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Evaluation of the Net Benefits of Using a Logistics Transportation Monitoring Application for PT. XYZ

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Abstract

Background: PT. XYZ is a telecommunications company that provides telecommunications network support and maintenance services. The company experienced disruptions in its logistics processes, resulting in losses equivalent to 60% of its total logistics costs. Because PT. XYZ had difficulty monitoring material deliveries, an information system in the form of a logistics transportation monitoring application was developed. However, the application has been operational for only six months. Infor mation systems (IS) have become an increasingly important field of study in business organizations because of the need to better understand the value generated by information and information technology.
Objective: This study aims to evaluate the success and net benefits of PT. XYZ's Logistics Transportation Monitoring Application.
Methods: This study employed a quantitative approach by surveying 133 application users. The data were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS to identify the factors influencing application use, user satisfaction, and net benefits. The DeLone and McLean Information Systems Success Model was used as the theoretical framework.
Results: The hypothesis-testing results show that information quality and system quality have positive effects on user satisfaction. System quality and service quality positively affect application use, while user satisfaction and application use positively affect the net benefits of the Logistics Transportation Monitoring Application.
Conclusion: The evaluation based on the DeLone and McLean Information Systems Success Model and PLS-SEM analysis using SmartPLS, with data from 133 respondents, shows that seven of the nine proposed hypotheses are supported. User satisfaction and application use are the primary drivers of the net benefits generated by the Logistics Transportation Monitoring Application.

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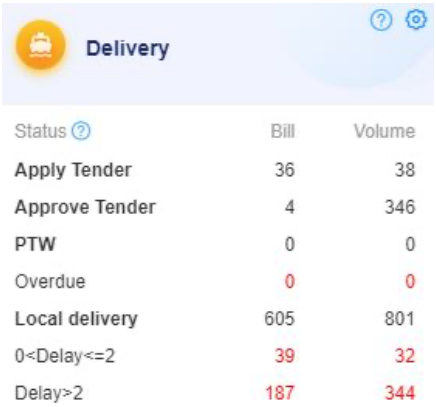
INTRODUCTION

Information systems have been used in various types of organizations with the aim of increasing organizational effectiveness, efficiency, and equality to become a strategic business factor by creating new business innovations (Sardjono et al., 2022). Furthermore, information systems help bridge geographical distances, enabling employees to work more productively. This is reflected in improved processes, administration, and information management, which benefits company productivity and competitiveness (Kim, 2015). The use of information technology in corporate business management, including logistics, is inseparable.

PT. XYZ is a telecommunications company that sells and services telecommunications network equipment. PT. XYZ desires an integrated logistics system from manufacturing to

material distribution to locations in carrying out its business activities. Currently, PT. XYZ is experiencing problems with its logistics processes, particularly logistics transportation procedures. Logistics transportation plays a crucial role in the performance of any logistics chain, including PT. XYZ. Furthermore, transportation expenditure is a key component of the logistics system, accounting for at least 60% of all expenses incurred by logistics companies. Since the 1950s, three constraints (time, cost, and specification) have been widely accepted as benchmarks for success (Atkinson, 1999). Effective logistics transportation requires attention to quality, time, cost, and flexibility. Information systems in the form of monitoring applications must be created to adapt logistics transportation processes to the new elements of the digital economy. Furthermore, it is important to include additional factors when determining the performance of information system initiatives, such as user satisfaction, usage intentions, and net benefits (Varajão & Carvalho, 2018).

PT. XYZ has 1 Main Supply Warehouse, 4 Regional Supply Warehouses, and 9 X-Docking Warehouses spread across 7 major provinces in Indonesia, with an average daily delivery of more than 500 shipments from Warehouse to location, 30 shipments for returning materials to the Warehouse, and shipments from customer Warehouses to locations and from location to location with a total of 100-200 shipments. PT. XYZ experiences difficulties in tracking material deliveries. For example, out of a total of 605 shipping bills every day, 226 are late in delivery, which reaches 37% of the delivery process in a day. PT. XYZ regularly receives complaints.



Delivery

Status	Bill	Volume
Apply Tender	36	38
Approve Tender	4	346
PTW	0	0
Overdue	0	0
Local delivery	605	801
0<Delay<=2	39	32
Delay>2	187	344

Figure 1. *Delivery Monitoring Dashboard*

As one of the improvement steps, PT. XYZ developed an IS/IT system in the form of a Logistics Transportation monitoring application that tracks goods from leaving the warehouse until they arrive at their destination. PT XYZ must monitor goods in real-time to provide transparency to customers, LSPs, and subcontractors. This application has only been used in the company for 6 months, so its performance needs to be evaluated to determine the level of alignment of IT use with company goals, the percentage of service quality levels provided to users or other parties related to the company, the direction and development of IT in the future, and to determine the direction and development of IT in the future.

To determine how closely an organization's objectives align with the use of IS/IT, application performance should be evaluated using the Information Systems Success (ISS) model as part of the information systems implementation process. Research and applications of information systems (IS) and information technology (IT) have attracted considerable attention to ISS over the past several decades. As a result of the tendency of previous studies to use measures relevant to their research context, resulting in fragmented and difficult-to-compare or retest ISS measures, several perspectives on ISS have been put forward over time. Given that ISS is the target dependent variable and has substantial importance (DeLone & McLean, 1992) .

The DeLone and McLean model DeLone (2003) offers a thorough framework for evaluating the effectiveness of information systems, such as the Logistics Transportation Monitoring Application utilized by PT. XYZ. This model assesses the success of an information system through six dimensions: information quality, system quality, service quality, usage, user satisfaction, and net benefits. By implementing the DeLone and McLean model (DeLone & McLean,

2003), PT. XYZ can evaluate the quality of information delivered by the application (information quality), the application's functionality and performance (system quality), and the level of service offered to users (service quality). Furthermore, this model takes into account the degree of application usage by employees (usage), their satisfaction with the application (user satisfaction), and the overall benefits and value produced by the application (net benefits).

