Quality In E-Procurement Success

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ABSTRACT

Nowadays, the quality of virtual service is diminishing, in which different aspects of E-business industry is signifying, especially in the business to business (B2B). E-procurement is part of the e-business, therefore, quality factors of E-procurement originates from e-business. Much research has focused on the critical success factors of E-procurement, however, when it comes to implementation, many E-procurements fail, which can be very costly. This article attempts to increase the success rate of E-procurement, and ensures that the success of E-procurement is more sustainable. This research estimates the structural equation model by collecting data from 208 managers to employ quantitative analysis to investigate the relationship between E-procurement quality factors. The result of this research shows that the quality of the organization culture has partial mediator relationship to the success of E-procurement. Meanwhile, the quality of IT infrastructure does not have a mediator relationship with the success of E-procurement. Lastly, quality of knowledge management has a full mediator relationship with the success of E-procurement and it does not affect the dynamic capability of organization directly.

Keywords: E-Procurement; B2B Quality; E- Business; Service Quality; Dynamic Capabilities Theory

INTRODUCTION

Supply-Chain Management (SCM) develops through the successful process flow of procurement, in which the flow of the overall chains is a crucial factor that can affect the whole chain performance. Besides, "Internet Revolution" in 1990s has sparked the emergence of WWW (World Wide Web), ERP (Enterprise Resource Planning), SCM, and electronic technology; these have been responsible in pushing businesses to venture across borders through e-business. Under those circumstances, the quality of the job and the answers to the questions of "which" and "how" business process model will be utilised for implementing E-procurement, become very important. With due attention given to all E-procurement business models, most of the supply chains fail because of low quality E-procurement, which cannot achieve the pre-defined goals and targets (Kothari, Hu, & Roehl, 2005).

This research relates to the aspect of quality as it helps the supply chain to attain a higher success rate of E-procurement strategic goals. Service quality models such as the SERVQUAL and INDSERV are the most common models used to study the total quality management in B2B and purchasing quality to analyse the gaps between the perceived and the real quality perspectives. Moreover, the roles of IT and the theory of Dynamic Capability are integrated by the supply chain system, which explain the success of E-procurement. SCM is the most effective means which can potentially bring competitive advantage into organizations (Lattimore, 2001). It is also a tool which plays a critical role to achieve customer satisfaction (Mentzer et al., 2001). In the supply chain, information is critical, since it plays a key role in reaching the coordination of all parties involved. Information systems and technologies are potential facilitating tools that could help achieve this coordination/integration, thus enabling the entire supply chain to reach a virtual integration.

This research identifies three main dynamic capabilities for E-procurement adoption and development from the quality perspective, which are: 1) Organization culture and structure; 2) IT infrastructure and technology; and 3) Knowledge management capability. The objective of this paper is to find out how the quality in critical dynamic capability of E-procurement can influence its success and implementation. Therefore, the objectives of this research are:

1. How does the quality in the organization culture in its E-procurement initiative and capabilities affect the success of E-procurement?
2. How does the quality in IT- infrastructure in its E-procurement initiative and capabilities affect the success of E-procurement?
3. How does the quality in Knowledge Management Capability in its E-procurement initiative and capabilities affect the success of E-procurement?

As for the contribution of this research, firstly, this research applies the Dynamic Capabilities Theory for E-procurement success and the sustainability of E-procurement service in the supply chain. Therefore, this research identifies the E-procurement capability and dynamic capability, which it shows the applicability of DCT in electronic service and improvement. Secondly, this research combines quality model and operational Theory of DCT to E-procurement success. The INDSERV and B2B quality models introduce the initiative and implementation of quality factors for E-procurement, which is the novelty of this research. Therefore, this research develops the structural equation model for sustainable success of E-procurement. The paper explains about the theoretical support and the analysis of the quality model that determines the success of E-procurement.

