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Transportation Management Model on Supply Chain Performance of SMEs in Thailand

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Abstract:
; 2; 3; 4Objective of this study is to examine the role of transportation management in supply chain performance (SCP) of SMEs. The SMEs in Thailand are facing the issues of SCP which has negative role in overall SMEs performance. Therefore, to facilitate the SCP of SMEs, the effect of transportation management was examined in SCP. Population of the study is SMEs of Thailand. Data were collected through survey and analyzed by using Partial Least Square (PLS). It is found that transportation management has major role in SCP of SMEs. Better transportation management has positive role to enhance SCP. Moreover, transportation management can be improved with the help of various factors such as electronic system, maintenance unit, vehicle replacement, staff management and time management. Improvement in electronic system, maintenance unit, vehicle replacement, staff management and time management improve the transportation management which shows positive effect on SCP.

Keywords: *Electronic system, Maintenance unit, Vehicle replacement, Staff management, Time management, Transportation management, Supply chain performance, SMEs*

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INTRODUCTION

Every company is involved in some sort of supply chain activities which always required a sufficient system to manage in a proper way. Supply chain always require special intention by the companies because it has major effect on the activities of the company. Most of the business are focusing majorly on the activities of supply chain. Supply is importance as it has possible effect on the performance of companies. Quality of supply chain system in the company's effect on the quality of the operations which has important for company performance. Therefore, supply chain system is key for every company performance (Putra & Yeni, 2019).

Supply chain system is also very importance and have central role in overall performance of various SMEs. There are various types of SMEs such as manufacturing SMEs, service SMEs and trading SMEs. All these SMEs are involved in supply chain activities. Supply chain has importance

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for each company operations as well as performance. For manufacturing SMEs, supply chain is significant in respect to two ways; 1) for company operations to form products before finished products, and 2) for transportation of finished products to various customers after the final manufacturing of the products. In first case, supply chain is important to obtain raw material as well as other parts required to form products. Timely management of material to make products has importance for the timely competition of products. For instance, for automobile companies, to make an automobile, various parts from various places are always required. Therefore, in this case, timely management of all parts is required to make automobile in a given time. Second, after the finish products, it is the responsibility of companies to transport goods to the customers. In this case, due to inefficient supply chain, delay in transportation of goods has negative role in customer satisfaction. However, better time management with the help of better supply chain increases the customer satisfaction. Therefore, supply chain system is important to meet the deadline. Along with this, supply chain is quite important for service SMEs. The provision of various services to the customer always required better supply chain system. Therefore, for all types of business SMEs the supply chain is most important because the operations of the companies are majorly based on the supply chain system of the companies. The effectiveness of the supply chain has relationship with the customers.

In Thailand, the SMEs are struggling to adopt good supply chain system. Absence of low-quality supply chain system has negative role in the operations which causes to decrease the performance. Therefore, SCP is low among Thailand SMEs having negative effect on company performance. Number of factors influencing SCP of SMEs. However, the current study is focusing on the transportation system for supply chain among SMEs of Thailand. Transportation system is significant importance in supply chain activities (Etemadnia, Goetz, Canning, & Tavallali, 2015; Hishamuddin, Sarker, & Essam, 2013; Rajabion, Khorraminia, Andjomshoaa, Ghafouri-Azar, & Molavi, 2019; Xie, Huang, & Eksioglu, 2014). Better transportation system by the companies has importance for SCP. On the other hand, transportation system also has relationship with the various other factors. Better management of transportation system for the supply chain of SMEs has significant effect on SCP. The factors effecting on transportation system of supply chain include; electronic system, maintenance unit, vehicle replacement, staff management and time management. Figure 1 shows the relationship between electronic system, maintenance unit, vehicle replacement, staff management, time management, transportation management and SCP.

