more accurately and safely so that SCF can make right decision about them and make it easy for them to acquire financial services.

Supply chain negotiation and supply chain finance improve the overall performance of SMEs under the influence of trade digitization. This increases the productivity and profits of the organizations [10]. But sadly, there are many loopholes in the supply chain finance and negotiation which hinders their impact on the improvement of SMEs performance. Many organizations have not even adopted trade digitization that slows down the process of improvement of performance. This issue is growing in developing and under developed countries all over the world, which ultimately affects the global economy [11]. If this issue prevails for a longer period of time, it will create much disturbance in the economy of the world. So, it is very important at this time, to make certain changes in the traditional

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business practices and modernize them for better economic performance by SMEs. Many studies have been done to study the performance of SMEs and some of them have shown the impact of supply chain finance and negotiation on SMEs performance [12]. But no study has demonstrated the moderating role of trade digitization between these variables. A research paper has recommended studying the moderating effect of trade digitization between supply chain finance and negotiation, and SMEs performance [13]. The main objectives of the study are listed below:

- Analyze the significant impact of supply chain finance on global SMEs performance
- Analyze the significant impact of supply chain negotiation on global SMEs performance
- Analyze the significant moderating role of trade digitization between supply chain finance and global SMEs performance
- Analyze the significant moderating role of trade digitization between supply chain negotiation and global SMEs performance

SMEs are an integral part of the economy of any country, as they take integral part in the development and progress of that country's economy. By adopting innovation, they are making huge progress by leaps and bounds for the better interest of the economy [14]. Many studies and researches have been conducted to study the factors that help to improve SMEs performance. These studies have helped SMEs to make different changes and adopt innovation in their business practices so that their performance can be improved and their productivity and profits may increase [15]. In this regard, govt. also supports SMEs by making favorable policies and sometimes by giving subsidies to them for the purpose in improving overall country's economy.

2. Literature Review

2.1. Transition Theory and Business Model;

In this particular Literature of the study, business model innovation [16] plays a vital role in drawing various pathways based on theoretical and empirical evidences regarding the Transaction theory [17], which further elaborates the conceptual framework of Trade Digitization along with its performance on radical innovation of supply chain finance (SCF) and supply chain negotiation (SCN). This theory enables transactional structural changes to develop between

the courses of SME's performance and economic and social systems of innovation in the business sector. Transaction theory [18] and business model both work together in response to attain good business outcomes, while they both focus on workable actions regarding trade as well as trade digitization process. Transaction theory rapidly addresses the framework that identifies digitalization activities in the dynamic capabilities phases of 'sensing', seizing, and reconfiguration that significantly relate it to the business model components depending upon value operations, value delivery, value determinants and value perspectives. Dynamic capabilities [19] regarding trade digitization consequently, argues for an environment-strategy-structure, furthermore which enhances the dynamics of digital business model to facilitate the levels of policy changes for digitalization capabilities. Digitalization adaptation also facilitates the effect of trade digitization according to the perspective of SCF that is responsible for creating financial and economic principles to prevent consequential exploitation of dynamic capabilities and digitalization as well as business models innovation. Transaction theory involves investments and development of new skills and abilities to begin co-creation with customers and suppliers to utilize economic resources. According to a research journal [20], digitalization and business models works in the medium of business –to-business context, this draws quite widely from diverse theoretical perspective regarding the processing of supply chain management as well as business performance. Transaction theory includes the key references that is associated with multiple theoretical approaches depending upon service-dominant logic, platform literature and transaction sustainability along with transaction cost-economies.