Conceptual Framework and Theoretical Support

The B2B Service quality measurement and conceptualization has different models, in which in the years of 1988, 1991, and 1994, Parasuraman and colleagues used the SERVQUAL scale model (Ashnai, 2006; Burgess, 2014; Goetsch & Davis, 2014; Gounaris & Gounaris, 2005; Kajan, 2012; Lee & Gregory, 2010; Naudé et al., 2007; Rahayu & Anggriawan, 2014; Segarra-Moliner, Moliner-Tena & Sánchez-Garcia, 2013; Su, Song, Li, & Dang, 2008; Sun et al., 2014; Van Aerschot, 2007). Besides, the SERVQUAL scale, B2B service is naturally more sensitive and known to have an initial good and long-term relationships before any development in the quality (Naudé et al., 2007). It is also the reason why the SERVQUAL scale is not admired in the B2B context (Hussein et al., 2015).

Gronroos abstracted the first quality model in a B2B context with two dimensions, functional and technical qualities (Brensinger & Lambert, 1990). The functional quality is "the process and the interaction during service provision, while the technical quality covers the aspects of service outcome" (Hussein et al., 2015). Afterward, Gronroos established six dimensions "professionalism and competence/ skills, reliability and confidentiality, attitudes and behavior, accessibility and flexibility, error and reputation fixing and credibility" for B2B service quality evaluation (Hussein et al., 2015). Morgan followed the Gronroos dimensions, with the method of service delivery as the process that is obtained from service delivery as a result (Al-Awadhi, 2009). Furthermore, Szmigin proposed a model with three dimensions; hard (process), soft (interaction) and outcome (Ashnai, 2006;Badlani & Paryani, 2015; Gounaris & Gounaris, 2005).

The quality in the B2B is different whereby the customer is absent from the process component (Bienstock, Mentzer & Bird, 1996). Instead of using the performance measurement perceived and expectation gap analysis or SERVQUAL, the model needs to follow the INDSERV and Gronroos (1984) model, which is based on the technical and functional factors (Durvasula, Lysonski & Mehta, 1999), arising from its needs in the internal and external factors between two companies (Gounaris, 2005; Ladhari, 2008). The INDSERV model involves several dimensions such as the potential quality, hard process quality, soft process quality, and output quality as quoted from Lee (2010). In addition, the International/Industrial, Marketing and Purchasing Group (IMP) interaction model develops a quality model for B2B interaction (Ford & Group, 1990; Gadde & Hakansson, 2001). These factors are social exchange, cooperation financial exchange, information exchange and adaptation in the interaction model (Rahayu & Anggriawan, 2014). Table 1 summarizes all these models their usage and dimensions in relation to B2B quality.

Table 1. Evaluation service quality model in a B2B environment

B2B service quality model	B2B service quality dimensions	Study outcome in B2B context	This research consideration	References
SERVQUAL model	"Reliability, availability, ease of use, assurance, timeliness, tangible, empathy"	Timeliness, availability most significant factor for quality of professional buyers.	Study Reliability, Timeliness, availability as quality factors E-procurement Implementation	Bienstock et al., 1996
SERVQUAL model	"Tangibles, Service Reliability, Responsiveness, Assurance"	The predictive quality of SERVQUAL in B2B context was low.	Not applicable	Brensinger & Lambert, 1990
INDSERV model	"Potential quality. Hard Process quality, Soft Process quality, Output quality"	INDSERV model better predictors than SERVQUAL model	All factors apply in quality model of this research	Durvasula et al., 1999
Gronroos (1984) model	"Technical and functional quality"	Very significant factor in B2B context	All factor applicable in this research	Patterson & Spreng, 1997
Revised SERVQUAL model	"Service reliability, credibility, service competence, intra-organizational communication, service flexibility, financial trust and pleasant environment"	All factors have significant impact on service quality perception of professional buyers.	This factors all consider as E-procurement Implementation and capability quality factors	Seth, Deshmukh, & Vrat, 2006
IMP model	"Social exchange, cooperation financial exchange, product/ service exchange, information exchange, and adaptation"	Social exchange and cooperation are relatively more important than others for evaluation of quality for professional services	Social exchange and cooperation use for capability quality in E-procurement	Woo & Ennew, 2006
2B-RELPERF scale model	"Relationship policies and practices, Relationship commitment, Trust in the relationship, Mutual cooperation"	The buyer–supplier relationship is the knowledge sharing and knowledge management where organization move to cooperation Organizational culture	All factors consider in this quality model	Badlani & Paryani, 2015; Foster, 2013; Hussein et al., 2015; Naudé et al., 2007; Sun et al., 2014; Tserpes et al., 2008