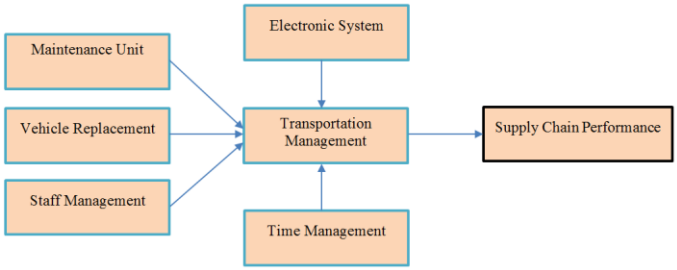

FIGURE I.
Theoretical framework of the study showing the relationship between electronic system, maintenance unit, vehicle replacement, staff management, time management, transportation management and SCP

II. LITERATURE REVIEW

2.1. Electronic System and Transportation Management

In transportation management, electronic system has significant importance. As to manage the supply chain activities, transportation system is key to enhance the performance in which electronic system is important. In supply chain, the electronic system denotes to the system which has the ability to track all the transportation vehicles and deliver the messages or instructions based on centralized system. The electronic system provides the facility to track the vehicles going to deliver the order. In this system, the management can track the vehicles on every place and point of time which help to

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deliver the goods in given time and lead to the better quality in supply chain. Electronic system also has ability to highlight issues during delivery system and provide the quick solution which save the time and help to meet the deadline. Therefore, transportation system has central importance for supply chain in which electronic system is more important. The relationship between electronic system and transportation management is highlighted in literature which shows position relationship (Erkan & Erkan, 2015; Nyrkov, Sokolov, Chernyi, Chernyakov, & Karpina, 2016; Siergiejczyk, Pas, & Rosinski, 2016).

Hypothesis 1. Electronic system has positive influence on transportation management.

2.2. Maintenance Unit and Transportation Management

SMEs use number of vehicles to manage transportation system for supply chain. Sufficient number of vehicles are always required to enhance supply chain by managing transportation system. However, these vehicles always require better maintenance system. Therefore, SMEs always required a good maintenance system to carry on transportation process which has central to the supply chain. During the transportation management, it is required management of various issues related to the transportation vehicles. Maintenance of transportation through different maintenance unites has major role in transportation system. Different maintenance units at different places and in different cities is always important to manage vehicles and keep running in good condition which is the guaranty of better management system. During goods delivery, vehicles face various issues and require repair, in this case various maintenance units of SMEs in different cities provide help to repair the vehicles and maintenance the delivery system in proper manners. The relationship between transportation management and maintenance is given previous studies (Dickerson III, Wang, Witherspoon, & Crumley, 2016; Ng et al., 2012).

Hypothesis 2. Maintenance unit has positive influence on transportation management.

2.3. Vehicle Replacement and Transportation Management

During the transportation system, vehicles face different issues which causes to delay in the good delivery which shows negative effect on the performance of supply chain. Therefore, to manage different issues and insure the proper delivery of goods lead to the transportation management performance. During the delivery system, various accidents are common. Particularly, road accident is quite possible during the delivery of goods to the customers. In case of accident, replacement of vehicle and ensure the timely delivery has significant importance for the SMEs. It is one of the major parts of transportation management. The SMEs transportation management must have extra vehicles which can be used to replace with defaulted vehicles and maintain the good transportation system. Redmer (2005) also mentioned that transportation system also requires vehicle replacement. Therefore, transportation system and vehicle replacement have relationship with each other's. This relationship is quite important for SMEs supply chain. As vehicles are most important role to play in supply chain (Gulsun, Yilmaz & Aslan, 2015; Govindan, Jafarian, Khodaverdi, & Devika, 2014).

Hypothesis 3. Vehicle replacement has positive influence on transportation management.

2.4. Staff Management and Transportation Management

Staff management is the management of subordinates in an organization. As the current study is concerned with the SMEs, therefore, it denotes to the staff management in SMEs. More specifically, it is related to the supply chain staff management. Often, large organizations have numerous of these functions achieved by a professional department, such as personnel as well as human resources. To manage a transportation system for supply chain in

SMEs, the availability of staff is most important. As employee are always important to manage operations among the organizations (Ali, Naveed, ul Hameed, & Rizvi, 2018; Hamid, Shahid, Hameed, Amin, & Mehmood, 2019; Kerdpitak, Hotrawaisaya & Khaengkhan, 2019; Razzaq, Maqbool, & Hameed, 2019). During transportation system, staff is required to deliver the goods from one place to another place. Proper duties of the staff are the guaranty of transportation management. Delivery of goods is always based on the efficient staff. Staff related to the transportation or related to the delivery of goods must be efficient and responsible to manage the allocated task. As the staff management among the companies has key importance (Stohr, Lovrich Jr, Menke, & Zupan, 1994). Therefore, staff management is always key to the companies, especially to management transportation system in supply chain, therefore, it is very important to handle staff.

