Impact of Accounting Information System (AIS) on Supply Chain Management Practices in Indonesian Manufacturing Sector

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Impact of Accounting Information System (AIS) on Supply Chain Management Practices in Indonesian Manufacturing Sector

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Abstract: The ultimate objective of the current study is to investigate the role of Accounting Information System (AIS) on supply chain practices in Indonesian manufacturing sector. Five components of AIS including people, procedures, data, software and IT infrastructure were considered to examine the effect of AIS on supply chain. For this purpose, three manufacturing industries were selected, namely; furniture industry, electronic industry and food production industry. Survey method were selected to collect the primary data. Six hypotheses were developed concerning the relationship of AIS, supply chain and manufacturing organization's performance. All the hypothesis was tested by using PLS-SEM. It is found that all the components of AIS has significant contribution in supply chain performance. It is concluded that AIS is the most important for every organization to get success in supply chain operations. This study is most significant because it is pioneer study which investigated the role of AIS in supply chain performance.

Keywords: Supply chain, accounting information system, furniture industry, electronic industry, food production industry.

1. INTRODUCTION

Management of Accounting information system (AIS) is most crucial for every organization (Budiarto, et al., 2018) to get success in their operations. Particularly, it is more important for manufacturing firms which generally depends heavily on supply chain activities. In management of an organization and executing an internal control mechanism, the role of AIS has central importance (Sajady, et al., 2012). An imperative question in the field of accounting and management decision-making concerns the fit of AIS with organizational necessities for information

communication and control (Nicolaou, 2000). This AIS system has significant important to run supply chain activities in an effective manner.

In spite of the fact that the information created from an accounting information framework can be feasible in basic supply chain process such as buying, establishment and utilization of such a framework which are useful when the advantages surpass its expenses. Advantages of accounting information framework can be assessed by its effects on change of basic supply chain process, nature of accounting information, execution process assessment, inside controls and encouraging organization's exchanges in respect to supply chain management activities. As the various activities of supply chain such as time of delivery, quality of supply chain officers, payment system and satisfaction of customers (Castorena, et.al. 2014; ANYANWU, et.al. 2017; Jones Osasuyi & Mwakipsile, 2017; Mukherjee, 2017; Durie & Beshir, 2018; Siddiqui & Parikh, 2018; Anyanwu, 2018; Hameed, et al., 2018; Hameed, et al., 2018; and Imran, et al., 2019) are heavily based on AIS.

Accounting information system is one of the comprehensive system which covers both internal as well as external organizational environment. It generally linked with organizations internal as well as external environment through information communication technology. As it is shown in Figure 1, it is one of the strategic system which links the organization in its external and internal activities such as operations and transactional system. These practices are most crucial to solve the issues of supply chain management and increases the performance. As the AIS is one of the most reliable system to resolve various issues and enhance the organizational performance (Bodnar & Hopwood, 2012; Gelinas, et al., 2011; Hall, 2012; and Romney, et al., 2000).

This study is based on the Indonesia manufacturing sector and supply chain performance. Indonesian manufacturing sector is not working with satisfactory level of quality as well as growth. In different nations, Indonesia's manufacturing division went under risk with China's accession to the WTO. China's entrance into the worldwide exchanging framework immediately changed the aggressive condition for Indonesia, as it contends specifically with China on work concentrated items, for example, footwear, articles of clothing, and other light manufacturing. In the short-term, Indonesia's goal to climb the esteem in manufacturing and to grow businesses was promptly tested by the quick development of Chinese exports in the worldwide commercial centre (Aswicahyono, et al., 2010).

Above situation indicates that Indonesia's manufacturing exports, particularly work various items, for example, textiles, garments, footwear and furniture declinesin its aggregate exports. This causes the decreases in overall industry performance where the supply chain activities effect negatively. As it is shown in the Figure 2, that the manufacturing industry of Indonesia has low growth as compared to the China, Malaysia and Thailand.

However, accounting information system is one of the comprehensive system which can reduce the declining trend of Indonesian manufacturing industry. AIS is generally based on five basic components, namely; people, procedures, data, software and information technology (IT) infrastructure. These elements have significant influence on supply chain activities in any organization having important link with performance.

