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AN EVALUATION THE IMPLEMENTATION OF E-PROCUREMENT APPLICATION AT CONTRACTOR COMPANY

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ABSTRACT

To prove that the company has implemented the principles of Good Corporate Governance (GCG), companies can digitize the procurement process by developing an E-Procurement application. One of the contractor companies that utilize E-Procurement is PT. XYZ. This research was conducted at PT. XYZ to evaluate the successful implementation of the E-Procurement application using DeLone & McLean. Success is represented as a Net Benefits variable measured through the Use and User Satisfaction variables and is connected to the Quality System, Information Quality, Service Quality. The questionnaire data was distributed to application users and collected as many as 304 respondents. The questionnaire data were collected and then processed using SmartPLS 3.0 and the results were that 5 out of 10 hypotheses were rejected, 3 of which were not significant and the other 2 were significant. Then for the other 5 hypotheses are accepted and are entirely significant. So it is evident that Net Benefits are greatly influenced by Use and User Satisfaction through System Quality, Information Quality and Service Quality.

Keywords: *E-Procurement; IT Evaluation; Delone and Mclean; User Satisfaction; Net Benefits*

1. INTRODUCTION

Currently, the use of E-Procurement plays an important role in increasing a company's competitive advantage. Good E-Procurement implementation will help a company's success in competing with other companies. Companies in general have implemented E-Procurement in order to implement the basic principles of Good Corporate Governance (GCG) and minimize problems in the implementation of goods and services procurement [1]. To prove that the procurement process is in accordance with the principles of GCG, a regulation is needed that regulates the implementation of the procurement of goods and services because in its implementation it must comply with government regulations. Then to minimize the occurrence of fraud in the procurement of goods and services, it is necessary to develop an E-Procurement application in the company.

Apart from companies in general, E-Procurement is also required for contractor companies. The application of E-Procurement in contractor companies helps in providing goods and services needed for road and bridge construction projects, transportation infrastructure such as seaports and airports, electricity, buildings, and the property industry. One of the contractor companies that utilize E-Procurement is PT. XYZ. In the early stages of developing the E-Procurement application at PT. XYZ system quality and information quality were not optimum. So that there are many complaints from internal users and vendors in using the application. Information quality problems were found during the auction process, the application did not display the total price of goods being auctioned and there was no notification report from the E-Procurement application which indicated that the vendor had registered as a List of Capable Partners.

Decreases in the use and user satisfaction of the application also occur. For example, the use of applications in 2020 during the COVID-19 pandemic has decreased a lot because the competence of human resources is not yet competent to adjust the procurement process manually. The decrease of user satisfaction can also be seen from the number of auction packages that have not been completed. It can be seen that in May - September 2020 no one had reached 100% of auction completion, as shown in Figure 1.

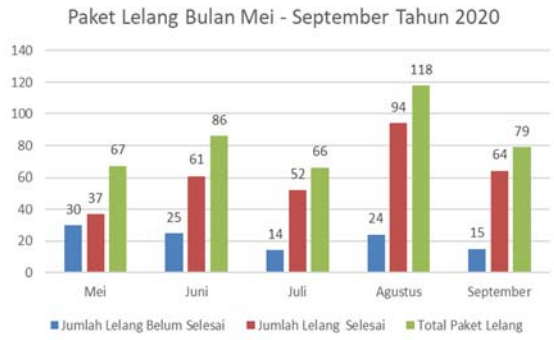

Figure 1: Auction Package from May - September 2020

Even though there was an increase in the percentage of auction completion every month, none of them reached 100%. This was caused by two statuses that indicate the incomplete auction in the E-Procurement application, namely Draft and Request for Approval. For Draft status, some E-Procurement application users in the field / project did not complete their auction to the Published stage because when the auction status was published, the data that had been inputted into the E-Procurement application could not be changed or deleted in the application so users must be careful in doing so input data to the application. In addition, the status of the auction in the form of Request for Approval related to the request for approval to the superior also showed that the auction had not been completed since the supervisor who had not approved the auction had had entered the Published stage due to several things, such as inappropriate input prices, etc. This made the users less satisfied with the application output.

From the above problems, the authors want to evaluate the successful implementation of the E-Procurement application that has been running at this company using DeLone and McLean IS Success Model. The reason for using DeLone and McLean is because the success of an information system can be assessed from the user satisfaction of the system [2]. Meanwhile, net benefits are obtained by users after interacting with an information system related to usage and user satisfaction [3].