Hypothesis 4. Staff management has positive influence on transportation management.

2.5. Time Management and Transportation Management

Time management is important to handle transportation system. Time management in transportation system is most difficult task which has major importance to increase the performance of transportation system. Especially, in supply chain, the transportation system is important in respect to the time management. Because supply chain requires timely delivery of goods to the customers. Timely delivery of the goods to the customer has the positive role to enhance customer satisfaction, however, delay in the delivery has negative effect on transportation system which causes to decrease the customer satisfaction. In the SMEs of Thailand, the delivery has central role in SMEs performance. The timely delivery of the material to the SMEs is also important to make products and to deliver goods on time. Therefore, from previous studies, it is highlighted that time management in transportation management is key (Babar & Arif, 2019). The importance of delivery time is also importance in logistics (Guneri & Yildiz, 2019; de Kervenoael, Schwob, & Chandra, 2020).

Hypothesis 5. Time management has positive influence on transportation management.

2.6. Transportation Management and Supply Chain Performance (SCP)

The above sections show that electronic system, maintenance unit, vehicle replacement, staff management and time management have relationship with transportation management. Any change in the electronic system, maintenance unit, vehicle replacement, staff management and time management have effect on transportation management. This section shows that transportation management has relationship with supply chain. This relationship is discussed in respect to the SMEs of Thailand. To enhance the operations of supply chain, it is important to handle better transportation system. Because, supply chain is majorly based on the transportation management. As the supply chain involve logistic which has relationship with the transfer of goods from one place to another place in which both Sami-finished, and finished goods are involved. The delivery of goods in supply chain has key importance which is based on transportation mechanism. The relationship between transportation management and supply chain is well established in the literature (Colicchia, Creazza, & Dallari, 2017; Kerdpitak, 2019; Zhang & Yang, 2020).

Hypothesis 6. Transportation management has positive influence on SCP.

It is discussed in the above detail that electronic system, maintenance unit, vehicle replacement, staff management and time management have direct relationship with SCP. Therefore, the direct relationship between variables is highlighted. On the other hand, the transportation management is also having indirect effect on SCP which is justified through the instructions of Baron and Kenny (1986). Aforementioned explanation shows that electronic system, maintenance unit, vehicle replacement, staff management and time

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management have significant effect on transportation management and SCP. Transportation management has significant effect on SCP. Therefore, all the required paths for mediation effect are significant which shows that transportation management is a mediation variable. In this direction, five mediation effect are examined. First mediation effect of transportation management is examined between electronic system and SCP. Second mediation effect of transportation management is examined between maintenance unit and SCP. Third mediation effect of transportation management is examined between vehicle replacement and SCP. Fourth mediation effect of transportation management is examined between staff management and SCP. Fifth mediation effect of transportation management is examined between time management and SCP. All these mediation effects are given in below hypotheses;

Hypothesis 7. Transportation management mediates the relationship between electronic system and SCP.

Hypothesis 8. Transportation management mediates the relationship between maintenance unit and SCP.

Hypothesis 9. Transportation management mediates the relationship between vehicle replacement and SCP.

Hypothesis 10. Transportation management mediates the relationship between staff management and SCP.

Hypothesis 11. Transportation management mediates the relationship between time management and SCP.

III. RESEARCH METHOD

The current study is based on primary data along with the quantitative research approach in which a cross-sectional research design was used for data collection. Seven variables, namely; electronic system, maintenance unit, vehicle replacement, staff management, time management, transportation management and SCP were measured in this study. Measures were developed for all these variables and questionnaires was developed to collect the data. Therefore, a survey was used in which a questionnaire was used (Räisänen et al., 2020). Likert scales was preferred to collect the data. Questionnaire was separated in to two portions, the first portion was based on the profile of respondents and scale items. First section was based on the respondent's information and second portion was based on the scale items related to the electronic system, maintenance unit, vehicle replacement, staff management, time management, transportation management and SCP.