Therefore, the prime objective of the current study is to investigate the role of AIS components (people, procedures, data, software, IT infrastructure) on supply chain practices in Indonesian

manufacturing sector. This study is one of the pioneer study which investigated the role of AIS on supply chain performance. In rare cases any study formally documented the effect of AIS on supply chain performance.

2. LITERATURE REVIEW

Accounting information system (AIS) is a system of collecting, storing and processing financial as well as accounting data that are used by various decision makers. AIS is a system which is normally a computer-based process for tracking accounting action in conjunction with IT resources. This information system requires extensive involvement of good employees, a planned procedure, sufficient data, software's and good information technology framework which is important for supply chain management (De Gorostiza, et al., 2018).

Accounting information system is considered as a subsystem of management information system (MIS). To see accounting as an information system, maybe, it is the most recent source of accounting. In 1996, American Institute of Certified Public Accountants (AICPA) stated that:

"Accounting actually is information system and if we become more precise, accounting is the practice of general theories of information in the field of effective economic activities and consists of a major part of the information which is presented in the quantitative form".

In the above definition, accounting is a part of general information arrangement of an economic entity. Accounting information frameworks is characterizing as frameworks that work elements of information gathering, preparing, arranging and financial dealings.Therefore, AIS has significant important in all the aspects of supply chain procedures in manufacturing industries. This system has different types as shown in Figure 3.

Information system of accounting covers all the areas of an organization. This system support the operational activities of manufacturing firms and increases the performance of operations (Liu, et al., 2018). In case of supply chain operations, AIS help to deal all the process from company to end user. It also includes the payment system by customers, delivery system and communication with customers. AIS makes this process easy and accessible for all customers and partners which has significant influence on industry performance.

Moreover, AIS system also has important contribution in management of all the processes. According to Carolina and Susanto (2017), management and AIS has significant link with each other. AIS help management support system and execute all the process in effective way through information communication technology. As it is important to handle information and knowledge (Galliers & Leidner, 2014) from employees and customers.

However, AIS is generally based on five major components as discussed above. First component is based on the employees of firm. Second component is based on the procedures in AIS system. Third component is data availability for AIS system. Fourth component is related to the software's generally used to develop good AIS system. And finally, the key element is IT system on which the AIS system depends. These components have important contribution in supply chain activities which enhances the performance among manufacturing firms. Although there are other factors that can affect the company's performance, such as the existence of a remuneration committee (Hadi, et al., 2016). Remuneration committee is able to reduce information asymmetry, thus encouraging a level of transparency that can drive company performance. It is shown in Figure 4.

Employees should be sufficient capable to deal with high quality AIS. To run this system the supply chain system should have trained employees, otherwise, AIS will not be helpful to produce good outcomes. As it is one of the comprehensive system (Gordon, 2018), therefore, it requires sufficient capable employees. Good capable employees can run AIS in better way which has significant influence on supply chain activities of manufacturing firms. Positive effect on supply chain activities always have contribution in overall performance. As the human capabilities are most crucial to usefully run any system (Bontis & Serenko, 2007).

Additionally, it is also important because it is helpful in human resource management practices (Al-rabei, et al., 2015). It increases the capability of nay organization to handle their employees in a better way in respect to the operations of firm. Proper and timely allocation of tasks to the employees of an organization always has significant impact on their performance which ultimately increases the accuracy and performance of supply chain management activities.

AIS system is based on the systematic procedures which requires sufficient data to execute. As it is stated by Prasad and Green (2015) that a dynamic and responsive system of accounting information is one that have better framework(i.e., faithful of the real world, and sufficient capable to represent the events as well as complex procedures). Therefore, complex procedures and data availability is important for AIS.

However, to run all the procedures, AIS requires software's. AIS generally based on different software's to implement the whole system. More sophisticated and expensive software, includes; computer-aided design, computer-aided manufacturing and computer-assisted production management (Ismail & King, 2014). Fuller (1996) claimed that the crucial problem of the absence of strategic information technology (IT) usage in manufacturing firms relates to the relatively poor fit between what the software tools are contributing and what is needed, with neither the users nor the suppliers being in a strong position to communicate with each other. These software's and IT systems is needed to boost supply chain performance in Indonesian manufacturing firms.