2. LITERATURE REVIEW

2.1 Delone & McLean IS Success Model

In measuring the level of success of an information system, a model is needed in analyzing its success factors. One of the models is Delone and McLean's information system success model as shown in Figure 2. DeLone and McLean in developing an information system success model describe six elements or factors of information system measurement, including: System Quality, Information Quality, Usage, User Satisfaction, Individual Impact, Organizational Impact [4]. According to [5] based on the information system success model, DeLone and McLean suggested that researchers should systematically combine individual measures of information system success categories to create a comprehensive success measurement instrument.

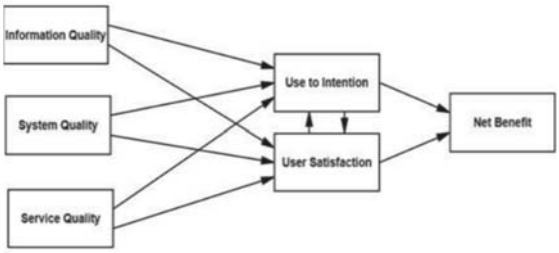

Figure 2: Delone McLean IS Success Model 2003

In the use of the E-Government system where users use the system voluntarily and the Use variable is considered to be closer to the meaning of success, this study adopts the Use variable rather than Intention to Use as a measure of the success of the Information system [6].

2.2 System Quality

The quality system according to [7] is used to measure the quality of the technological system itself. According to [8], system quality is a measure of information system processing. Based on the opinion of several experts, it can be concluded that system quality is used to measure the quality and performance of the system as measured by how well are the capabilities of software, hardware and information system procedures provide information about user needs. In their study, [9] describe five indicators used in system quality, namely System Reliability, System Flexibility, System Integration, System Accessibility, System Response Time. Research by [10] show that there is a positive relationship between System Quality and Usage. System quality was measured and perceived as ease of use, and a positive relationship was found with use across multiple systems at the individual analysis level. [11] shows that there was a positive relationship between management support information system functionality, which was one measure of System Quality that was found to be significantly related to User Satisfaction. For knowledge management systems, System Quality was also found to be strongly associated with User Satisfaction [12]. For websites, System Quality was measured as reliability and download time, significantly associated with User Satisfaction [13].

2.3 Information Quality

Information quality is a measure of the quality of information system content [14]. According to [15], the quality of information is a function concerning the value of information output generated by the system. [16] describes the five indicator scales used in measuring the quality of information, namely completeness, precision, reliability, currency, output format. Based on the opinions of the experts above, it can be concluded that the quality of information is a measure that focuses on the desired output characteristics of the system output and the output value for the user. [17] found that Information Quality was significantly related to Usage when usage was measured by system dependency. A study of knowledge management systems found that the quality of information or knowledge was significantly related to Intention to Use [18]. At the organizational level, the London Ambulance Dispatch System found a positive relationship between Information Quality and System Usage [19]. The relationship between Information Quality and User Satisfaction is strongly supported in the literature [20]. Studies that specifically examine aspects of Web site information quality, such as content and layout, have found a significant relationship between Information Quality and User Satisfaction [21].

2.4 Service Quality

Service quality according to [22] is the quality of support system users receive from information systems organizations and support from IT personnel. According to [23] there are three indicators that affect Service Quality, namely Assurance, Empathy and System Responsiveness. From the above understanding, it can be concluded that Service Quality is more directed at the quality provided by IT personnel or information systems organizations. At the organizational level, in the London Ambulance System study, the effective role of technical staff namely, Quality of Service is positively related to system end use [19]. [24] found that the relationship between the IS function and users and the quality of support and services provided by the IS function had an impact on User Satisfaction.

2.5 Use

Use refers to how often users use information systems, which can be measured from the number of uses, frequency of use, intended use and suitability of use [7]. According to [23] the more frequent users use information systems, in general it will be followed by a higher level of learning that users get from using information systems. From the two experts' opinions above, it can be concluded that use is the way and level at which users take advantage of the capabilities of an information system. In [14] study, the indicators used to measure usage were daily use time and frequency of use during work. It was found that in a medical information system study Usage was significantly related to User Satisfaction as measured by the number of daily uses and frequency of use. In the context of knowledge management, [16] identified a significant relationship between Intention to Use and User Satisfaction and a significant relationship with Net Benefits as measured by increased job performance. [24] identified a significant relationship between Usage and User Satisfaction in the context of e-learning.

2.6 User Satisfaction

One of the benchmarks for the success of implementing information systems is user satisfaction. According to [27] the main determinant of community satisfaction is the perception of service quality. Information system user satisfaction shows how satisfied users are and how confident they are in the information system provided to meet their needs in completing user work [1]. According to [23] indicators to measure User Satisfaction are Information Satisfaction (Repeat Purchases) and Overall Satisfaction (Repeat Visits). User satisfaction is strongly related to usage when measured by system dependency ([12]; [17]). [28] found a strong relationship between User Satisfaction and Intention to Use when mediated by technology acceptance constructs. The empirical results show a strong relationship between User Satisfaction and Net Benefits [16]. [29] investigated the relationship between User Satisfaction and organizational impact and found that satisfaction is correlated with performance based on profitability and income. Another study according to [30] found similar results when evaluating the relationship between user satisfaction and organizational performance of an ERP system.