E-procurement implementation process has three categories, namely direct procurement, indirect procurement and sourcing (Gupta & Browning, 2007). It comprises of four separate processes, namely supplier selection, making order, order fulfillment, and financial settlement and payment (Wright, 2002). Its implementation and process are system and technology, organization and management and practice and process (Caniato, Golini, Luzzini, & Ronchi, 2010; Kaliannan, Awang & Raman, 2009; Mahbubur, 2008; Roger & Greylord 2003; Schotanus, Bakker, Walker & Essig, 2011; Vaidya, Callender, Sajeev & Gao, 2004).

Quality model of implementation of the E-procurement is translated into two dimensions quality model by Grönroos (1984) and INDSERV model. Firstly, system and technology potentially can be integrated with the old or new initiatives technologies in adopting e-business (Caniato et al., 2010; Kaliannan et al., 2009; Lee & Whang, 2001; Mahbubur, 2008; William & Presutti, 2003). Therefore, the quality of system technology is equal to the potential quality of E-procurement. Secondly, organization and management are required soft skills to manage the purchasing process (Brandon-Jones, 2009;Cagnazzo, Taticchi, Bidini & Sameh, 2009;Filos, 2006; Walker & Harland, 2008). Consequently, the quality in organization and management is covered in the soft quality in INDSERV model. The practice and process include exchange of information and material process (Harrigan, Boyd, Ramsey, Ibbotson & Bright, 2008;Jahnukainen & Lahti, 1999; Vaidyanathan & Devaraj, 2008). Quality in the practice and process are the hard qualities in the INDSERV model. Besides, E-procurement success is an outcome quality model of this

research. Hence, this model studies the relationship between the E-procurement capabilities (quality) in potential, soft, hard and outcome quality of E-procurement. This relationship is explained by Dynamic Capability Theory (DCT).

DCT is the ability to integrate, construct and re-arrange organizational internal and external factors as a core competencies, in order to adapt to the dynamic and ever changing environment (Teece, Pisano, & Shuen, 1997). Dynamic capabilities are some general internal processes of organizations or routines which have been embedded into the firms' processes or routines (Helfat et al., 2009; Maritan & Peteraf, 2007; Zollo & Winter, 2002), which is shown in figure 1.

Figure 1. Summary of DCT definition (modified Barney & Mackey, 2005)

However, having considered this definition, it can be found that the focus of DC Theory is on the organization itself and the possible capabilities, which are located outside the company's boundaries, are neglected while there is a connection between IT investment and dynamic capabilities (Rai, Patnayakuni, & Seth, 2006). The aforementioned integration can be categorized into two different domains, namely SC process integration and SC-related IT integration (Malhotra, Gosain, & Sawy, 2005; Rai et. al., 2006; Wang, Tai & Wei, 2006). The higher level of integration in a supply chain system leads to greater knowledge capability in the organization (Malhotra et al., 2005). However, the integration between the supply chain processes can only happen when an appropriate IT platform is available (Rai et. al., 2006). The current study in the supply chain management and E-procurement uses DCT as summarized in table 2. The capability effect on the process and its routine are based on DCT. Therefore, the relationship of capability and success affects the quality of E-procurement implementation. The conceptual framework of this paper is presented in figure 2, with below hypothesizes:

H1: Quality in system and technology, quality in organization and management, quality in practice and process mediate the relationship between quality in organizational culture and E-procurement success.

H2: Quality in system and technology, quality in organization and management, quality in practice and process mediate the relationship between quality in IT-Infrastructure and E-procurement success.

H3: Quality in system and technology, quality in organization and management, quality in practice and process mediate the relationship between quality in Knowledge Management Capability and E-procurement success.