The information generated by the accounting system should be used as a basis for making appropriate and relevant decisions. Therefore, the application of an accounting system must consider the costs and benefits that lead to efficiency. The availability of appropriate and relevant information is able to encourage transparency that can reduce conflicts between users of financial information. Although the financial information presented is inseparable from management's judgement (Suryanto, 2015), those who have the drive to behave dysfunctionally (moral hazard) are detrimental to the company.

Efficiency of this accounting system also based on the awareness of decision-makers on the practicality of information produced by the system to satisfy informational requirements for the supply chain operation processes, supply chain managerial reports, supply chain budgeting and supply chain control within the manufacturing organization. Therefore, the effective implementation is based on the employees of manufacturing firms. Effective implementation has significant role in supply chain performance which has positive effect on manufacturing industry performance.

However, apart from AIS factors, manufacturing firm's performance and supply chain activities also have effect due to various leadership activities, training of employees and enterprise risk management activities (Hameed, et al., 2017; Hameed, et al., 2018; Hussain, et al., 2013).

Moreover, political influence of stock return has also significant effect (Maqbool, et al., 2018) on manufacturing industry of Indonesia.

Additionally, AIS has significant positive effect on organizational performance (Larrauri, et al., 2016). Better implementation of AIS decreases the chances of error in supply chain operations which increases the accuracy in overall operation. It also decreases the time cost and delivery of product to the customers. These positive effects have significant influence on supply chain activities and performance. However, innovation in AIS and supply chain can make the difference (Hameed, et al., 2018).

Finally, from the above discussion, it is evident that AIS has significant influence on supply chain activities of manufacturing firms which has direct effect on the organizational performance. All the components of AIS, namely; people, procedures, data, software's and IT has influence on supply chain. Therefore, from the above discussion and framework in Figure 4, the below hypotheses are proposed;

H-1: There is significant positive relationship between AIS people and supply chain performance.

H-2: There is significant positive relationship between AIS procedures and supply chain performance.

H-3: There is significant positive relationship between AIS data and supply chain performance.

H-4: There is significant positive relationship between AIS software's and supply chain performance.

H-5: There is significant positive relationship between AIS IT infrastructure and supply chain performance.

H-6: There is significant positive relationship between supply chain performance and manufacturing organization's performance.

3. METHOD

Manufacturing industry of Indonesia was selected to examine the effect of AIS on supply chain activities and company's performance. From all manufacturing industries three industries, namely; furniture industry, electronic and food production industries were selected. Managerial employees of all these companies were selected as respondents.

As the research method is one of the crucial part of every research study, therefore, by conferring the problem, objectives and nature of study, cross-sectional research design with quantitative research approach were selected (Hameed, et al., 2018). Thus, data were collected one point of time.

Data were collected by using the survey questionnaires. The 5-point Likert scale were used to collect the data. The 5-point Likert scale from strongly disagree to strongly agree is more reliable than other scale. Because this scale decreases the frustration level of respondents and increases the reliability of instrument.

According to Hair, et al. (2006) the size of the sample is based on the items of the study. It was recommended that each item should be characterised using 5 samples. Since, the current study intends to use 35 items, therefore, the sample should be more than 175. Thus, the current study used 200 sample size.

3.1 Data Collection Procedure

Head offices of furniture industry, electronic industry and food production industry were visited and lists of their managerial employees were collected. From these lists managerial employees were selected randomly. After that the respondents were approached by self-visit to the companies and questionnaires were distribution.

While getting the response from respondents, objective of the study was explained to them and it was insured that the data will remain confidential. Those managerial staff having no link with AIS and supply chain were not included in the survey. It was considered that employees having no link with AIS and supply chain cannot respond according to the requirements of this study.

4. ANALYSIS AND RESULTS

PLS-SEM was performed by following the steps of Henseler, et al. (2009). Confirmatory factor analysis is shown in Figure 5. Confirmatory factor analysis shows the factor loadings of each item. All the factor loading is above satisfactory level (Hair, et al., 2010). Moreover, composite reliability is also shown in Table 1 which above the satisfactory level (0.7). Additionally, average variance extracted (AVE) is also meet the threshold level (0.5). Therefore, the current study attained the convergent validity.