1) Supply Chain Finance Relationship with SME's Performance

According to literature studies by [2], researchers suggests that growing need for financing in small and medium enterprises (SME's) is because of the developing features related to business models and transactional theory background, that acts as a significant obstacle to the development of firms. It is a fact that SME's [21] can only develop if they have exposure to proper business performance and which deals with resource based views (RBV) [22] that highly influence the working of the firms and which

assists the firms to improve their performance at small as well as large level. SCF is responsible for providing finances to promote the SME's performance, to pursue the effect of trade digitalization on the performance of supply chain and SME's capabilities. As per studies, globalization is the main cause which causes drastic effects on small and large enterprises SME's, depending on the availability of resources, SCF and economic development. On the other hand SME's has become one of the significant growing strength for almost every country's economic development. SME's plays vital role in the development of world's economy and economic infrastructure, with the help of latest technology and scientific methods SME's are gaining the position of the world's most resourceful enterprises, which gradually causes advancement to improve national productivity. SME's are playing a pivotal role with the help of SCF in both internal and external markets that are always surrounded with multiple business orientations, to improve the performance of supply chain, customer supply chain (CSC), supplier benefits and dynamic supply chain (DSC). However, still researches are made to completely study the strengthening factors that are responsible for empowering the SME's performance along with the supply chain (SC) cycle [23]. Therefore, executives and entrepreneurs or innovators are searching for new ways of financing that will refrain from the received challenges because of the wide-spreading form of globalization, challenges has to be faced in such a way that rivals should develop a relation of competition to secure their finances. SC management also plays an essential role to enhance the effect of SCF[15] on the capabilities of SME's performance. Informational stream and managerial stream are not required by the SC management for the promotion of SCF and SME's performance; however executive focuses on the design and concepts of increasing the effect of SCF on SME's abilities. Thus, the following hypothesis is proposed:

H1: Supply chain finance has a significant impact on SME's performance

2) Supply Chain Negotiation Relationship with SME's Performance

As per latest studies [6], business models are using the phenomena developed by the concept of SCN which significantly affects the business enterprises at all levels. Executives and entrepreneurs work focuses on the minimization of the cash flow within the framework of transaction theory that deals with the availability of financial resources to cater the needs of SCN [24] within the boundaries of business performance. Business model can enhance the implications of SCN which is responsible in growing the product category of financial institutions through undergoing negotiation process of supply chain maintenance and supply chain management. SCN is a special kind of financing product that uplifts the working capital and also primarily, plans for the overseas flow of finances in the manufacturing sector, while it is also responsible for controlling all the money streams that move across the SC members, who supports the SCN to develop further relation with SME's performance. The flow of money that is earned from productivity of products by the manufacturing sector enhances the factor of SCF which further influences SME's performance relating it with the environmental and economic performance. Thus, the following hypothesis is proposed:

H2: Supply chain negotiation has a significant impact on SME's performance

3) Moderating Role of Trade Digitization between Supply Chain Finance and SME'S Performance

According to leading journals [25], many articles explain the theoretical perspective of Transaction Theory and business model performance which forms a base for the application of the moderator between SCF and SME's performance. The moderating role of Trade Digitization develops the concept of digitalization within the transactional, social and economic systems. However, innovation approaches of business model builds on the criteria of radical changes and accommodating innovational changes that further accelerates the value generated from latest technology in the field of SME's performance and innovation. Trade digitization makes use of internet of things (IOT) purposes to highlight the aspect of SCF [26], that achieve entrepreneur contemplating higher valued resources based technology, to develop the asset's owner ecosystem. However, transactional theory perspective gives rise to the business model that organizes the full potential of digitalization, trade digitization and IOT, to significantly enhance the role of the moderator between the two variables. Trade digitization

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recognizes the importance of platform thinking in undertaking digital transformation in pursuit of strategic opportunities. These strategies will positively influence the role of SCF and SME's performance. Front-end and back-end integration collaborates with the performance of SME's to involve higher degree of customer performance, orientation and customization efficiency along with operational efficiency, to increase the rate of SCF and trade capabilities. Thus, the following hypothesis is proposed:

H3: Trade Digitization has a significant moderating role between SCF and SME's performance

4) Moderating Role of Trade Digitization between Supply Chain Negotiation and SME's Performance

