

Customer Integration, Top Management Support, Organizational Structure and Supply Chain Technology Adoption. Examining the Mediating Role of Intention to Adopt Specific Supply Chain Technology

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Abstract- The main focus of the present study is to examine the impact of top management support, organizational structure, and customer integration on the intention to adopt specific technology management and adoption of e-supply chain technology. Additionally, mediating impact of intention to specific technology between top management support, organizational structure, customer integration and adoption of new technology is assessed as well. The data is collected from the employees of commercial banks of Indonesia. The data collection technique adopted was stratified random sampling. The collected data was analyzed through PLS-SEM using PLS 3.2.1. The findings of the study revealed that all of the proposed direct as well, and mediating hypothesis is accepted. The findings of the study are important for the practitioners of the banking sector to adopt strategy by which they can adopt new technology. Moreover, this study fills the gap of limited studies related to technology in the supply chain perspective of the banking sector.

Keywords; *E-Supply Chain Technology Adoption, Customer Integration, Top Management Support, Organizational Structure, Indonesia*

1. Introduction

Competition among different organizations is mounting at the global and local markets. Therefore, it is necessary for organizations to adopt changes in technology so they can develop and sustain competitive advantage. Electronic supply chain management system (e-SCM) is the new form of inter-organizational system, which is internet-based [1]. This system facilitates firms in collaboration, coordination and communication throughout the organizational boundaries [2]. As a result, the competitiveness of the organization is enhanced. The main reliance e-SCM is on socio-technical interactions, namely support regarding joint decision-making system and shared database. This socio-

technical interaction allows integration of fragmentation as well as silo oriented supply chain processes with rich content and less cost [3].

In past literature, E-SCM is discussed as the technology which has the ability to provide adopters with different strategic advantages and operational benefits. In terms of operational goals regarding e-SCM, which is the short term, has the focus to minimize the cycle time, reduce inventory and maximize the productivity of the organization. The long term objective of application of E-SCM is to focus on innovation and improvement regarding all processes among suppliers, customers, companies and other stakeholders of companies [4]. Despite that organizations are failed to get the expected results of e-SCM, the main concern of using e-SCM by top management is to gain competitive advantage and sustain in the market on long term basis [5].

Support of top management is very important in any type of organization to apply any innovation system [2]. Scholars mentioned that top organizational management proposes the system which plays an important role in the success of the organization. The support of top management plays a critical role in the success of the organization [6].

Researchers also pointed out that information is shared among organization and customers through customer integration. The feedback which organizations obtain from their customers provides the information which is linked with operations like inventory. Therefore, there is a need for a solid relationship among customers and organizations to enhance the strength of the supply chain program [7]. On the other hand, researchers agree to the point that support of top management is important for the success of projects. The success of the project is mainly dependent upon the support of top management [8]. Whereas, a number of different studies mention that top management support is the interaction term in which a number of factors are involved, such as performance level, within function VS

cross-functional projects, and task interdependency. It's been argued by the researchers that if the project is cross-functional and highly task interdependent, then management support becomes critical [6].

Banking sector of Indonesia is considered as the backbone of the Indonesian GDP. Like any other country, there are a number of private as well as public sector banks in Indonesia [9]. The classification of these banks is as rural or commercial banks. Commercial banks in Indonesia are very important for country growth. Therefore, the level of technology adoption at the level of the supply chain is important to be studied in the banking sector [10]. Thus, the objective of the present study is to examine the impact of top management support, customer integration and organizational structure on the intention to adopt e-SCM and technology adoption.

2. Literature Review

2.1. Electronic supply chain management technology adoption (ESCM)

In the field of innovation information system (IS) and, the main concern of researchers is the relationship between organizational change and application of IS. According to the past literature regarding technology innovation, the term IT innovation is generally referred as a production system, processes, and adoption of new methods which has the intention to improve or maintain the performance of organization [11]. Moreover, these changes play an important role in responding to the external environment changes. Opposite to old IIOS, the features of e-SCM are different. These features are different in terms of conducting activities of the value chain, integration of business process, support in joint decision making and capabilities of information exchange [12].

There are many other impacts of e-SCM as well, including business transformation, the relationship among partners which are involved in trading, and business process change. For this reason, adoption of e-SCM can be perceived as the adoption of IT innovation [13]. The process of IT innovation has a number of different stages including implementation, adoption and initiation; assimilation, implementation, adoption and comprehension; expansion, implementation, adoption and evaluation; and routinization, adoption and initiation. As mentioned earlier that all these stages can be categorized in 2 general groups as post-adoption and initial adoption for continuous usage, referred most of the time as initiation and implementation [14].