Data was collected from the SMEs of Thailand. All types of SMEs were included in the survey. Data were collected with the help of email survey. Hence, questionnaires were distributed in Thai SMEs. Moreover, simple random sampling was used for data analysis (Siuly, Li, & Wen, 2011) which is most suitable to collected data and provide the equal chances to each participant. 500 questionnaires were used in the survey. From total 500 questionnaires, 230 questionnaires were returned. From these 230 questionnaires, 10 was not completed and missing with major parts of questionnaire. Therefore, these questionnaires were not included in the survey. Consequently, finally, the current study used 220 questionnaires for data analysis to achieve the objective.

IV. FINDINGS ALL READ

Before to get the objective of the current study, data screening was preferred before data analysis. As data screening is one of the process to remove the mistakes in the data. Especially, this data screening was used to remove the missing value (Aydin & ŞENOĞLU, 2018) as well as outlier. Hence, data was proceeded for data careening and after removal of all the errors, it was used for further data analysis. Data screening is given in Table 1.

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TABLE I.
Data Statistics

	No.	Missing	Mean	Median	Min	Max	SD	Kurtosis	Skewness
ES1	1	0	3.117	3	1	7	1.372	0.245	0.487
ES2	2	0	3.006	3	1	7	1.383	-0.153	0.525
ES3	3	0	3.158	3	1	7	1.339	0.423	0.621
ES4	4	0	3.088	3	1	7	1.458	0.015	0.714
ES5	5	0	3.14	3	1	7	1.452	0.139	0.712
MU1	6	0	3.135	3	1	7	1.338	0.319	0.639
MU2	7	0	3.14	3	1	7	1.673	-0.735	0.297
MU3	8	0	3.216	3	1	7	1.749	-0.722	0.386
MU4	9	0	3.251	3	1	7	1.953	-0.833	0.488
VR1	10	0	3.263	3	1	7	2.101	-1.11	0.502
VR2	11	0	3.105	3	1	7	2.171	-1.024	0.604
VR3	12	0	3.123	3	1	7	2.053	-0.952	0.578
VR4	13	0	3.281	3	1	7	1.755	-0.624	0.508
VR5	14	0	3.205	3	1	7	2.011	-0.92	0.504
VR6	15	0	3.222	3	1	7	1.955	-0.858	0.547
SM1	16	0	3.269	3	1	7	1.994	-0.936	0.459
SM2	17	0	3.228	3	1	7	2.097	-1.053	0.508
SM3	18	0	3.304	3	1	7	2.152	-1.109	0.491
SM4	19	0	3.228	3	1	7	1.988	-0.984	0.491
SM5	20	0	3.205	3	1	7	1.964	-0.893	0.486
TM1	21	0	2.953	3	1	7	1.879	-0.725	0.559
TM2	22	0	3.199	3	1	7	2.065	-1.049	0.458
TM3	23	0	3.117	3	1	7	1.863	-0.831	0.441
TM4	24	0	2.936	2	1	7	2.23	-0.717	0.876
TM5	25	0	2.83	2	1	7	2.274	-0.729	0.91
TRM1	26	0	2.877	2	1	7	2.136	-0.533	0.931
TRM2	27	0	2.807	2	1	7	2.024	-0.269	0.983
TRM3	28	0	2.825	2	1	7	2.259	-0.682	0.929
TRM4	29	0	2.825	2	1	7	2.159	-0.471	0.996
TRM5	30	0	2.766	2	1	7	1.89	-0.187	0.929
SCP1	31	0	2.684	2	1	7	1.945	-0.019	1.044
SCP2	32	0	2.76	2	1	7	2.159	-0.478	0.978
SCP3	33	0	2.953	2	1	7	2.08	-0.564	0.87
SCP4	34	0	2.83	2	1	7	2.193	-0.572	0.937
SCP5	35	0	2.784	1	1	7	2.343	-0.745	0.948
SCP6	36	0	2.678	2	1	7	2.011	-0.111	1.058
SCP7	37	0	2.865	2	1	7	2.094	-0.407	0.993