Trade digitization influences the rising value of technology, scientific methods [1] and role of executives, entrepreneurs and innovators in the field of SCN process. However, due to increase in the usage of latest technology in the manufacturing sector of different organizational firms, it will directly increase the effect of supply chain management, performance and finance on SME's performance. Trade digitization [4] enhances the effect of customization and operational efficiency which will enable the researchers to draw rich conclusions from the current phenomenon of digitalization and business model innovation. Digitalization and business model leads the literature study towards the formation of a sustainable industry that highly enables digital technology. IOT make use of trade digitization that enables innovation across three business model elements that includes: value creation, value delivery and value capture. These models of business provide an essential key to ensuring sustainability benefits within the organizational framework. Studies believe that potential of business model, trade digitization and digital capabilities enables the resourceful outcomes from business model innovation at different levels (economic, social and environmental). This enhances the performance of supply chain negotiations and SME's with respect to artificial intelligence, digital technologies, remote monitoring, predictive maintenance and smart contracts. Much business develops smart opportunities due to the efficiency of trade digitization; however diverse variety of technology and their applications makes it challenging for SCN development and SME's effective performance. Thus, the following hypothesis is proposed:

H4: Trade digitization has a significant moderating role between SCN and SME's performance

Model:

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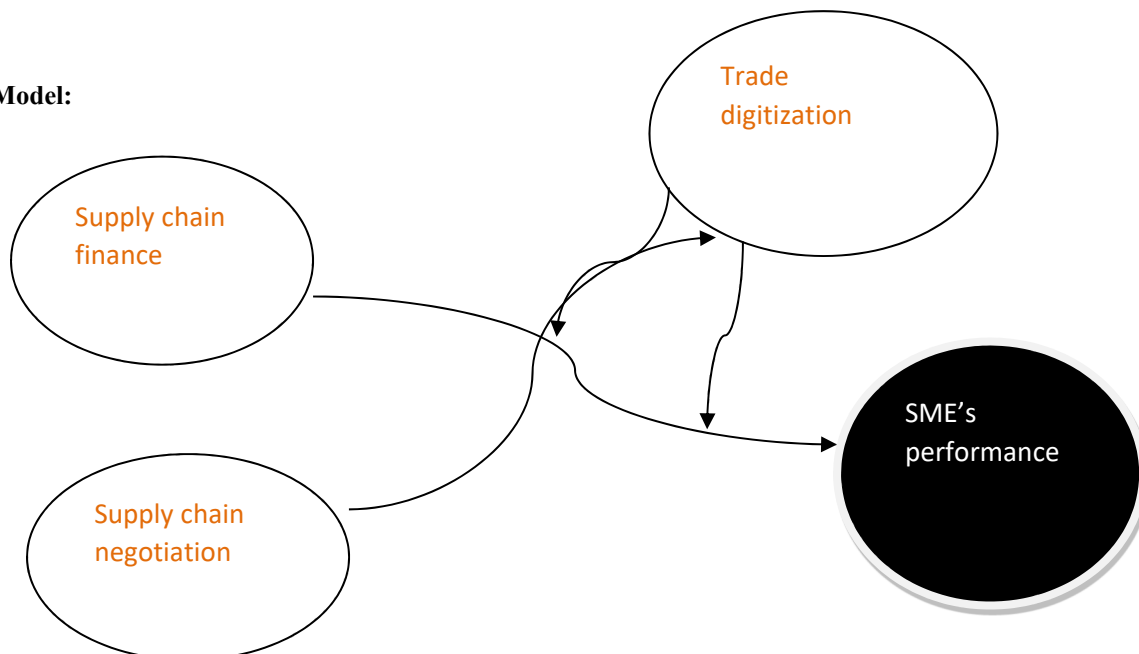
3. Research Methodology
3.1. Population and Sampling