2.7 Net Benefits

Net Benefits is the impact of using information systems on the quality of user performance both individually and within an organization, including productivity, increasing knowledge and reducing time spent searching for information [7]. These variables are the impact of the existence and use of

information systems on the quality of user performance both individually and within an organization. In the study, [31] measured the indicators of Net Benefits, namely: Speed of Completing Tasks, Job Performance, Effectiveness, Ease of Work, Usefulness in Work.

2.8 E-Procurement

According to [32], E-Procurement is the procurement of goods and services electronically which is usually carried out by an organization, either a company or a government. [33] define E-Procurement as the integration, management, automation, optimization, and empowerment of an organization's procurement processes through tools, technology, electronics, and web-based applications. According to [34], E-Procurement is the integration and electronic management of all procurement activities including purchase requests, assignment of ordering rights, delivery, and payments between buyers and suppliers. From the various definitions above, it can be concluded that E-Procurement is an electronic system that integrates management in the procurement of goods and services carried out in an organization or company. This application also includes decision making and ease of communication between companies and vendors. The use of the E-Procurement system in the company is believed to provide convenience and efficiency related to the procurement of goods and services. E-Procurement is implemented to ensure that the procurement process can take place in a more transparent and professional manner and to prevent corruption, collusion and nepotism in the procurement of goods and services. It is because the opportunity for direct contact between providers of goods / services and the procurement committee becomes more practical and faster, saves time, saves operational costs, and its implementation eases the accountability for the procurement process and document storage. [35] explained that the implementation of E-Procurement in Indonesia aims to eliminate corrupt practices that occur in the procurement of goods and services. A transparent process in implementation will provide equal opportunities to providers of goods and services.

2.9 Related Research

The [36] in his research uses the Delone and McLean IS Success Model as the underlying theory to test the relationship between three independent variables (information quality, system quality and service quality) and user satisfaction and net benefits using the e-procurement system in government-owned hospitals. The results of this study have provided a conceptual background for testing the IS success model in the hospital which consists of the key constructs of IS success (system quality, information quality, and service quality). In practical application, the proposed framework provides a solid understanding of the impact of key IS success factors on user satisfaction and the overall success of e-procurement systems in government hospitals.

[37] in her research analyzed the determinants of the success of the e-procurement system and their impact on perceived transparency from the supplier's perspective and answered both questions by applying a covariance-based structural equation modeling approach to analyze survey data from 157 respondents. This study found that only system quality, service quality, regulation, trustworthiness, user satisfaction, and perceived benefits determine the success of an e-procurement system. However, only belief in the e-procurement system dominantly influences perceptions of transparency.

In the research, [38] examined the factors that influence the Information Sharing Model in Supporting the Implementation of e-Procurement Services: The Case of Bandung City. The Bandung e-Procurement Information Sharing System is categorized in stage 1 in the Estevez model where the main concern is the assessment of the benefits and risks of implementing the system using the Delone & McLean Information System Success model (D&M Bandung city. The model is then empirically tested using survey data collected from 40 listed supplier companies. This model introduces Information Quality, System Quality, and Service Quality as independent variables; Usability and User Satisfaction as intermediate dependent variables; and Perceived Net Benefit as the final dependent variable. The results show that all constructs, in order of appearance: Service Quality, System Quality, and Information Quality, significantly affect the perceived benefits of the Information Sharing Model in Supporting E-Procurement Service Implementation through Usability and User Satisfaction. This model successfully represents predictors for the benefits of sharing information with rounded RSquare = 0.6. The other 40% of variability is due to unknown factors.

[39] synthesized the extant literature on service convenience and performance failure to develop a model that takes into account vendor satisfaction with e-government procurement systems. Based on the compatibility principle, not only differentiating between performance failure and service convenience as object-based and behavioral beliefs, but also service performance and convenience are strong predictors of vendor satisfaction with e-government procurement systems. Furthermore, service convenience as a behavior-based belief, is influenced by object-based beliefs of performance failure. Whenever a failure occurs in an e-

government procurement system, it negatively affects the vendor's assessment of service convenience, leading to dissatisfaction with the system. After analyzing survey data collected from 227 Indonesian-based vendors regarding their experiences with e-government procurement systems, it was found that vendor evaluations of service convenience are negatively affected by information availability, functionality, and system failure and that the impact of these failures varies. across multiple dimensions of service convenience. In turn, service convenience and performance failure have opposite effects on vendor satisfaction with e-government systems.