Table 2. Current studies in supply chain management and E-procurement by DCT

	Purpose	Capability	Reference
Dynamic Capability Theory	**CRM development**	Marketing capability	Maklan & Knox, 2009
	Financial performance	Strategic group (SG) and product life cycle (PLC).	Chiou, 2011
	Performance	E-business capabilities, Inter e-Business	Zhao, Lu & Liu, 2010
	Company success	Purchasing, Manufacturing , Sales and Marketing, Performance management	Molnár1 et al., 2011

Figure 2. Framework for E-procurement implementation success
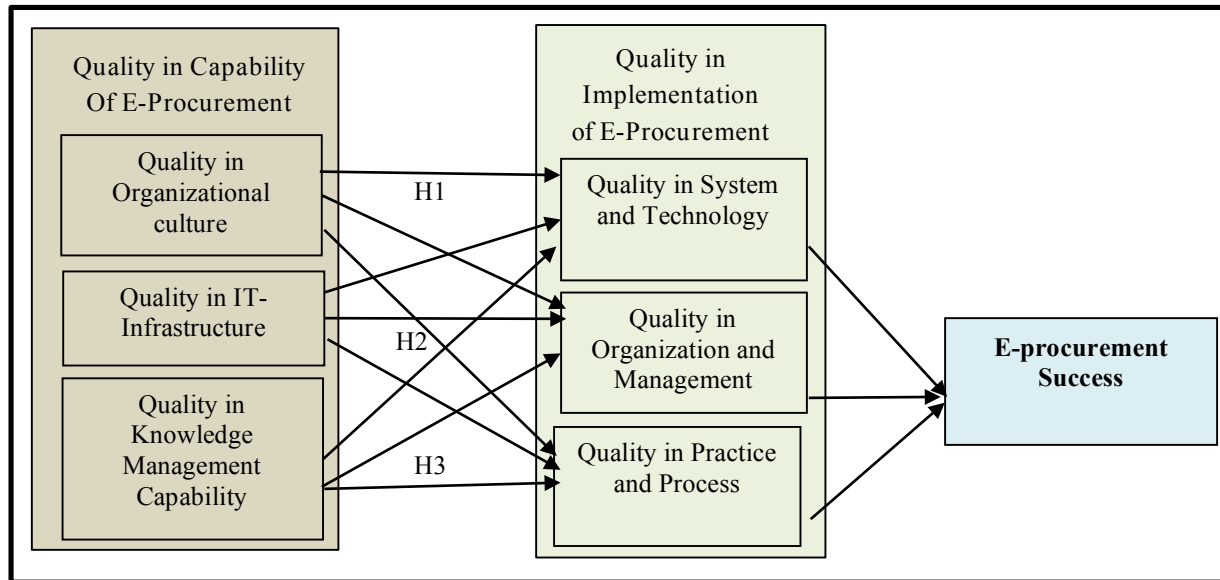
Quality in E-Procurement Success Capabilities

An E-procurement capability is needed to prepare the organization to adopt and deploy the new service or electronic service (Perera, Eadie, Heaney, & Carlisle, 2006). E-procurement initiatives are the capability for E-procurement adoption (Vaidya et al., 2004). The first capability, organizational culture, and part of the strategic quality development factors are also important in the E-procurement improvement (Ashnai, 2006). Quality of organizational culture is defined as removing the roadblock to improvement, change and cooperate relationship in B2B context (Lee & Gregory, 2010). A positive intention to adopt new systems in organizations could make organizations flexible (Chow et al., 2008).

Flexibility helps both sides of the trades, i.e. buyers and sellers, to form integration between their systems. The organization culture that promotes innovation and development can be evaluated by the entrepreneur organization factors such as flexibility level and innovation and creativity level (Hussein et al., 2015; Luftman & Kempaiah, 2008). It is improving the supply chain, sub–suppliers, and their network; all of which need cooperate culture capability (Leirmo, 2013). Co-operation includes compatibility of mutual goals, inter-firm communication, participative decision making, ideological agreement and the use of power in a non-pressurized fashion. Quality in cooperation needs detailed communication, mutual respect, trust, teamwork through IT facility, which is more effective (Hussein et al., 2015). Quality perspective of IT infrastructure comprises of the software, hardware, network equipment and data form and format exchange data and the EDI technological performance (Bailey & Jibril, 2006).