In this research study, impact of supply chain finance on SMEs performance and supply chain negotiation has been examined, in mediating role of trade digitalization. As the financing remains an issuing point for SMEs that's why new technique supply chain finance helps the firms to raised good amount of finance. Moreover, trade digitalization helps the firms to achieved the competitive advantages in industry. Reason of selecting the Thailand for observing the impact of this study is that industry sector managed by SMEs largely contributed to Thailand total GDPO with value of 43.9%. Because of this fact, SMEs enhanced performance has to be ensured by using SCF and trade digitalization. Researcher selected the automotive and electronic industries in manufacturing sector as a sample, because these industries have been a major part of economy and managed fully documented supply chain. In sampling, sample size has been selected on the bases of idea provided by Klein, (2015) which states that number of questions *10 generate accurate sample size. Almost 300 questionnaires have been distributed among the managerial employees of sample industries, those who have clear idea about the SMEs performance under SCF and trade digitalization. Out of these, only 282 considered valid.

3.2. Data Collection Techniques

In this research study, researcher used questionnaire for data collection because data obtained through this method is numeric which can easily be analyzed statistically. Structured questionnaire which composed of closed ended questions has been used by researcher and it make sure that all the questions must be in accordance with aim of study. A pilot study has been conducted, which include 20 employees those who verify the items whether items are understandable or difficult. Before finalizing the questionnaire, it has been ensured that language must be understandable by employees of companies and content validity of scale has to be checked. Researcher mailed the questionnaire to employees and they solved it according to their opinions regarding the study.

3.3. Reliability, Validity and Common Bias

For the analysis of reliability and validity, researcher have been used SPSS and AMOS respectively. Analysis of reliability through SPSS has been examined by a criterion which states that Cronbach's α has to be greater than 0.70 because according to [12] its values were stronger at 0.75 or at above. On the other hand, three criteria have been examined for the analysis of convergent validity which includes (1) items loading λ and its threshold range is greater than 0.70, (2) composite constructs reliability and its range is greater than 0.80 and (3) average variance extracted which has to be greater than 0.50 (Fornell & Larcker, 1981). For the analysis of discriminant validity, criterion has been examined entails that square root of AVE has to be greater when corelated with all other constructs.

Common bias has been generated when the similar measures have been used for the evaluation of independent and dependent variables without observing the difference in nature of variables. As respondent used the measure provided by common rater [21] for evaluation of variables but they have to modify them according to the study. Set of variables has been used in this study include trade digitalization, supply chain finance, negotiation and SMEs performance. For testing the absence or presence of risk of common bias in this study, Harman's single factor test has been used by researcher. In this test, research test whether the most of constructs interpreted by one factor or by different factor. According to the results, different factor used for interpretation of most of construct such as 89% of variance accounted for by factor solution and 14% of variance accounted for by single factor. Risk of common bias has been observed when 50% of variance interpreted by single factor. Hence, absence of risk has been ensured in this study as the most of constructs not accounted for by single factor.

3.4. Hypothesis Testing

For the assessment of acceptance or rejection status of hypotheses, hypothesis testing has to be performed and it has been conducted by structure equation model which runs on AMOS. Covariance based approach used by AMOS in order to run the diagnostics of SEM. Hypotheses of this study such as impact of supply chain finance on SMEs performance and on supply chain negotiation, in mediating role of

trade digitalization have been tested under SEM. Standardization of path and significance of influence path have been checked in order to reported which hypothesis accepted or rejected.

3.5. Measures

SCF was measured with the scale developed by Choi (1991), with the help of five items that were taken on a five-point Likert scale. Then TD was assessed by the scale developed by the researcher [12] and here four items were taken on a five-point Likert scale and were assessed. SCN was measured by a scale developed by [12], four items were taken and measured on a five-point Likert scale. Finally, SP was measured by the scale developed by [14] and five items were taken which were measured on a five-point Likert scale.

4. Empirical Findings:

Data was collected for doing research in regard of SMEs performance from the manufacturing sector of Thailand. 282 employees were involved in data collection process. We know that in order to move to further analysis, we must perform pre requisite analysis to check the authenticity, reliability, validity and normality of data. Moreover, demographics of the data show that among 282 employees, 118 were males and remaining 164 were females. Educational qualification of 23 employees was graduation, 134 were post graduated, 115 employees had done masters and the remaining 10 employees were having different qualifications. In context of age, most of the employees from which data was collected were young having age between 21 years and 30 years. Other than those, 42 employees were 31-40 years old, 9 employees were 41-50 years old and remaining 2 employees were over the age of 50 years.