In [40] research as an effort to shorten the supply chain and improve the efficiency, effectiveness and transparency of procurement processes, the Indonesian government created a public procurement plan information system (SIRUP) as part of e-Procurement used by government agencies in Indonesia. This research was conducted to analyze the determinants of SIRUP implementation in Indonesia and their impact on the performance of procurement personnel using a modified research model from Delone & McLean theory, Task Technology Fit (TTF) and Technology Acceptance Model (TAM). The research model was tested using Partial Least Square Structural Equation Modeling Approach (PLS-SEM) with SmartPLS 3.0 software. The results of the study from 239 respondents showed that system quality, information quality, service quality, use, user satisfaction, subjective norms, task characteristics and suitability of task technology were factors that influenced the implementation of SIRUP on the performance of procurement personnel. However, only task-appropriate technology and user satisfaction predominantly affect procurement personnel performance. In the end, this research can be a feedback for the Goods / Services Procurement Policy Institute (LKPP) as the main stakeholder of SIRUP to improve their systems and service quality.

[41] obtained empirical evidence of the successful implementation of e-procurement by local governments, seen from the system and quality of information. Implementation success refers to the use and satisfaction of users, who contribute to the organization and the individuals within it. The research method is a quantitative method using a questionnaire. The study population was the procurement committee in the local government, while the samples were members of the procurement committee in the Surakarta City Government. Data were analyzed using SmartPLS 3.0. The results of statistical analysis show that the quality of the system does not affect user satisfaction and usage. Information quality has a positive influence on user satisfaction and actual usage. Meanwhile, actual usage does not affect user satisfaction. In addition, user satisfaction and use also have a positive effect on individual impacts and individual impacts have a positive impact on organizational impacts.

[42] found End-user satisfaction and individual performance have been identified by many researchers as important determinants of the success of information systems. As more and more organizations now use e-procurement systems, there is a desire to understand their effect on individual end user performance. Therefore, this study attempts to empirically test a framework that identifies the relationship between end-user satisfaction, and individual end-user performance. The data collected from 432 end users of the e-Acquisition system in Malaysian government agencies were used to examine the relationships proposed in the framework using the Partial Least Square (PLS) approach. The findings provide strong support for our model. The results show that the three factors of processing, content and usability significantly influence end-user satisfaction, while higher levels of end-user satisfaction lead to improved individual performance.

3. RESEARCH METHODOLOGY

3.1 Research Objectives

The research objectives in this study is to evaluate the E-Procurement application at the Contractor Company using DeLone and McLean IS Success Model. This application is useful in procuring goods and services at this company. The following is a display of applications and business processes in the application:

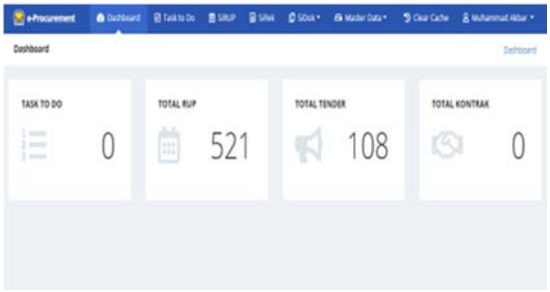

Figure 3: E-Procurement Dashboard

Figure 4 describes the process of procuring goods and services in the E-Procurement application. It represents all work units at PT. XYZ who wants to procure goods and services and must record the Goods Requirement Plan / RKB Document to be submitted to the Production Department so that the

RKB Document will be inputted to the E-Procurement application. Then, after the input, the Production Department creates an auction based on the goods needed. The next step is informing the vendor / supplier of goods and services that have been registered in the application to become a list of capable partners at the auction stage. Then the Vendors who wish to participate in the Auction must upload the proposed bid / price document in which the price will later be compared by the Production Department at the Negotiation stage. After the negotiation, the Production Department determines the winning Vendor based on the lowest price submitted by the Vendor. After that, the Production Department submits a Letter of Appointment and Award. The submission depends on the nominal amount of the negotiation result. If the nominal value is <= 5 billion Rupiah, it is submitted to the General Manager. If the nominal value is > 5 billion Rupiah up to <= 25 billion Rupiah, it is submitted to the Director of Production. If the nominal value is > 25 billion Rupiah, it is submitted to the President Director. Then, all Vendors in the Determination and Announcement menu are informed thrugh the E-Procurement application. The last step is signing a contract signature with the Vendor who wins the auction.