2.2. Intent to use specific Supply chain technology and E-Supply chain technology adoption

A number of past studies have laid the theoretical foundation in terms of intention as well as acceptance of using a number of technologies by the employees who are working in an organization. Researchers empirically tested the impact of intent to use on the technology implementation. At the organizational level, acceptance of

the technology is reflected by the organization of the have intention or willingness to use technology in the organization [13]. In other words, if the organization have the willingness to use the specific technology of the supply chain, technology adoption is manifested [15].

2.3. Top Management Support: Intent to use e-SCM and technology adoption

Top management is referred to as strategic decisions which align the internal structure of the organization along the process to the environment by committing resources and setting precedents. The interface between environment and organization is provided by top management. The top management makes decisions regarding the strategies of the organization. Therefore, direction, guidance and future strategies of the organization [16].

Moreover, strategic planning success is mainly dependent upon the support of top management. As a leader, the role of top management is very important. In every field and subject, leadership is of great importance. There is a critical role of leadership to achieve organizational goals, so organizational performance can be enhanced through strategic planning [17]. The direction to achieve organizational goals must be identified by the loaders so organizational goals can be achieved. It is also important to mention that the person who is leader matters a lot because strategic planning is also done by the leaders. In order to enhance the performance of organizations, the decision-makers must look towards the transformational as well as the charismatic type of leaders [18]. For this reason, leaders for strategic planning is very important for strategic planning.

Top management is referred to as the executives who are at a high level, owners, presidents, senior-level managers. On the implementation of strategy, the role of leaders is very important, and it is acknowledged by a number of researchers as well. A number of researchers pointed out that a management role is key for strategic planning. The quality of the person who is involved in the process of decision-making affects the planning as well as the implementation of strategies and effectiveness. In this context, quality is referred to as characteristics, experience, capability, attitude and skills of the individual [19]. The success of any strategic system is mainly dependent upon three factors, namely systems, organizations and people. Past findings revealed that human aspect of project management is the key aspect of the success of strategic planning. Therefore, at the level of top management, the style of leadership is the key. Productivity and advantage are enhanced by the style of leadership because knowledge management is enhanced by top management [20].

Organizational members play a very important role in the adoption of technology and the creation of the environment by which technology adoption is enhanced. In this matter, organizational employees are influenced by the top management in order to provide commitment and vision to

the organization. In order to incorporate technology within the organization, the role of top management is very important and crucial. Moreover, top management facilitates usage as well as the adoption of an information system [21].

It is very important that top management intervene so the resources can be committed for the successful adoption of e-SCM. For this purpose, they have to show intent to adopt e-SCM. Researchers have mentioned that top management support is the degree to which understanding is given by top management. It also includes the level of involvement of top management in the projects related to SCM. Promoting as well as management of employees so they can accept the projects related to e-SCM is only possible if top management has the intention to adopt e-SCM [11].

2.4. Customer Integration: Intent to use e-SCM and technology adoption

Researchers mentioned that customer is the only person who can evaluate a product and make a decision regarding a product. It is because customers have the power to purchase the product. Therefore, the customer is the person who will make the decision in terms of supply chain literature. Additionally, sharing of information based upon interaction among organization and customer enhance customer integration. Furthermore, the competence level of organization is enhanced because of the relationship between the organization and customers [22].

Researchers presented the definition of customer integration and defined it as the practice of organization in order to use, explain and identify customers so the specific products can be produced as per the needs of the customers so the needs of the customers can be satisfied and expectations can be maximized [23].

Scholars highlighted that in the production process, the opinion of customers is very important because the relationship between manufacturer and customer becomes easy because of this information. Uncertainty in the mind of customers can be reduced if the strategy, intentions and goals of the organizations are clear to the customers. Whereas, loss of flexibility and closeness may lose the advantage created by clarity. If the efforts related to design integration are not updated on the bases of opportunities and requirements, they can create the system which can be efficient internally, but its output will be unproductive. The financial performance of an organization is positively impacted by customer integration. In order to improve organizational performance, customer integration is not enough if applied alone [24]. It's been revealed in a number of studies that organizations which have strong customer integration, can easily gather information regarding their performance in the market. On the basis of their performance, they can develop the intention to adopt e-SCM and adopt it at the next stage so their overall performance can be enhanced [23].