Furthermore, discriminant validity is shown in Table 2. It followed the criteria of Fornell and Larcker (1981) by using the square root of AVE. Moreover, the cross-loadings are also shown in Table 3. It indicates that this study satisfies the discriminant validity.

Table 4 shows the direct effect of all the independent variables on dependent variable. It shows that all the direct hypotheses are supported. As the t-value for all the hypothesis is above 1.96 and p-value is below 0.05. Moreover, the beta value is positive for all the hypothesis. Thus, it accepts all the hypothesis (H-1, H-2, H-3, H-4, H-5, H-6).

In the current study R^2 is 0.741 which is substantial (Chin, 1998). Furthermore, effect Size (f^2) value shows the effect of each variable on dependent variable. In this study, Table 5 shows the effect Size (f^2). By following the instructions of Cohen (1988), it is revealed that all the variables have small effect size, however, supply chain performance has moderate effect size, as it is shown in Table 5. Finally, predictive relevance (Q^2) is shown in Table 6 which shows the quality of model and this value should be more than zero (Chin, 1998).

5. FINDINGS

While analysing the data, it is found that AIS has significant relationship with supply chain performance of manufacturing companies. It is found that people such as AIS people of an organization has significant positive relationship with supply chain performance with t-value 6.05. Well trained AIS members has positive contribution in supply chain performance.

Moreover, results demonstrated that AIS procedures has also important role to boost supply chain practices. Good procedures are the basic element of AIS (Hall, 2012). It is found that AIS procedures always effect positively on supply chain performance. As the relationship between AIS procedures and supply chain is significant positive with t-value 2.065. Similar results were found in cases of data and supply chain performance. AIS data has positively associated with supply chain performance with t-value 2.313.

Better utilization of data, procedures and people requires good software's. Latest software's always has significant relationship on AIS system (Gelinas et al., 2011) and better AIS system has positive effect on supply chain activities. As the relationship between software's and supply chain is found significant positive with t-value 2.000.

Furthermore, information technology has significant role in supply chain (Hameed et al., 2018; Hameed, Nadeem, et al., 2018; Imran et al., 2019). Good IT system enhances the performance of AIS and better AIS system increases the performance of supply chain, particularly in Indonesian manufacturing organizations. As this study revealed that supply chain

performance has significant impact on manufacturing organizations performance.

6. CONCLUSION

The current study examined the role of accounting information system (AIS) on supply chain performance of Indonesian manufacturing companies. Three manufacturing industries were selected, namely; furniture industry, electronic industry and food production industry. Managerial employees of all these companies were selected as respondents.

AIS is the key to success in supply chain activities, particularly in Indonesian manufacturing industries. All the elements of AIS (people, data, procedures, software's, IT infrastructure) has important contribution in supply chain performance. AIS contributes positively by decreasing the delivery time, smooth running of operation and quick response to the customers. It provides a good communication system with customers which has significant effect on performance. AIS promotes supply chain which has significant contribution to boost the performance of manufacturing organizations. Thus, AIS is a strategic tool to enhance supply chain practices and overall firm performance.

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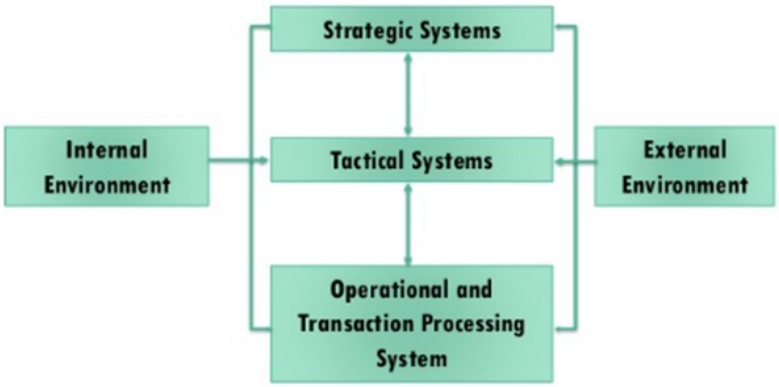