Better quality in communication and data or money exchange related to the standard format helps partners to face less difficulty in accessing to the related information (Brandon-Jones & Carey, 2011 ; Eadie, Perera, & Heaney, 2010; Hawking & Stein, 2002; Kaliannan et al., 2009; Yu-hui, 2008). Since there is a payment section in the process of E-procurement systems, the issue of security is an important factor for both sides of the trade, sellers and buyers (Eadie et al., 2010). Besides, communication differentiation makes it very convenient for customer and partner to exchange information and money (Eadie et al., 2010). In addition, without knowledgeable employee (IT expertise) to update and ensure the maintenance of the IT-infrastructure will not be affected from the IT benefits (Athanasopoulou, 2009). One of the requirements in the success of procurement and supply chain is the ability for knowledge sharing and capability in a mature relationship between the buyer and seller. Quality perspective of knowledge management capability is leveraged on the flow of knowledge inside the company. On the other hand, since SCM is a multi-player initiative, and is deployed between two or more companies, knowledge management helps the technology transfer between partners and is able to integrate the whole game (Chow, Choy, & Lee, 2007)

Quality perspective of knowledge management capability earns importance while the issues of sufficient knowledge, education and training in both buyers and sellers come through. This knowledge would be about content management, relationship management, e-tendering, e-marketplace, e-auction/ reverse auction, e-categories/ purchasing, and e-invoicing thus making the trust and transparency while knowledge capability includes Knowledge acquisition, knowledge application and knowledge sharing (Ashnai, 2006; Athanasopoulou, 2009; Badlani & Paryani, 2015; Gounaris, 2005; Gounaris & Gounaris, 2005; Hussein et al., 2015). Quality perspective of knowledge management capability can produce better performance (Shirzad & Bell, 2013). The different dimensions of quality perspective of knowledge management capability include acquisition, conversion, application, and protection (Hsu, 2012).Quality perspective of knowledge management capability is based on the knowledge-based theories such as Knowledge Acquisition, Knowledge Application and Knowledge Sharing (Azadegan & Ashenbaum, 2009; Jutla, Craig, & Bodorik, 2001). Quality perspective of knowledge management capability serves to create knowledge and convert the tacit knowledge to explicit knowledge.

Quality in Implementation of E-Procurement

Successful implement of E-procurement steps (system and technology, organization and management, practice and process) are vital to increase the efficiency and effectiveness of E-procurement system. The quality in the system and technology is related to the compatibility and integration of characteristics of the old and new technologies (Caniato et al., 2010; Kaliannan et al., 2009; Lee & Whang, 2001; Mahbubur, 2008; Vaidya, Sajeev, & Callender, 2006; William & Presutti 2003). The integrity of IT-infrastructure such as financial system, MIS system, IS system with an E-procurement system which will result in better and smooth electronic situations with less problem and higher quality (Koorn, Smith, & Mueller, 2001; Leipold, Klemow, Holloway, & Vaidya, 2004). Besides, these are needed to be reliable to lessen the cost of procurement system (Caniato et al., 2010; Kaliannan et al., 2009; Mahbubur, 2008).

Service reliability one of the SERVQUAL scale which is means making promises (Hussein et al., 2015). Electronic B2B service reliability refers to consistent, timely, dependable and unfailing service delivery (Patterson & Spreng, 1997). Besides service delivery reliability, another factor of E-service quality is the service availability (Seth et al., 2006). Available technical opportunities involve social influencing process. Various teams with specific expertise, different leadership styles, strategic human resource management initiatives and efficiencies and effectiveness of planning, organization and control of management of purchasing procedures have an impact on the quality action of the E-procurement process (Brandon-Jones & Carey, 2011 ; Cagnazzo et al., 2009; Filos, 2006; Walker & Harland, 2008). From efficiency, it can be translated into reduction of error in decision making when ordering and inventory management as well as supplier selection.