2.5. Organizational Structure: Intent to use e-SCM and adoption

Besides the climate of the organization, members of the organization are also impacted by the structure of the organization. There are three elements of organizational structure, namely integration, centralization and formalization. The level at which there exist standardization among the jobs within the firm is the formalization. Moreover, formalization also is the level at which procedure and rules within the organization guide the behaviour of employees. There exist explicit procedure and rules in the organization where there exists high formalization. In this scenario, there is a lack of flexibility and spontaneity, which is required for internal innovation. The probability that members of organizations will be involved in alternative behaviour is removed by the standardization. Moreover, the willingness of the members is removed which as well is important to discuss the alternatives [25].

The need to discuss the procedure of work is less because, in most of the organizations, the way of doing work is pre-decided. On the other hand, the organizations where there exists less formalization of work, there exist unstructured job behaviour. The employees also have freedom in terms of the way they have to achieve their tasks. In this scenario, social interaction among the members of society is more frequent. For this reason, it is possible that less formalized structures create and encourage more interaction among members of the organization [26].

On the other hand, the level of control on the process of decision making by the top management is the centralization. The non-participative environment is created by centralization due to which communication among employee, commitment with organization and level of involvement in projects and tasks is reduced. Whereas, there is a need for more self-regulation, and autonomy by the employees who have wider responsibility of work, expertise, and skills because of the increase in competitive pressure. The decision regarding the output will be accepted by the employees if they have discretion, independence and freedom. It is because such employees can easily provide ideas and inputs during the process of decision making. If the members of the organization have more autonomy, they will act in a more responsible way to fulfil the organizational goals. Additionally, it believed that employees could solve the pre-existed as well as new problems if they are allowed to interact with the community [27].

The process of selecting the structure, assessing the process, responsibility, authority, control, coordination, labour division, communication on the basis of formal system and selection of the structure which represents the organizational design, This is key for the organizations to achieve their goals [28]. Organizational design of any organization is as complex as a web in which a number of

patterns are reflected regarding coordination and interactions of human components, tasks and technology. In most of the literature, organizational design is depicted as the organizational structure, which is more detailed and complex, which appears on organisational charts. Basically, the organizational structure shows the willingness of the people to use technology and adopt it within the organization so the organizational goals can be achieved [29].

The literature survey has proposed the following hypotheses

H1: Intent to use specific Supply chain technology and E-Supply chain technology adoption are significantly related to each other.

H2: Top Management Support and Intent to use specific Supply chain technology are significantly related to each other.

H3: Top Management Support and E-Supply chain technology adoption are significantly related to each other.

H4: Intent to use specific Supply chain technology mediates the relationship between Top Management Support and E-Supply chain technology adoption.

H5: Customer Integration and Intent to use specific Supply chain technology are significantly related to each other.

H6: Customer Integration and E-Supply chain technology adoption are significantly related to each other.

H7: Intent to use specific Supply chain technology mediates the relationship between Customer Integration and E-Supply chain technology adoption.

H8: Organizational structure and Intent to use specific Supply chain technology are significantly related to each other.

H9: Organizational structure and E-Supply chain technology adoption are significantly related to each other.

H10: Intent to use specific Supply chain technology mediates the relationship between Organizational structure and E-Supply chain technology adoption.

2.6. Research Framework

Following theoretical framework is developed from the review of previous literature.

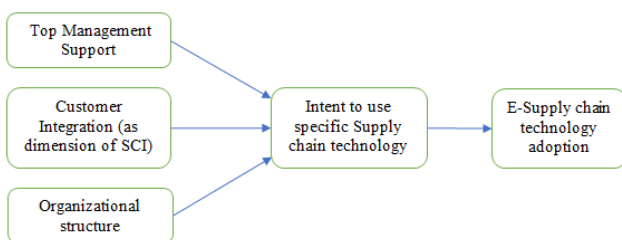


Figure 1. Framework

3. Methodology

The present research is designed with three independent variables as total management support, organizational structure and top management support. Moreover, the

intention to use specific technology and e-supply chain technology adoption is the outcome variables. For the present research, data is collected from the employees of the commercial banks in Indonesia. The data was collected through a stratified random sampling technique. By using this technique, questionnaires were distributed among the respondents. Total usable questionnaires were 360 from the distributed questionnaires. The response rate was 53%. After collection of the data, it was screened through SPSS 22. The missing values were removed using SPSS and outlier issue was resolved as well. After screening the data, PLS-SEM was used for further analysis.