Figure 2 shows the PLS measurement model in which the factor loadings was examined. Measurement model is most suitable to test the reliability and validity (F. Hair Jr, Sarstedt, Hopkins, & G. Kuppelwieser, 2014; J. F. Hair, Ringle, & Sarstedt, 2013; Hair Jr, Hult, Ringle, & Sarstedt, 2016; Ul-Hameed, Mohammad, & Shahar, 2018)

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which is recommended by number of studies. Figure 3 shows that electronic system is measured through five items having factor above 0.7. Maintenance unit is examined through four scale items with factor loading above 0.7. Vehicle replacement is measured through six scale items having factor loadings above 0.7 for all items. Staff management is measured by using five scale items with factor loadings above 0.7. Time is measured by taking five measures and all have factor loadings above 0.7. Finally, transportation management is measured by using five and SCP is measured by using seven scale items and all have factor loadings above 0.7. As it is recommended by J. Hair, Hollingsworth, Randolph, and Chong (2017) that factor loadings must be above 0.7. Table 2 shows the factor loadings.

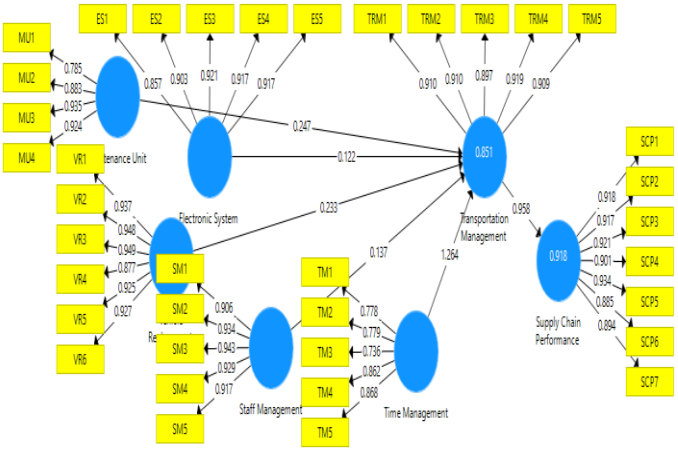

FIGURE II.
Measurement Model

TABLE II.
Factor Loadings

	Electronic System	Maintenance Unit	Staff Management	Supply Chain Performance	Time Management	Transportation Management	Vehicle Replacement
ES1	0.857						
ES2	0.903						
ES3	0.921						
ES4	0.917						
ES5	0.917						
MU1		0.785					
MU2		0.883					
MU3		0.935					
MU4		0.924					
SCP1			0.918				
SCP2			0.917				
SCP3			0.921				
SCP4			0.901				
SCP5			0.934				
SCP6			0.885				
SCP7			0.894				
SM1				0.906			
SM2				0.934			
SM3				0.943			
SM4				0.929			
SM5				0.917			
TM1					0.778		
TM2					0.779		
TM3					0.736		
TM4					0.862		
TM5					0.868		
TRM1						0.91	
TRM2						0.91	
TRM3						0.897	
TRM4						0.919	
TRM5						0.909	
VR1							0.937
VR2							0.948
VR3							0.949
VR4							0.877
VR5							0.925
VR6							0.927

After the factor loadings, this study examined composite reliability (CR) and average variance extracted (AVE) for convergent validity assessment. Both the CR and AVE must be above 0.7 and 0.5 respectively. Results are given in Table 3 which shows that CR is above 0.7 for all variables. AVE is also above 0.5 for electronic system, maintenance unit, vehicle replacement, staff management, time management, transportation management and SCP. Hence, it is found that all

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three elements, Alpha, CR and AVE is above minimum threshold level of all variables; electronic system, maintenance unit, vehicle replacement, staff management, time management, transportation management and SCP. Along with CR and AVE, discriminant validity is given in Table 4.