Furthermore, the learning level in the organization of the E-procurement department is considered as an efficiency of E-procurement when the capacity and scheduling the logistics planning is an efficient investment for implementing a productive E-procurement system (Brandon-Jones, 2009; Millson, 2014;Vaidya et al., 2004). Moreover, in order to achieve the predetermined objectives of an E-procurement system, it should be designed and developed as a customer-oriented system. Indeed, any management system or technological hardware that, in any senses, cannot help the organization to create value for its customers is not align with the strategic maturity of performance of the organization (Woo & Ennew, 2006). Efficiency refers to three important aspects corresponding to accessibility and system availability, usability and design, with excellent result and financial performance or profitability. The implementation of an E-procurement system comprises of several processes and operational activities. These practices and processes include the capacity management of raw material, order placement, order tracking and product delivery. Basically, the outcome of these activities will be evaluated by customers based on two measures, namely accuracy (Harrigan et al., 2008; Jahnukainen & Lahti, 1999; Vaidyanathan & Devaraj, 2008) and the timeliness of processes and activities (Hawking & Stein, 2002; Vaidyanathan & Devaraj, 2008).

Accuracy in E-procurement implementation process refers to the preciseness of activities which some of them were mentioned earlier (i.e. order placement etc.). For instance, if the accuracy of a raw material in the operational process or a part of that is not compatible with the basic standards, assuming all the other processes of E-procurement are correct, a product is produced without being able to meet the customers' expectations. Another concern of E-procurement quality process is timeliness which relates to the on-time service delivery that needs to

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meet certain customer expectation. Furthermore, recognizing the competencies of special possessions, taking advantage of possible changes in the supply chain and E-procurement configuration(Harrigan et al., 2008). Configuration, is an ability to have transparency and vision of having a non-testable procedure, in order to have conformity between strategy and activity (Vaidyanathan & Devaraj, 2008). Besides, standard legislation and function can cause internal and external awareness (Harrigan et al., 2008).

RESEARCH METHODOLOGY

Respondents included purchasing or procurement managers of manufacturing industries who are currently in-charge of deployment of the E-procurement and have outstanding involvement in the economic contribution and development. The manufacturing companies selected were based on the five years market share and economic report. Among 700 surveys issued, 220 accurate and reliable responses were available for analysis. This survey was distributed or carried out in meetings, and through email and telephone interview. To ensure the reliability of different groups of samples, the one-way ANNOVA was run on the data to make sure that the data variation is not significantly different. Therefore, there is no significant difference between the responding surveys. The consistency of the latent variables was examined using the Cronbach alpha test which shows the minimum level of acceptance of coefficient is more than 0.7.

Construct validity is a validity of measurement and the relationship between the factors which is tested by discriminate and convergent validity. Hence, the reliability of measurement analysis happens with the confirmatory factor analysis (CFA). As a result, the EFA test shows that factor loadings of latent variables are more than 0.5. Besides, there is no significant correlation between the variables, as almost all the correlation is less than 0.7. The adequacy of the sampling for all the variables measurement was tested using the Kaiser Meyer Olin (KMO) test that shows a value of more than 0.6, which is acceptable. The convergent validity was tested using the EFA analysis through SPSS 20, in which the factor loading for variables are more than 0.5. Subsequently, the result of the EFA was moved to the AMOS 18 for CFA analysis and Hypotheses testing by (SEM) Structural Equation Modeling analysis. Model Estimation fit conducted using the Maximum Likelihood factors estimation (ML), the error term of factor measurement (Hoyle, 2012). All the model satisfied the requirements X2/DF= a =» 1< a < 5, P-value = b < 0.05 with 95% confidence level, RMR= c < 0.1, PCLOSE =d < 0.5, CFI = e > 0.9, GFI = f > 0.9, AGFI = f > 0.8, RFI = g > 0.9, TLI= h > 0.9, RMSEA= k < 0.1 and NFI= n > 0.9 (Loehlin, 2004).

ANALYSIS AND RESULT

Data analysis using the SEM model (Structural Equation Model) demonstrates the results and estimation of the structural model of this research as shown in figure 3. The indicators of fit model are satisfied with GFI of 0.99, which is more than 0.9 and AGFI of 0.849, which is more than 0.8. Other Indictors in this model has shown the fitness as table 3.