4.1. Descriptive Analysis:

TABLE 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
SupChainFin	282	1.00	5.00	3.5950	1.07477	-.894	.145
SupChainNeg	282	1.00	5.00	3.6234	1.08822	-.860	.145
Trade_Digi	282	1.00	5.00	3.6277	1.08456	-.902	.145
SME_Per	282	1.00	5.00	3.4681	1.11179	-.556	.145
Valid N (listwise)	282						

Table 1 shows that there is no out liar present in our data which is important as the presence of out liar may affect the research process. The absence of out liar is evident from the fact that the maximum and minimum values are within the appropriate range. In addition we come to know that the data collected is skewed between -1 and +1 which is the indicator of

normality. So from these results we can say that the data is normal and fit for further processing.

4.2. Rotated Component Matrix:

Rotated Component Matrix shows the factor loading values of all the indicators involved in our data. Look at the following table:

TABLE 2. Rotated Component Matrix[a]

	Component			
	1	2	3	4
SCF1		.673		
SCF2		.763		
SCF3		.860		
SCF4		.837		
SCF5		.891		
SCN1	.804			
SCN2	.835			
SCN3	.826			
SCN4	.844			
SCN5	.847			
TD1				.799
TD2				.850

TD3		.867
TD4		.804
SMEP1	.828	
SMEP2	.854	
SMEP3	.866	
SMEP4	.873	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Table 2 shows that all the values of factor loading of our indicators are more than 0.7, which shows that our data is valid for further hypothesis testing. The sequence is also suitable for research. This table also shows that there is no issue of cross loading in our data so we can easily move towards further analysis.

4.3. Convergent and Discriminant Validity:

TABLE 3. Convergent and discriminant validity

	CR	AVE	MSV	MaxR(H)	TD	SCN	SCF	SMEP
TD	0.933	0.776	0.376	0.934	**0.881**			
SCN	0.947	0.783	0.376	0.970	0.613	**0.885**		
SCF	0.941	0.762	0.348	0.983	0.528	0.590	**0.873**	
SMEP	0.927	0.761	0.260	0.986	0.488	0.430	0.510	**0.872**

Table 3 shows that composite reliability and average variance extracted values are more than 70% and 50% respectively. Moreover, the loading of each indicator is discriminated from each other which depict the discriminant validity of our data. Both these validities prove the authenticity and validity of our data.

4.4. Confirmatory Factor Analysis:
It is used to measure the fitness level of hypothetical model made for research pupose.

TABLE 4. Confirmatory Factor Analysis

Indicators	Threshold range	Current values
CMIN/DF	Less or equal 3	2.730
GFI	Equal or greater .80	.875
CFI	Equal or greater .90	.955
IFI	Equal or greater .90	.956
RMSEA	Less or equal .08	.079

Table 4 shows the current values of all indicators are within the appropriate range. For example, the value of CMIN/DF is 2.730 which is less than 3, value of GFI is .875, which is greater then .80, CFI and IFI values are .955 and .956 respectively, which are greater than .90 and finally the value of RMSEA is .079, which is less than .08. These values show that the hypothetical model is fit for further use. The following figure is screenshot of CFA:
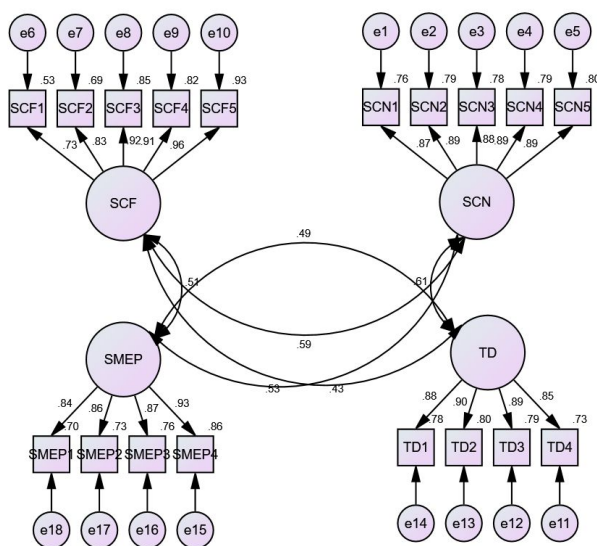
4.5. Structural Equation Modeling:

Structural equation modeling is used for the confirmation of hypothesis we have made for our research. This involves the use of regression analysis.

TABLE 5.1. Structural Equation Modeling

			Estimate	S.E.	C.R.	P	Label
SME_Per	<---	SupChainFin	.423	.067	6.363	***	par_2
SME_Per	<---	SupChainNeg	.158	.066	2.407	.016	par_3

Table 5.1 shows that the impact of supply chain finance and supply chain negotiation on SMEs performance is significant because the value of p is less than .05. It means that with one unit increase in SCF, there will be 42.3% increase in SMEs performance, while with one unit increase in SCN, there will be 15.8% increase in SMEs performance. Screenshot of this SEM is as follows:
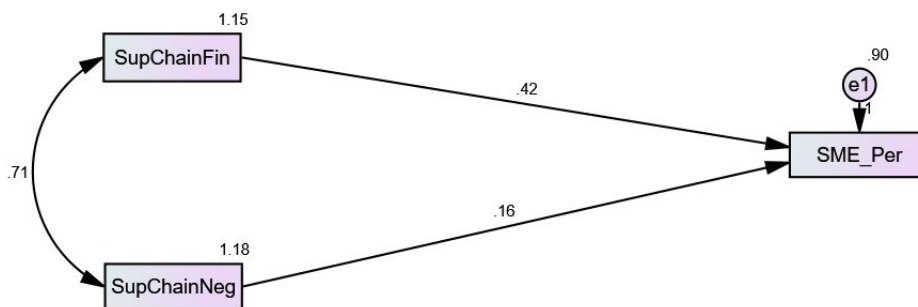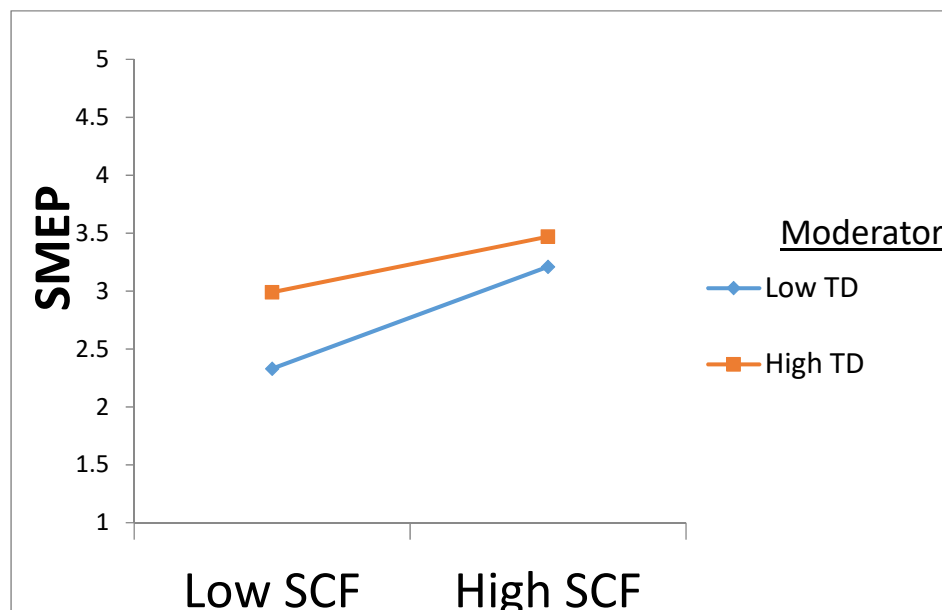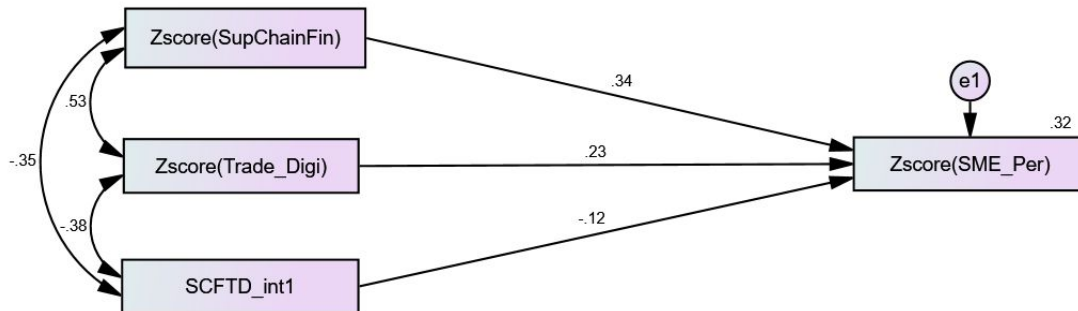