Figure 1. Managing Accounting Information System

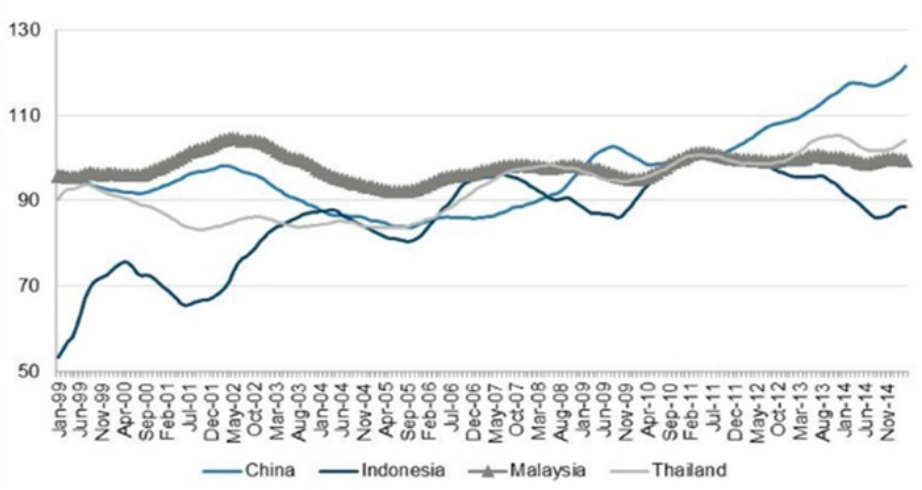

Figure 2. Comparison of various countries manufacturing industry with Indonesia

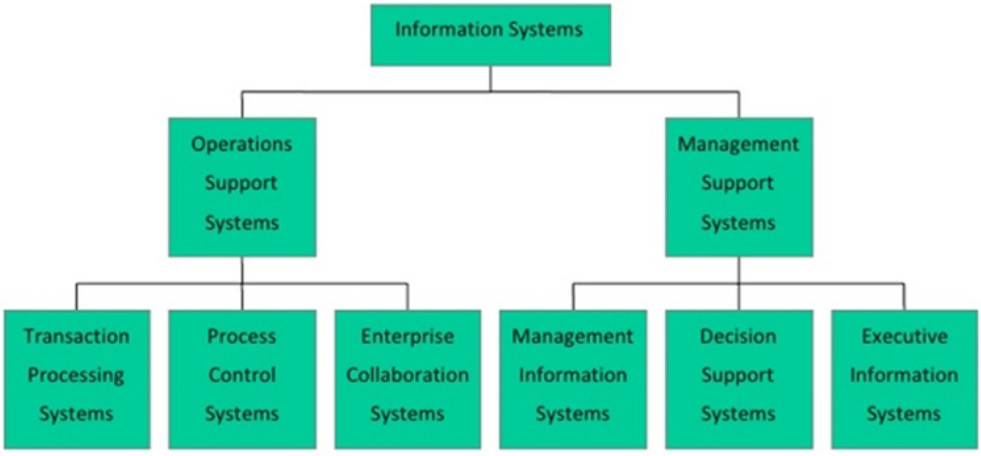

Figure 3. Type of AIS

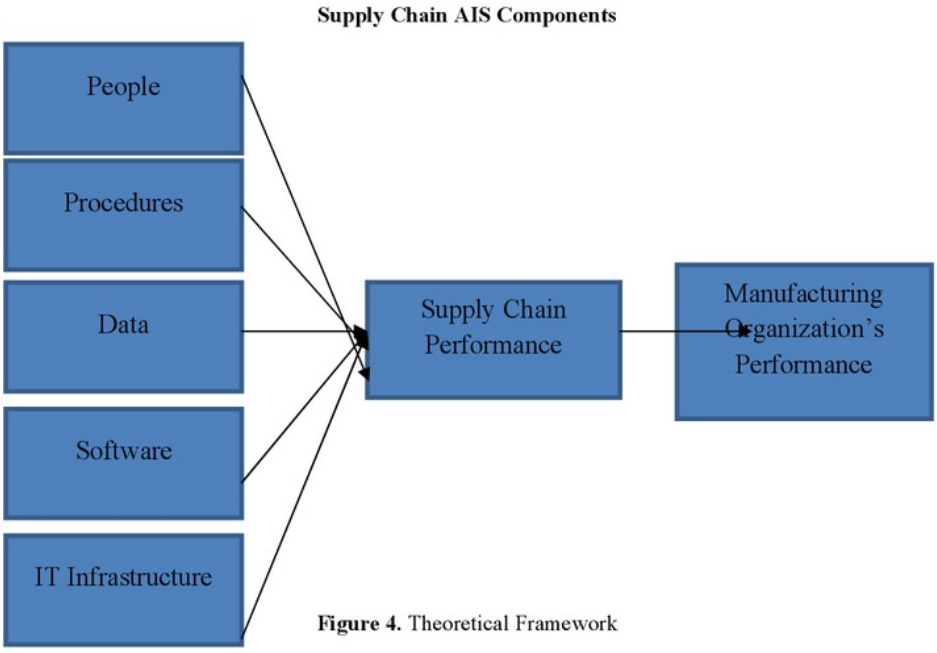

Figure 4. Theoretical Framework

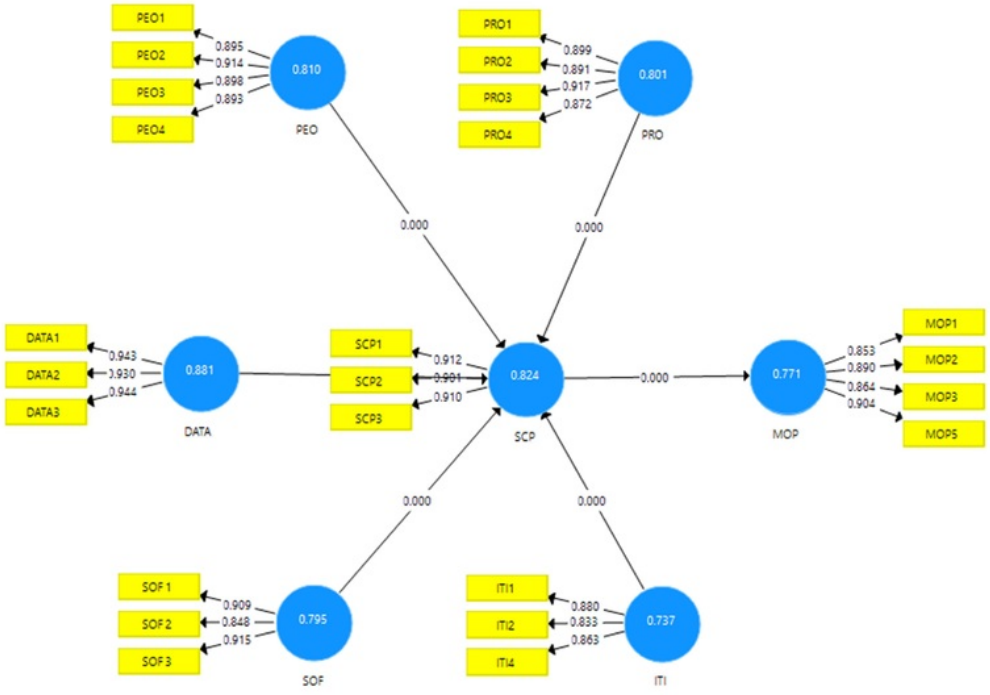

Figure 5. Confirmatory Factor Analysis

Table 1. Internal Consistency, Convergent Validity, composite reliability and AVE

Construct	Indicators	Loadings	Cronbach's alpha	Composite Reliability	AVE
People	PEO1	.895	.922	.945	.810
	PEO2	.914			
	PEO3	.898			
	PEO4	.893			
Data	Data1	.943	.933	.957	.881
	Data2	.930			
	Data3	.944			
Procedure	PRO1	.899	.917	.942	.810
	PRO2	.891			
	PRO3	.917			
	PRO4	.872			
Software's	SOF1	.909	.870	.921	.795
	SOF2	.848			
	SOF3	.915			
IT Infrastructure	ITI1	.880	.826	.894	.737
	ITI2	.833			
	ITI3	.863			
Supply Chain Performance	SCP1	.912	.894	.934	.824
	SCP2	.901			
	SCP3	.910			
Manufacturing Organization's Performance	MOP1	.853	.884	902	.771
	MOP2	.890			
	MOP3	.864			
	MOP5	.904			