4. Results

PLS 3.0 is used for the analysis of the present study. In the first phase of the analysis validity and reliability of the data gathered is assessed through measurement model. Discriminant analysis and convergent analysis is done to test the validity of the proposed model. Later, the structural model is done by the researcher so the hypothesis can be tested.

[30] mentioned that the reliability of the data is assessed through internal consistency. For this purpose, composite reliability and Cronbach alpha are calculated so the construct reliability can be assessed. Moreover, the value of factor loading of each item of the study should be more than 0.7. The figure of measurement model mentioned in figure 1 and in table 1 showing the value of factor loading more than the required value [31]. All of the values are mentioned in figure 1 of the measurement model and table 1, as well.

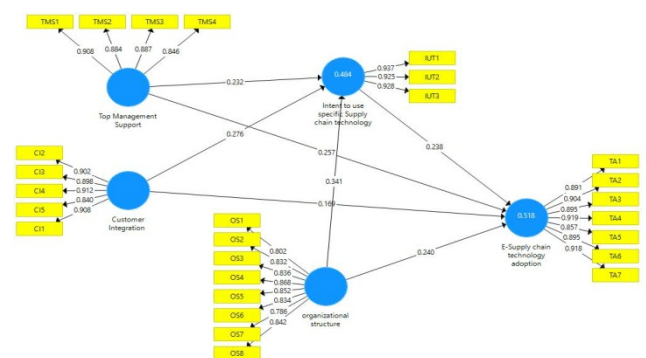


Figure 2. Measurement Model

Table 1. Outer Loading

	CI	IUST	OS	SCTA	TMS
CI2	0.902				
CI3	0.898				
CI4	0.912				
CI5	0.840				
IUT1		0.937			
IUT2		0.925			
IUT3		0.928			
OS1			0.802		

OS2			0.832		
OS3			0.836		
OS4			0.868		
OS5			0.852		
OS6			0.834		
OS7			0.786		
OS8			0.842		
TA1				0.891	
TA2				0.904	
TA3				0.895	
TA4				0.919	
TA5				0.857	
TA6				0.895	
TA7				0.918	
TMS1					0.908
TMS2					0.884
TMS3					0.887
TMS4					0.846
CI1	0.908				

Researchers mentioned that the composite reliability of all of the constructs and reliability (Cronbach Alpha) should be more than 0.7 [32]. According to the values of composite reliability and Cronbach Alpha mentioned in table 2, all values are above 0.7, which is more than the standard value, as mentioned by [33]. Therefore, the reliability of all of the constructs is established in the present study.

Furthermore, the average variance extracted is also calculated for the convergent validity of the data [30]. Convergent validity of the data is explained through correlated and actual latent variables along with remaining latent variable indicators [30]. As mentioned earlier that in order to assess convergent validity, average variance extracted AVE is calculated. On the other hand, [34] mentioned that standard AVE value of every construct should be above 0.50 to establish the convergent validity of the data. These values are also mentioned in table 2 below.

Table 2. Validity and Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CI	0.936	0.940	0.951	0.796
IUST	0.922	0.923	0.951	0.865
OS	0.936	0.940	0.947	0.692
SCTA	0.960	0.960	0.967	0.805
TMS	0.904	0.906	0.933	0.777

The concept of discriminant validity is defined by [35] according to which it is validity in which certain latent construct is different from remaining latent constructs. Furthermore, [36] pointed out that in order to establish the discriminant validity of data, the cross-loading values of a construct is more than the other values of construct being measure. Additionally, [36]. also mentioned that when the square of AVE of every construct of the study is higher than the other constructs, discriminant validity is established. Cross loadings of all of the values are shown in table 3 below. According to these values, the cross-loading values are more than the remaining values. It is according to the standard procedure mentioned by [34].