3.2 Research Model

The type of research model used in this research is a hypothesis test which aims to test and explain the characteristics of a particular relationship, the independent influence of two or more factors in one situation. The research model in the preparation of this final paper is to test the success of the E-Procurement application information system that has been implemented at PT. XYZ using Delone and McLean models. The variables used in this study are System Quality, Information Quality, Service Quality, Use, User Satisfaction and Net Benefits. The research model is as shown in Figure 5:

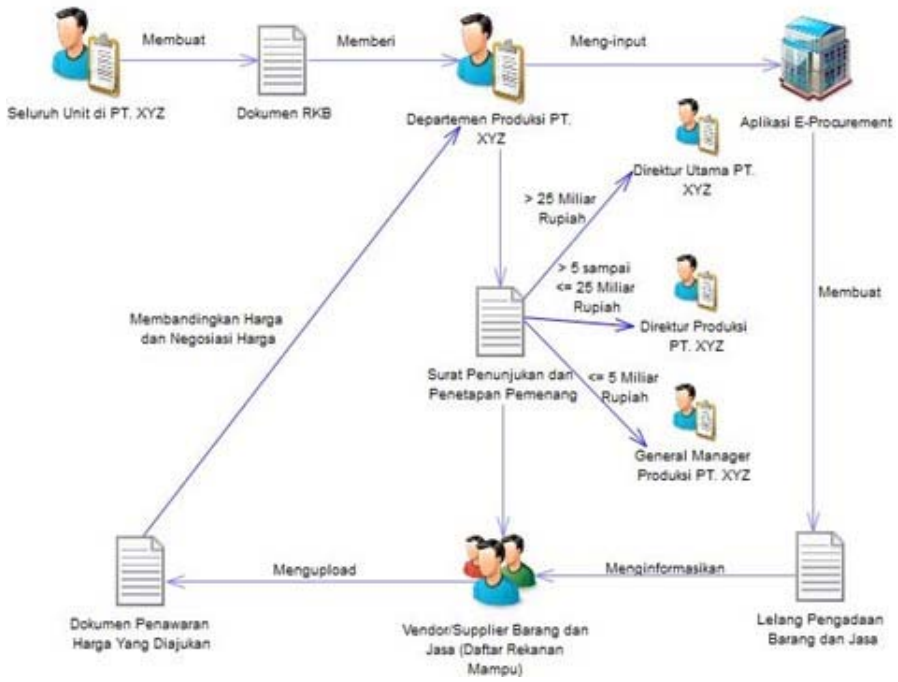

Figure 4: Overview of the Procurement Process of Goods & Services

Based on the research model in Figure 5, the research hypothesis proposed in this study are as follows:

- Hypothesis 1: The System Quality of the E-Procurement application has a positive and significant impact on Use..
- Hypothesis 2: The System Quality of the E-Procurement application has a positive and significant effect on User Satisfaction.
- Hypothesis 3: The Information Quality of the E-Procurement application has a positive and significant impact on Use.

- Hypothesis 4: Information Quality of the E-Procurement application has a positive and significant impact on User Satisfaction.
- Hypothesis 5: The Service Quality of the E-Procurement application has a positive and significant impact on Use.
- Hypothesis 6: The Service Quality of the E-Procurement application has a positive and significant impact on User Satisfaction.
- Hypothesis 7: The use of the E-Procurement application has a positive and significant impact on User Satisfaction.
- Hypothesis 8: User Satisfaction of the E-Procurement application has a positive and significant impact on Use.
- Hypothesis 9: Use of the E-Procurement application has a positive and significant impact on Net Benefits.
- Hypothesis 10: User Satisfaction of the E-Procurement application has a positive and significant impact on Net Benefits.

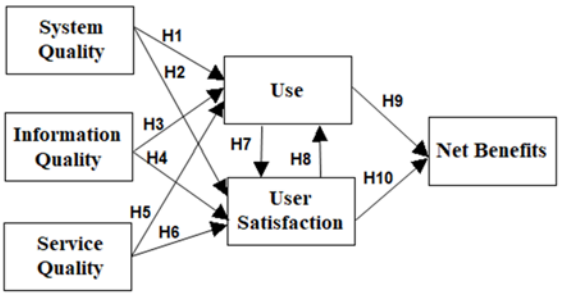

Figure 5: Research Model

Based on the research model above, to measure each Delone & McLean dimension variable, an appropriate indicator is needed so that the measurement of the success of the E-Procurement application information system can be tested accurately and precisely through factor analysis on the research dimension variables. The variables used in this research are variables that can be measured directly (Latent Variable), namely:

- Exogenous Variable (Exogenous Construct) as Independent Variable (X) which consists of: System Quality (SQ), Information Quality (IQ), Service Quality (SEQ).
- Endogenous Variables (Endogenous Constructs) as Dependent Variables (Y) which consists of: Use (U), User Satisfaction (US), Net Benefits (NB).