Table 3. SEM model Estimation

Chi- square χ2	3.956		=	X2/DF	1< 3.956 < 5	
Df	1		>	X2/DF	1< 3.956 < 5	
P- value	0.047 < 0.05 with 95% confidence level					
RMR	0.005< 0.1					
PCLOSE	.105< 0.5					
CFI	0.998 > .9	RFI	0.951 > .9	TLI	0.963 > .9	NFI	0.998 > .9
RMSEA	0.09≤0.1					

The Final model can satisfy the fit model requirement where it has RMSEA and RMR less than 0.1 and GFI, NFI, CFI all more than 0.9; therefore, the structure model is a good fit. This fit model proves how the structural relationship between these factors can cause success. It is proven how dynamic factors quality change the critical quality factors as a capability of E-procurement before causing the Final success and benefits of achievements by the dynamic capability theory. Common factor analysis during CFA analysis, there is not any issue in the data set and analysis is reliable.

Organizational culture explains the behavior the components within the system to make reliable relationship. Besides, a significant portion of the initiative value proposition of IT infrastructure and Knowledge management capability have often not ultimately delivered due to problems related to technology, business process, people and organizational issues. The organizational culture is important to adopt the organization to new knowledge and changes to best practice and process development. Organization and management act as an efficient and effective toward the practice and process of advancing the knowledge management capability and IT infrastructure for smoothing the flow of the information and material where all stockholders adopt and flexible to changes. Therefore, the quality of the Organizational culture, knowledge management capability and IT infrastructure effectively on the Implementation of quality in E-procurement which is tested in the model figure 3.

In figure 3 all the indicators have standard regression weight above 0.6, which show that all three quality indicators for each factors explain and represent them for measurement. Innovation, flexibility, Co-operation representation of the quality factors of organizational culture, where communication channel capacity, security and authorization capability, besides IT expertise level and facility capacity is a good measurable indicator for IT infrastructure. Regarding knowledge management capability also knowledge acquisition, application, and sharing capability show the organizational power and quality in knowledge management it is because standard regression weight are above 0.6.

Furthermore, the E- procurement implementation factors also has respective indicators for measurement which in the analysis shows they are satisfied requirement for measurement. Quality in System & Technology present by level of capability of integration and compatibility, reliability and availability of system and technology. Whereas, the quality in organization & management evaluate based on efficiency, effectiveness and profitability of E-procurement. And lastly, the quality in E-procurement practice and process measure by the Accuracy, timeliness and configuration of flow of the material and information.

Three main factors, namely total effect, direct and indirect effects have significantly explained the relationship of each quality in the capability of E-procurement success. Firstly, quality in Organizational culture shows direct significance of $0.002 < 0.05$, the indirect significance of $0.002 < 0.05$ and total effect of $0.048 < 0.05$, with 0.95 confidence interval. As a result, quality in 'system and technology', 'organization and management' and 'practice and process' serve as partial mediators of the quality in organizational culture and E-procurement success relationship. It means that, quality of both organizational culture and E-procurement success have a direct relationship with these mediators' qualities in organizational culture.

Secondly, the quality of IT- infrastructure and E-procurement success have a significant direct effect of 0.001, the indirect effect is not significant with p-value $.124 > 0.05$, and the total effect of $0.002 < 0.05$. This shows that hypothesis two is rejected and IT- infrastructure has a direct effect on E-procurement success where it is also effected on a single element of E-procurement implementation. Therefore, quality in system and technology, organization and management, process and practice are not mediators in the E - procurement relationship with IT infrastructure.

Finally, the quality of the knowledge management capability and E-procurement success as third hypothesis is totally accepted. It is because the direct effect is not significant with p – value of $0.149 > 0.05$, indirect value of $.001 < 0.05$ and a significant total effect with $.001 < 0.05$. Therefore, the quality in 'system and technology', 'organization and management' and 'practice and process' are full mediators of quality in knowledge management capability and E-procurement success. This means, the quality in knowledge management through changing quality in E-procurement implementation factors can change the possibility of success of E-procurement.