Table 3. Discriminant Validity

	CI	IUST	OS	SCTA	TMS
CI	0.892				
IUST	0.614	0.930			
OS	0.688	0.606	0.832		
SCTA	0.594	0.606	0.583	0.897	
TMS	0.445	0.465	0.323	0.520	0.882

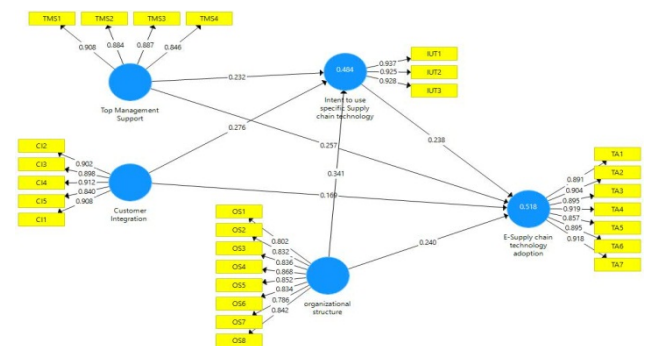


Figure 3. Structural Model

In the second half of the PLS analysis, a structural model is calculated so the hypothesis developed in the earlier half can be tested. The value of R square and path coefficient is mentioned in the structural model figure 2. Moreover, the direct relationships of the proposed models are mentioned in table 4 below. According to [37], mentioned the conditions to accept the hypothesis if the level of significance is at 5%. The values of $P < 0.05$ and t must be more than 1.96. From table 4, it's evident that all of the values of P and t are within an acceptable range. Thus, all proposed hypothesis is accepted.

According to the findings of the study, organizational structure, customer integration and support of top management directly impact e-supply chain technology adoption along with the intention to use specific supply chain technology. Moreover, figures in table 4 also show that intention to use supply chain technology impacts the supply chain technology adoption.

Table 4. Direct Relationship

	(O)	(M)	(STDEV)	t-value	P Values
CI -> IUST	0.276	0.270	0.067	4.121	0.000
CI -> SCTA	0.235	0.230	0.070	3.353	0.001
IUST -> SCTA	0.238	0.240	0.064	3.727	0.000
OS -> IUST	0.341	0.346	0.075	4.518	0.000
OS -> SCTA	0.321	0.323	0.062	5.208	0.000
TMS -> IUST	0.232	0.235	0.053	4.404	0.000
TMS -> SCTA	0.312	0.313	0.066	4.694	0.000

Table 5 shows the mediation relationship between IV and DV's. According to the findings of the study, the T value of the mediation relationships is more than 1.96, whereas P-Values is less than 0.05. Both of these values are within the standard values mentioned [37]. Therefore, it is revealed that Intention to specific technology mediates significantly between customer integration and e-supply chain technology adoption. Moreover, the intention to use specific technology also mediates significantly among organizational structure and e-supply chain technology adoption. Furthermore, intention to use supply chain technology mediates significantly between top management support and e-supply chain technology adoption.

Table 5. Mediation Results

	(O)	(M)	(STDEV)	T Statistics (O/STDEV)	P Values
CI -> IUST -> SCTA	0.066	0.064	0.023	2.862	0.004
OS -> IUST -> SCTA	0.081	0.084	0.032	2.520	0.012
TMS -> IUST -> SCTA	0.055	0.056	0.020	2.764	0.006

The value of R Square, also known as the coefficient of determination shows the variation in the outcome variables

because of independent or endogenous variables. The R square value of IUST in this study is 0.484 showing that it impacted 48.4% because of IV's of the present study. Additionally, the value of R-Square of e-supply chain technology adoption is 0.51.

Table 6. R Square

	R Square
IUST	0.484
SCTA	0.518

5. Conclusion

Technology all around the world is changing rapidly. Therefore, it is important for the organization to adapt to the changing environment and adopt the new changes in technology so they can sustain in the market. Therefore, this study examined the impact of customer integration, top management support and organizational structure on the intention to adopt supply chain technology and e-supply chain technology adoption. The initiatives taken top management are very important to adopt the technology for the supply chain management. The intention which is developed to adopt the new supply chain technology is also mainly dependent upon the top management initiatives. The development of the intention of the e-supply chain management system and adoption of technology is also dependent upon the integration of customers with organization. The customer who is closely linked to the organization provides key information which can be crucial to adopt the technology. Moreover, intention and technology adoption is also dependent upon the structure of the organization as well. All of these assumptions are supported by the results of the present study. Moreover, the intention to use specific technology also mediates significantly among customer integration, top management support and organizational structure and adoption of new technology. These results are consistent with the findings of past studies. The outcome of the present study is important for the practitioners of the supply chain in the banking industry. The study contributes to filling the gap regarding the limited study of using technology in supply chain management.

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