3.3 Population and Research Sample

The object of analysis in this study is the E-Procurement application users at PT. XYZ. The sampling technique used is probability sampling, which is random sampling by providing equal opportunities for each member of the population to be selected as a sample member. The population in this study are all E-Procurement application users who have registered on the system, both Vendors and Internal Users and already have a username and password to log into the system. Based on the menu of Internal User Management and Vendor Management, the total number of users registered in the system is 854 for Internal Users and 588 for Vendors, the total population for the study is 1442 users. Based on the Slovin formula, the number of samples from a population of 1442 users of the E-Procurement application is obtained n of 304. The value of n indicates the number of samples as many as 304. Thus, the number of samples needed in this study is 304 samples.

$$n = \frac{1442}{1 + 1442 \times (0.05)^2}$$

$$n = 304$$

So that the number of samples taken in this study were 304 respondents.

4. RESULT AND DISCUSSION

After collecting the data from the questionnaire, then the data is processed using the SmartPLS 3.0 software and using the PLS-SEM and Bootstrap configurations.

4.1 Findings

Table 1 shows for all constructs each Cronbach's alpha and C.R. were greater than 0.80. Even though the Cronbach's Alpha of Use at 0.722 still can be accepted because all the latent construct values exceeded the minimum threshold level of 0.70. So the scales of Cronbach's alpha and C.R. were reasonably reliable.

Table 1: Reliability and Validity Construct

Variable	Code	Outer Loadings	Cronbach's Alpha	C. R.	AVE
System Quality	SQ1	0.838	0.839	0.886	0.609
	SQ2	0.721			
	SQ3	0.739			
	SQ4	0.808			
	SQ5	0.788			
Information Quality	IQ1	0.854	0.868	0.905	0.655
	IQ2	0.790			
	IQ3	0.809			
	IQ4	0.826			
	IQ5	0.765			
Service Quality	SEQ1	0.847	0.801	0.883	0.716
	SEQ2	0.825			
	SEQ3	0.865			
Use	U1	0.893	0.772	0.897	0.814
	U2	0.911			
User Satisfaction	US1	0.935	0.879	0.943	0.892
	US2	0.954			
Net Benefits	NB1	0.843	0.879	0.911	0.673
	NB2	0.825			
	NB3	0.806			
	NB4	0.802			
	NB5	0.826			

In this study, the accepted cut-off value for the outer loading was 0.7. As shown in Table 1, the outer loadings range between 0.721 and 0.954. Each latent construct's Average Variance Extracted (AVE) was calculated to verify the convergent validity of the variables. Convergent validity was confirmed for this study model because all of the AVE values were more than 0.5. So from the results above also confirmed the good internal consistency of the measurement model and convergent validity.

Table 2: Heterotrait-monotrait ratio of correlation (HTMT)

	SQ	IQ	SEQ	U	US	NB
System Quality		0.99	1.02	0.8	0.24	0.9
Information Quality	0.9		1.00	0.8	0.30	0.9
Service Quality	1.0	1.00		0.86	0.22	0.9
Use	0.8	0.82	0.86		0.16	0.8
User Satisfaction	0.2	0.3	0.22	0.1		0.3
Net Benefits	0.9	0.9	0.9	0.8	0.36	

Table 2 shows the heterotrait-monotrait ratio of correlations (HTMT) test of the model where an HTMT value above 0.90 would suggest that discriminant validity is not present and for researcher can examine if the upper bound of the 95 percent confidence interval of HTMT shall be lower than 0.90 or 0.85. So the conceptual model result in this paper with confirmation of convergent validity, adequate reliability, and the verification of the research model was supposed to be acceptable.

4.2 Evaluation of the Inner Model

After that the Inner Structural Model outcomes was measured, including observing the relationships between the constructs and the model's predictive relevancy and. The coefficient of Effect size (f^2), Goodness-of-Fit (GOF) index, determination (R^2), Path coefficient (β value) and T-statistic value, are the key standards for evaluating the inner structural model.

4.3 Measuring the value of R^2

The coefficient of determination measures the variance and overall effect size for the structural model and to measure the model's predictive accuracy explained in the endogenous construct. As shown in Table 5, the inner path model was 0.517 for Net Benefits, 0.539 for Use and 0.078 for User Satisfaction endogenous latent construct. These indicate those the two independent constructs substantially explain 51.7% of the variance in the Net Benefits, four independent constructs substantially explain 53.9% of the variance in the User Satisfaction, and one independent construct explain 7.8% of the variance of Use. According to [43], [44] an R^2 value of 0.25 is considered as weak and an R^2 value 0.50 is regarded as moderate.

Therefore, all the R^2 values in this paper were substantial.