TABLE III.
Reliability and Convergent Validity

	Cronbach's Alpha	rho_A	Composite Reliability	(AVE)
Electronic System	0.943	0.947	0.957	0.816
Maintenance Unit	0.906	0.924	0.934	0.781
Staff Management	0.958	0.959	0.968	0.857
Supply Chain Performance	0.965	0.966	0.971	0.829
Time Management	0.88	0.939	0.903	0.65
Transportation Management	0.947	0.948	0.96	0.826
Vehicle Replacement	0.967	0.972	0.974	0.86

TABLE IV.
Cross-Loadings

	Electronic System	Maintenance Unit	Staff Management	Supply Chain Performance	Time Management	Transportation Management	Vehicle Replacement
ES1	0.857	0.689	0.59	0.384	0.509	0.367	0.611
ES2	0.903	0.679	0.598	0.428	0.544	0.421	0.586
ES3	0.921	0.675	0.585	0.371	0.494	0.344	0.571
ES4	0.917	0.698	0.567	0.374	0.503	0.356	0.578
ES5	0.917	0.718	0.632	0.397	0.55	0.394	0.642
MU1	0.833	0.885	0.668	0.368	0.536	0.351	0.657
MU2	0.651	0.883	0.818	0.39	0.648	0.371	0.807
MU3	0.64	0.935	0.881	0.493	0.74	0.466	0.834
MU4	0.631	0.924	0.859	0.495	0.738	0.467	0.859
SCP1	0.37	0.434	0.883	0.918	0.79	0.855	0.451
SCP2	0.383	0.432	0.891	0.817	0.784	0.88	0.408
SCP3	0.375	0.47	0.948	0.921	0.815	0.865	0.43
SCP4	0.443	0.488	0.966	0.901	0.794	0.881	0.473
SCP5	0.438	0.482	0.959	0.934	0.828	0.898	0.466

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SCP6	0.388	0.44	0.874	0.785	0.795	0.872	0.489
SCP7	0.369	0.436	0.947	0.894	0.786	0.853	0.442
SM1	0.634	0.855	0.906	0.964	0.72	0.422	0.895
SM2	0.588	0.85	0.934	0.951	0.73	0.45	0.898
SM3	0.597	0.832	0.943	0.958	0.711	0.443	0.908
SM4	0.591	0.825	0.929	0.955	0.717	0.447	0.893
SM5	0.645	0.886	0.917	0.958	0.722	0.437	0.881
TM1	0.622	0.852	0.507	0.481	0.898	0.475	0.882
TM2	0.59	0.874	0.502	0.509	0.879	0.473	0.602
TM3	0.611	0.874	0.652	0.442	0.896	0.411	0.861
TM4	0.403	0.459	0.44	0.896	0.899	0.809	0.429
TM5	0.347	0.427	0.463	0.916	0.868	0.802	0.457
TRM 1	0.394	0.446	0.455	0.87	0.817	0.91	0.464
TRM 2	0.386	0.423	0.454	0.853	0.794	0.91	0.439
TRM 3	0.414	0.466	0.474	0.901	0.805	0.917	0.464
TRM 4	0.348	0.397	0.378	0.883	0.759	0.919	0.386
TRM 5	0.361	0.418	0.398	0.847	0.741	0.909	0.362
VR1	0.582	0.809	0.904	0.473	0.732	0.457	0.937
VR2	0.636	0.855	0.904	0.466	0.732	0.44	0.948
VR3	0.599	0.835	0.904	0.471	0.738	0.445	0.949
VR4	0.663	0.823	0.848	0.404	0.636	0.354	0.877
VR5	0.628	0.845	0.911	0.481	0.731	0.469	0.925
VR6	0.596	0.836	0.908	0.457	0.698	0.414	0.927

Henseler and Chin (2010); Henseler et al. (2014); Henseler, Ringle, and Sinkovics (2009) suggested that; structural model is most suitable for relationship testing. Model in Figure 3 is the structural model. Structural model examine the relationship between variables to test the hypotheses (Hameed, Basheer, Iqbal, Anwar, & Ahmad, 2018). This section shows the direct effect of electronic system, maintenance unit, vehicle replacement, staff management and time management on transportation management. The direct effect of transportation management is also examined on SCP. It is found that electronic system has positive effect on transportation management with t-value 2.392. Maintenance unit also has positive effect on transportation management with 2.437. Vehicle replacement has insignificant effect on transportation management as t-value is below 1.96. Staff management has insignificant effect on transportation management. Moreover, time management has positive effect on transportation management with t-value 23.025. Finally, transportation management shows positive effect on SCP. Results are given in Table 5.