TABLE 5.2. Structural Equation Modeling

			Estimate	S.E.	C.R.	P	Label
ZSME_Per	<---	ZSupChainFin	.338	.059	5.716	***	par_4
ZSME_Per	<---	ZTrade_Digi	.233	.060	3.908	***	par_5
ZSME_Per	<---	SCFTD_int1	-.101	.046	-2.210	.027	par_6

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Table 5.2 shows that trade digitization has significant moderating role between supply chain Finance and SMEs performance. This is because the value of p is less than 0.05. This means that there is 10.1%

moderation of trade digitization between supply chain finance and SMEs performance. Screenshot of this SEM is given as:

GRAPH 1

Graph 1 shows that as the SMEs performance increases with increase of SCF, the moderator trade

digitization TD also has high value, which shows that its moderating impact is significant.

TABLE 5.3. Structural Equation Modeling

			Estimate	S.E.	C.R.	P	Label
ZSME_Per	<---	ZSupChainNeg	.224	.065	3.459	***	par_4
ZSME_Per	<---	ZTrade_Digi	.366	.068	5.372	***	par_5
ZSME_Per	<---	SCNTD_int1	.067	.051	1.308	.191	par_6

Table 5.3 shows that trade digitization has insignificant impact as a moderator between supply chain negotiation and SMEs performance; therefore, we will reject this hypothesis of significant

moderation of trade digitization between SCN and SMEs performance. The screenshot of this SEM is given as:

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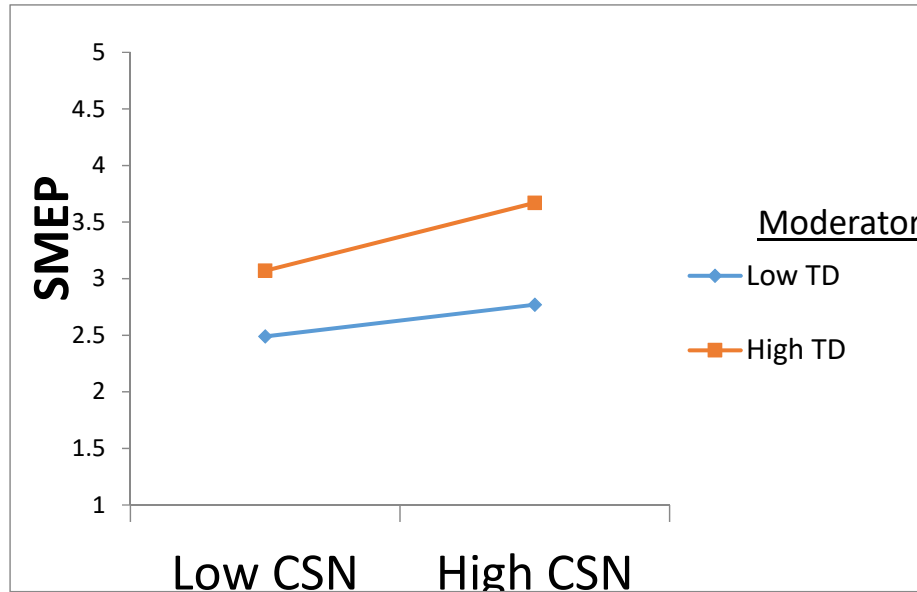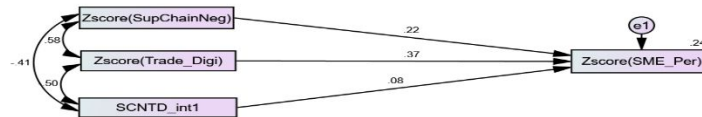
GRAPH 2