Estimation of T-statistics and Path Coefficients (β)

The significance of the hypothesis tested from the Path Coefficients (β) value. The β values of every path in the hypothesized model was calculated, the greater the β value, the more the substantial effect on the endogenous latent construct. For a unit variation in the independent construct(s) the β showed the expected variation in the dependent construct. However, for its significance level through the T-statistics test, the β value had to be verified.

Table 3: T-statistics and Path Coefficient

Path Coefficient	Std. Beta	T-statistics	ρ Value
Information Quality -> Use	0.150	1.111	0.267
Information Quality -> User Satisfaction	0.355	2.606	0.009
Service Quality -> Use	0.233	2.042	0.042
Service Quality -> User Satisfaction	-0.124	0.975	0.330
System Quality -> Use	0.390	3.255	0.001
System Quality -> User Satisfaction	0.079	0.573	0.567
Use -> Net Benefits	0.650	16.359	0.000
Use -> User Satisfaction	-0.076	0.892	0.373
User Satisfaction -> Net Benefits	0.232	5.107	0.000
User Satisfaction -> Use	-0.036	0.863	0.388

Bootstrap procedure was carried out in this study, using 5000 bootstrap samples to test the significance of T-statistics values and the path coefficient as shown in Table 3. From H1, The System Quality of the E-Procurement application has a positive and significant impact on Use. As resulted, the findings in Table 3 and Figure 6 support that the construction related factor significantly influenced on Use (β = 0.390, T = 3.255, ρ < 0.001). Hence, H1 was supported. Furthermore, when observing the direct and positive influence of the System Quality of the E-Procurement application related factor to User Satisfaction (H2) from Table 3 and Figure 6 showed that the System Quality not related factor positively influenced User Satisfaction (β = 0.079, T = 0.573, ρ < 0.567), and rejected H2. The Information Quality of the E-Procurement application on Use was not significant (β = 0.150, T = 1.111, ρ < 0.267), and conclude that H3 was rejected.

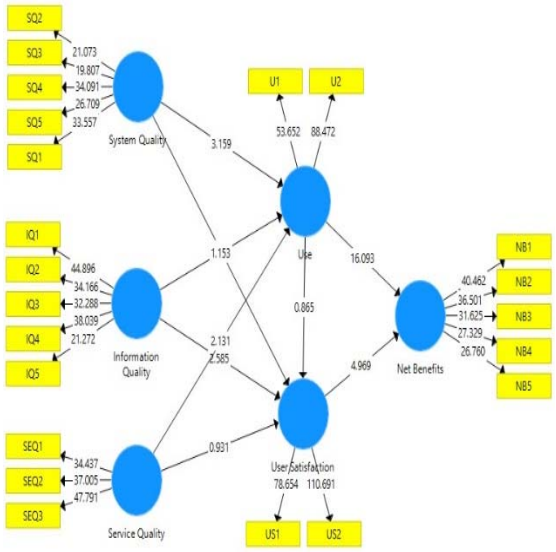

Figure 6: Structural Equation Model (1)

The results effects on the Information Quality related factor to User Satisfaction was significant (β = 0.355, T = 2.606, ρ < 0.009), hence supporting H4. The findings in Table 2 also shown empirical support for H5, where the effects of the external related factor on Service Quality was positive and significantly affected the Use (β = 0.233, T = 2.042, ρ < 0.045), therefore hypothesis (H5) confirmed. Next is the Service Quality of the E-Procurement application has not a positive and significant impact on User Satisfaction (β = -0.124, T = 0.975, ρ < 0.330) and rejected H6. It is also the same with (H7) use of the E-Procurement application has not a positive and significant impact on User Satisfaction (β = -0.027, T = 0.892, ρ < 0.373) and rejected H7.

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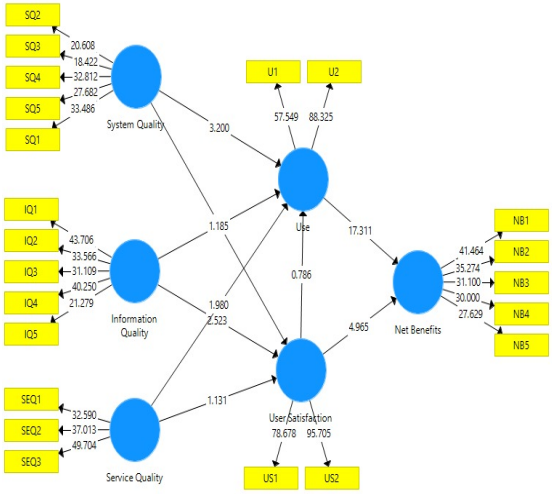

Figure 7: Structural Equation Model (2)