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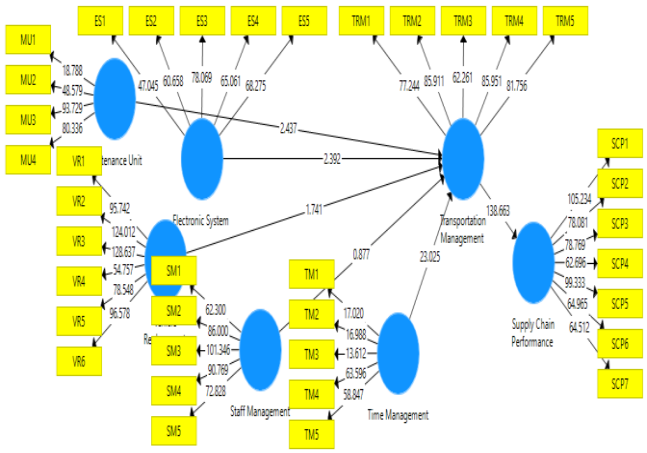

FIGURE III.
Structural Model

TABLE V.
Direct Effect Results

	(O)	(M)	SD	T Statistics	P Values
Electronic System -> Transportation Management	0.122	0.118	0.051	2.392	0.017
Maintenance Unit -> Transportation Management	0.247	0.237	0.101	2.437	0.015
Staff Management -> Transportation Management	0.137	0.136	0.156	0.877	0.381
Time Management -> Transportation Management	1.264	1.264	0.055	23.025	0
Transportation Management -> Supply Chain Performance	0.958	0.958	0.007	138.663	0
Vehicle Replacement -> Transportation Management	0.233	0.234	0.134	1.741	0.082

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After the direct effect assessment, this study examined the indirect effect through transportation management. Table 6 shows that first mediation effect of transportation management is examined between electronic system and SCP. Second indirect effect of transportation management is examined between maintenance unit and SCP. Third indirect effect of transportation management is examined between vehicle replacement and SCP. Fourth mediation effect of transportation management is examined between staff management and SCP. Fifth mediation effect of transportation management is examined between time management and SCP. Results shows that transportation management is a mediating variable between electronic system and SCP with t-2.386. Indirect effect between maintenance unit and SCP is also significant with-value 2.437. The indirect effect of transportation management between maintenance unit and SCP has insignificant with t-value 0.877. The mediation effect between time management and SCP is also significant with t-value 22.885. Hence, three mediation effect out of five are accepted. Finally, r-square value is 0.918 which is strong (Chin, 1998). It shows that; electronic system, maintenance unit, vehicle replacement, staff management and time management and transportation management are expected to bring 91.8% variance in SCP. Mediation effect is also given in Figure 4, 5 and 6.

TABLE VI.
Indirect Effect Results

	(O)	(M)	SD	T Statistics	P Values
Electronic System -> Transportation Management -> Supply Chain Performance	0.117	0.113	0.049	2.386	0.017
Maintenance Unit -> Transportation Management -> Supply Chain Performance	0.236	0.227	0.097	2.437	0.015
Staff Management -> Transportation Management -> Supply Chain Performance	0.131	0.13	0.15	0.877	0.381
Time Management -> Transportation	1.211	1.211	0.053	22.885	0

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Management -> Supply Chain Performance					
Vehicle Replacement -> Transportation Management -> Supply Chain Performance	0.223	0.224	0.128	1.75	0.081