Graph 2 shows that as the SMEs performance increase with increase of CSN, the low and high TD lines are in such a way that they will not intersect

each other if produced further. This shows that the impact of moderator is insignificant.

5. Discussion and Conclusion
5.1. Discussion
This study aimed to know about the impact of supply chain finance (SCF) on SMEs Performance (SP) and also the impact of supply chain negotiation (SCN) on SP. This study was conducted to know the moderating role of trade digitization (TD) between SCF and SP and also between SCN and SP. The first hypothesis proposed in the study was that, "SCF has a significant impact on SP". This hypothesis is accepted as in the research paper of Julia Kagan, it is stated that SCF facilitates the businesses by integrating the buyer, seller and the institution that is proceeding the transactions, in all the ways SCF facilitates the small and medium enterprise's business [20]. The second hypothesis stated was that, "SCN has a significant impact on SP", this hypothesis is accepted as well, A. Potter stated in a paper that negotiation is the most important step in business transactions, the way an enterprise negotiates directly impacts the SP [27]. The third hypothesis proposed

was that, "TD significantly moderates between SCF and SP". G. Wignaraja concluded that SCN cannot run without a digitally integrated system, a system that integrates buyers, sellers, institutions and all of the transactions, so SCN has to be integrated through TD that brings a positive and enhanced SP [28]. The fourth hypothesis proposed was that, "TD has a significant moderating role between SCN and SP", this hypothesis is accepted according to the research work of DM Lambert it is concluded that SCN has to be integrated through the digital trading system in order to positively increase the SP.

5.2. Conclusion
The study aimed to know about the impact of SCF and SCN on SP and to know about the moderating role of TD between SCF, SCN and SP. The tool used for data collection was questionnaire data was collected from three hundred respondents, 282 responds were valid belonging to SMEs of textile sector of Thailand. The data was collected and analysis proved that SCF and SCN significantly and

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positively impact SP. This study also proved that TD is a significant moderator between SCN and SP and SCF and SP.

5.3. Implications of the Study

This study has contributed highly in the theoretical information about the importance of TD between SCF and SP. This study has also elaborated that how modern techniques of SCF, SCN and TD are important for enhancing the performance of SMEs and are important for the supply chain process as well. SCN and SCF can be implemented in the SMEs, because this study highlights the positive impacts of these on SP. The policies of SMEs should include the implementation of SCN and SCF in their processes and systems so that their SP will increase according to the results of the present study.

5.4. Limitations and Future Research Recommendations of the Study

The focus of the study was only on the SMEs of textile sector of Thailand, whereas, there are plenty of other sectors as well that need the same attention and consist of problems related to SCF, SCN and TD and the other sectors are also facing problems regarding their performance. This study took questionnaire as its major tool for data collection, whereas, it will be far better if future researchers go and interview the managers of different SMEs in their own, in order to analyze their problems and to conduct research to propose proper solutions. TD was taken as a moderator whereas, the moderating effect of supply chain integration and management information system can also be studied with the same variables under observation.

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