Finding in Table 3 and Figure 7; User Satisfaction to Use of the E-Procurement is not positive and significantly effect Satisfaction (β = -0.036, T = 0.863, ρ < 0.388) and therefore H8 is rejected. When analyzing the direct and positive effects of the Use of the E-Procurement application related factor on Net Benefit (H9), the findings from Table 3 and Figure 7 endorsed that the Use of the E-Procurement related positively influenced Net Benefit (β = 0.650, T = 13.369, ρ < 0.000), and supporting H9. The lastly, the User Satisfaction of the E-Procurement application has a positive and significant impact on Net Benefits (β = 0.232, T = 5.107, ρ < 0.000) and support H10. The greater the beta coefficient (β), the stronger the effect of an exogenous latent construct on the endogenous latent construct. Table 3 and Figure 7 showed that the construction related factor had the topmost path coefficient of β = 0.650 when compared to other β values in the model, which showed that it had a greater value of variance and high effect with regard to affecting the Net Benefits.

4.4 Measuring the Effect Size (f^2)

The f^2 value can be used for analyze the contribution of exogenous variables against the value of R^2 endogenous variables. According to [43], change in R^2 value when the variables are exogenous can be omitted from the model used to evaluate whether omitted variables have an impact substantive on endogenous variables. This measure referred to as the effect size (f^2).

Table 4: Measurements Effects Size Results

Path	f square	Total Effect
Information Quality -> Use	0.011	Weak
Information Quality -> User Satisfaction	0.030	Moderate
Service Quality -> Use	0.029	Moderate
Service Quality -> User Satisfaction	0.004	Weak
System Quality -> Use	0.076	Moderate
System Quality -> User Satisfaction	0.001	Weak
Use -> Net Benefits	0.860	Strong
Use -> User Satisfaction	0.003	Weak
User Satisfaction -> Net Benefits	0.110	Moderate

Based on the value f^2, effect size each variable can be represented as small (0.02), medium (0.15), and large (0.35). The effect size value is less than 0.02 indicates that there is no effect certain.

4.5 Goodness-of-Fit Index

Goodness-of-Fit (GOF) is applied as an index for the complete model fit to verify that the model sufficiently explains the empirical data [44]. The GOF values lie between 0 and 1, where values of 0.10 (small), 0.25 (medium), and 0.36 (large) indicate the global validation of the path model. According to [45] a good model fit shows that a model is parsimonious and plausible. According to [46], The GOF is calculated by using the geometric mean value of the average communality (AVE values) and the average R^2 value(s), and the GOF of the model is calculated by equation:

$$GOF = \sqrt{AVE_{average} \; x \; [R^2]_{average}}$$

Table 5: Goodness-of-Fit index calculation

Constructs	AVE	R^2
System Quality	0.609	
Information Quality	0.655	
Service Quality	0.716	
Use	0.814	0.539
User Satisfaction	0.892	0.078
Net Benefits	0.673	0.517

Average	**0.726**	**0.378**
AVE x R^2	0.275	
GOF = SQRT (AVE X R^2)	**0.524**	

The results of the GOF index as shown in Table 5 for this study model was measured as 0.524, means that empirical data has substantial predictive power in comparison with baseline values and fits the model satisfactory [47].

Table 6: Model Fit Summary

	Estimated Model
SRMR	0.052
d_ULS	0.688
d_G1	0.544
d_G2	0.481

To measure the approximate suitability of the model, SRMR calculations were also carried out. As shown in Table 6 that the SRMR of this research model is 0.052 so this research model has a good suitability. Because when the SRMR value ≤ 0.08, the research model has a good fit. So the lower SRMR value it has, the research model will be more suitable.

4.6 Results Interpretation

From the results above, the similiar case reports [38] shows that all the constructs including: Service Quality, System Quality and Information Quality significantly influence the Net Benefits of Information Sharing Model in Supporting Implementation of E-Procurement Service trough Usability and User Satisfaction. While in this research shows that Net Benefits represents the successful implementation indicator of E-Procurement at this Contractor Company. Net Benefits affected by three variable: System Quality, Information Quality and Service Quality through the variable : Use and User Satisfaction. The good system will increase the use of the application and user satisfaction while using it [42]. So, increasing those variables will also increase Net Benefits.

5. CONCLUSION

This study aims to find important factors affecting succesfull implementation of E-Procurement in the contractor company using Delone and McLean model. The research was conducted in a quantitative way, distributing online questionnaires to 304 respondents, and analyzing the data using SmartPLS 3.0. All hypothesis testing has met the validity test and reliability test based on the measurement model and inner model, AVE, Cronbach's Alpha, CR. The results of this study provide recommendations for improving E-Procurement application in contractor company, namely:

- To increase Net Benefits, we recommend improving the Quality System, Information Quality and Service Quality in the E-Procurement application. So the use of the e-procurement application and user satisfaction from the application will also increase.

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