Table 2. Discriminant Validity

	DATA	ITI	MOP	PEO	PRO	SCP	SOF
DATA	**0.939**						
ITI	0.819	**0.859**					
MOP	0.654	0.830	**0.878**				
PEO	0.843	0.852	0.656	**0.900**			
PRO	0.913	0.814	0.676	0.825	**0.895**		
SCP	0.653	0.851	0.915	0.666	0.670	**0.908**	
SOF	0.866	0.844	0.697	0.870	0.892	0.674	**0.891**

Table 3. Cross-Loadings

	DATA	**ITI**	**MOP**	**PEO**	**PRO**	**SCP**	**SOF**
DATA1	0.943	0.769	0.632	0.795	0.869	0.628	0.821
DATA2	0.930	0.752	0.58	0.79	0.845	0.585	0.805
DATA3	0.944	0.786	0.628	0.788	0.856	0.624	0.814
ITI1	0.793	0.880	0.669	0.819	0.835	0.664	0.848
ITI2	0.831	0.833	0.576	0.784	0.831	0.59	0.785
ITI4	0.548	0.893	0.839	0.632	0.615	0.878	0.594
MOP1	0.516	0.706	0.853	0.564	0.559	0.748	0.55
MOP2	0.569	0.709	0.890	0.564	0.594	0.832	0.631
MOP3	0.542	0.719	0.864	0.533	0.544	0.792	0.58
MOP5	0.664	0.778	0.904	0.641	0.674	0.839	0.68
PEO1	0.807	0.779	0.579	0.895	0.841	0.585	0.789
PEO2	0.738	0.769	0.607	0.914	0.819	0.641	0.77
PEO3	0.77	0.779	0.562	0.898	0.854	0.579	0.8
PEO4	0.721	0.741	0.613	0.893	0.818	0.59	0.774
PRO1	0.831	0.815	0.67	0.875	0.899	0.657	0.829
PRO2	0.792	0.742	0.591	0.836	0.891	0.597	0.785
PRO3	0.853	0.808	0.621	0.816	0.917	0.606	0.818
PRO4	0.789	0.718	0.526	0.775	0.872	0.525	0.756
SCP1	0.602	0.77	0.858	0.609	0.611	0.912	0.602
SCP2	0.581	0.774	0.806	0.587	0.59	0.901	0.596
SCP3	0.594	0.773	0.829	0.619	0.623	0.91	0.637
SOF 1	0.78	0.754	0.617	0.762	0.796	0.619	0.909

SOF 2	0.757	0.703	0.582	0.76	0.791	0.549	0.848
SOF 3	0.78	0.797	0.662	0.805	0.802	0.63	0.915

Table 4. Direct Effect

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**	**Decision**
DATA -> SCP	0.15	0.14	0.063	2.313	0.020	Supported
ITI -> SCP	0.403	0.400	0.133	3.010	0.002	Supported
PEO -> SCP	0.167	0.163	0.027	6.05	0.000	Supported
PRO -> SCP	0.238	0.228	0.115	2.065	0.039	Supported
SCP -> MOP	0.115	0.315	0.014	8.109	0.000	Supported
SOF -> SCP	0.224	0.212	0.110	2.000	0.041	Supported

Table 5. Effect Size (f^2)

R-Squared	f-squared	Effect Size (f^2)
People	0.043	Small
Data	0.044	Small
Procedure	0.032	Small
Software's	0.023	Small
IT Infrastructure	0.071	Small
Supply Chain	0.155	Moderate

Table 6. Predictive Relevance (Q^2)

Total	SSO	SSE	Q^2 = (1-SSE/SSO)
Manufacturing Organization performance	868.000	333.836	0.615
Supply Chain Performance	651.000	277.830	0.573

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