Figure 3: Research model Estimation
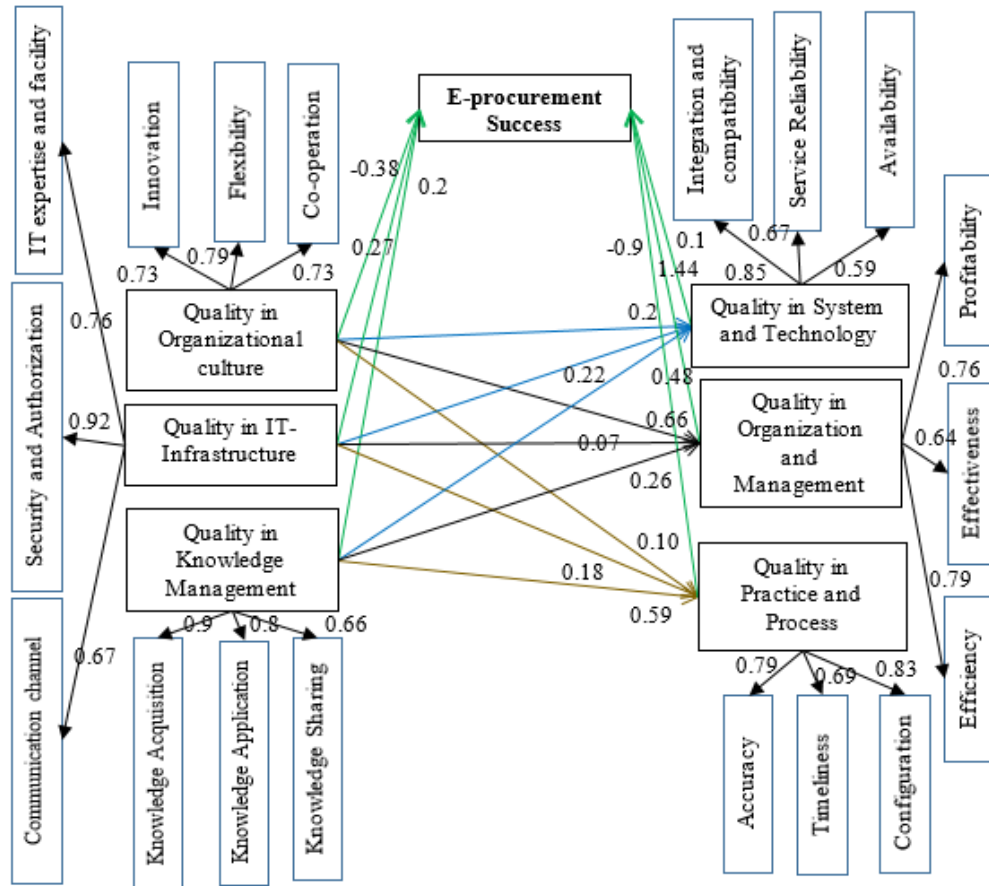
The results deliberate on the sustainability and steadiness of electronic procurement service, which are vital for B2B business to reduce costs and take advantage of its benefits. A lot of statistics in many countries show a high rate of loss of E-procurement. Total quality management (TQM) is one of the most valuable methods to reduce error and increase possible success. Hence, by introducing the quality factors of the E-procurement capability to support the quality in dynamic capability of an E-procurement implementation may result in better performance.

Furthermore, by commingling the quality models of B2B and DCT has introduced a new and specified quality E-procurement model which explains the logical relationship between the factors. This model can be utilized not only to develop the B2B industry, but also to produce a better national economic environment with more successful businesses via the reduction of the inefficiency of B2B business and supply chain.

Regarding future research and recommendation, electronic service are one of the most common needs of the new industrial environment and economic growth. The international business need to adapt to the turbulence of the environment. This quality factor can be applied for global supply chain to improve the ability of successful implementation of e- procurement in the world. Hence, as a development of the e- procurement, continuous research should be done for strategic development to remove more barriers of e-procurement or for achieving more benefits of e-procurement. Further research is needed generalizing the findings of this research in different industries. Otherwise, future research also can happen by applying this framework in a different industry or service scope.

The other future research can focus on extending the model with more variables or different variables. It means that, Applying and extending this framework for more quality factors in e- procurement. Whereas, it can use the other theory that can be mixed with this research theory. Besides, it can use other quality model for an evaluation of the

quality in e- procurement. Besides, it can identify the moderator factors or other mediators that effects on the relationship and significance of relationships of the model.

Lastly, this research can be recommended for comparing the companies who apply and do not apply the e-procurement, to evaluate the different perception regarding quality development of the E-procurement framework. Or by using other quality model and theories to evaluate the e-procurement success and compare with this research result.

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