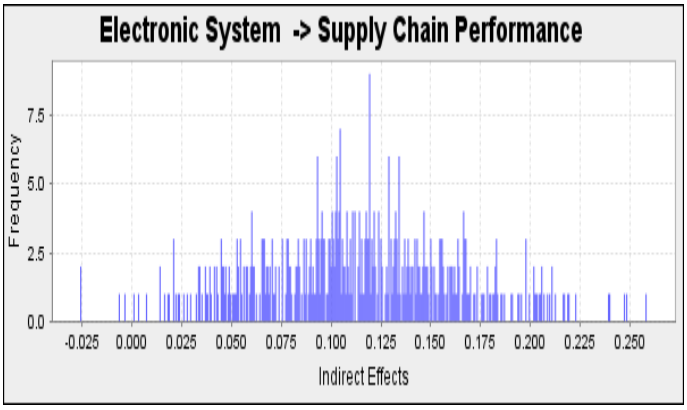

FIGURE IV.
Indirect Effect Histogram: Electronic System -> Transportation Management -> Supply Chain Performance

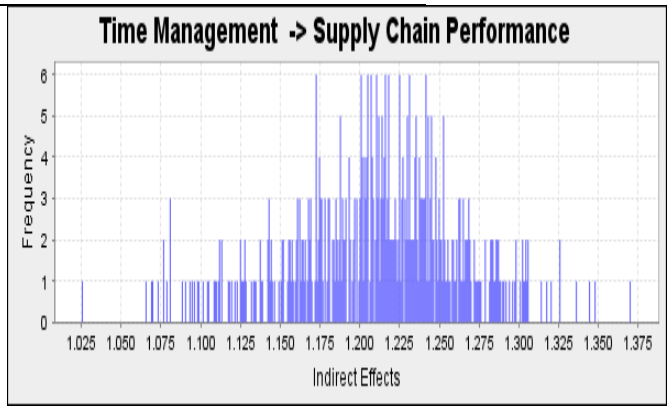

FIGURE VI.
Indirect Effect Histogram: Time Management -> Transportation Management -> Supply Chain Performance

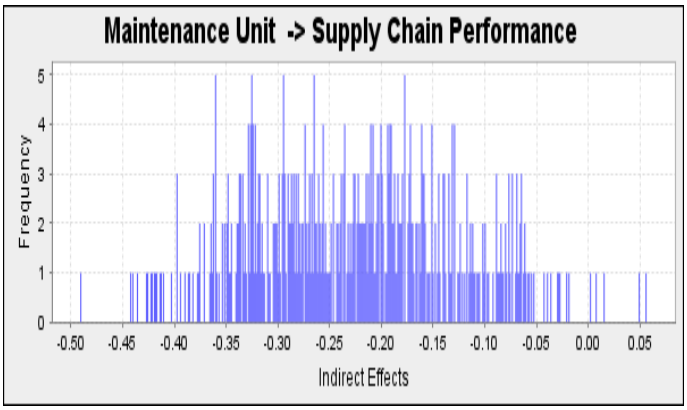

FIGURE V.
Indirect Effect Histogram: Maintenance Unit -> Transportation Management -> Supply Chain Performance

V. CONCLUSION

Objective of this study was to examine the role of transportation management in supply chain performance (SCP) of SMEs. Data were collected through survey and analyzed by using Partial Least Square (PLS). The relationship between electronic system, maintenance unit, vehicle replacement, staff management, time management, transportation management and SCP were examined. It is found that this relationship is most important for the SMEs to facilitate supply chain. Involvement of these factors among the SMEs has positive role to enhance SCP.

It is found that transportation management has major role in SCP of SMEs. Better transportation management has positive role to

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enhance SCP. Increase in the transportation management quality increases the SCP. Moreover, transportation management can be improved with the help of various factors such as electronic system, maintenance unit, vehicle replacement, staff management and time management. It is found that electronic system, maintenance unit, vehicle replacement, staff management and time management have significant positive effect on transportation management. Improvement in electronic system, maintenance unit, vehicle replacement, staff management and time management improve the transportation management which shows positive effect on SCP. Moreover, it is found that transportation management is a mediating variable between electronic system and SCP. It shows that transportation management transfer the positive effect of electronic system on SCP. Moreover, transportation management is a mediating variable between maintenance unit and SCP. Finally, transportation management is a mediating variable between time management and SCP.

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