Literature review

Delone and Mc Lean's Information Systems Success Method

Investments in information systems are generally substantial, prompting companies to assess whether these expenditures yield favorable outcomes for their operations. The six dimensions identified by DeLone & McLean (2003) for developing Information Systems Success (ISS) as a multidimensional metric include information quality (IQ), system quality (SQ), service quality (QS), user satisfaction (US), usage (TU)/intention to use (IU), and net benefits (NB).

The DeLone and McLean model incorporates several critical components essential for comprehending the success of information systems (IS). Additionally, the model offers a classification framework for the various success metrics proposed in existing literature. Furthermore, it serves as a robust foundation for subsequent empirical and theoretical investigations. These three aspects illustrate the causal and temporal connections among the identified categories. This model is among the most frequently referenced frameworks in the information systems literature, reflecting its broad acceptance within the IS community (Gable et al., 2003; Heo & Han, 2003; Gorla et al., 2010).

According to the reciprocal relationships proposed in the model, the quality dimensions of an information system (information, system, and service) impact the system's usability and user satisfaction. This implies that net benefits can influence each other in addition to being the primary cause of those benefits. This allows the model to be applied at whatever level of analysis the researcher deems most relevant (Gorla et al., 2010; Petter et al., 2008). Consequently, this model is distinguished by its attempt to identify more reliable and acceptable data for adequate information system assessment (Solano Rodríguez et al., 2014).

Previous Literature

Research on assessing information systems success models has focused specifically on the DeLone and McLean models. The usefulness of information systems in business has also been comprehensively evaluated using the DeLone and McLean models. The following findings from previous research examining information systems serve as the primary source material for this study:

Table 1. Research Indicators and Variables

Author	Research Title	Indicators used in this study
(Jeyaraj, 2020)	*The DeLone & McLean model of information systems success: A critical meta-review and research directions.*	*Information quality (IQ), system quality (SQ), service quality (RQ), user satisfaction (US), intention to use (IU), and net benefits (NB)*
(Abrego Almazán et al., 2017)	*The influence of information systems on organizational results*	*Information Quality, System Quality, Service Quality, User Satisfaction, and Net Benefits*
(Chatterjee et al., 2018)	*IoT Success in Indian Smart Cities: An Empirical Analysis*	*Perceived Information Quality (PIQ), Perceived System Quality (PSQ), Perceived Service Quality (PESQ), Perceived Intention to Use (PIU), Perceived User Satisfaction (PUS), Perceived Net Benefit (PNB).*
(Jayakrishnan et al., 2019)	*The Journey of Enterprise Architecture Development Approach in the Malaysian Transportation Industry*	variables *are Information Quality, System Quality, Service Quality, Intention to Use, User Satisfaction, and Net Benefits*

(Sardjono et al., 2022)	*Evaluation Model for the Success of Cruise Ship Information System Implementation Using the Delone and McLean Method to Improve Organizational Performance*	*Information Quality, System Quality, Service Quality, Usage, User Satisfaction, and Net Benefits*
(Kartika & Heny, 2020)	The Influence of System Quality, Information Quality, and Perceived Pleasure on the Use of Online Transportation Applications	*Information Quality, System Quality,* and *Intention to Use*
(Alshahrani et al., 2023)	*Implementation of an electronic portfolio management system at the Technical and Vocational Training Company (TVTC) in Saudi Arabia.*	*System Quality, Service Quality, System Quality, Information Quality*
(Mardiana et al., 2015)	*Validation of a Conceptual Model to Predict Usage Intention as Part of an Information System Success Model: A Case Study of an Indonesian Government Agency*	*DeLone-Mclean Information Systems success model*
(Roky & Meriouh, 2015)	*User evaluation of industrial information systems (XPPS) based on the DeLone and McLean model for information system success.*	*System Quality, Information Quality, Service Quality, System Usage, User Satisfaction*
(Baraka et al., 2013; Jeyaraj, 2020)	*Assessing call center success: Validation of the DeLone and Mclean model for information systems*	*Six dimensions of the D&M model (System quality, Information quality, Service quality, Usage, User satisfaction, Net benefits)*

METHOD

The population of this study consisted of users of the PT. XYZ Transportation Logistics Monitoring Application. The information system covers PT. XYZ's employees, 3PLs, and subcontractors. A total of 133 users used the application. To find an appropriate and tested measurement tool, an analysis of variables and measurement indicators was conducted through literature from previous studies. Next, a questionnaire was created using previously discovered indicators. Validity and reliability tests were then conducted on each questionnaire item.

Figure 1 illustrates the interconnections among user satisfaction, usage, and net benefits, all of which are affected by information quality, system quality, and service quality. User satisfaction, in turn, exerts a collective influence on information quality, system quality, service quality, and usage. To explore the objectives of this study and to elucidate the relationships among these variables, the following hypotheses have been formulated:

Ha1: Information quality has a positive influence on usage.
Ha2: Information quality has a positive effect on user satisfaction.
Ha3: System quality has a positive influence on usage.
Ha4: System quality has a positive influence on user satisfaction.
Ha5: Service quality has a positive influence on usage.
Ha6: Service quality has a positive effect on user satisfaction.
Ha7: User satisfaction has a positive influence on usage.
Ha8: User satisfaction has a positive influence on net profit.
Ha9: Usage has a positive effect on net benefits.

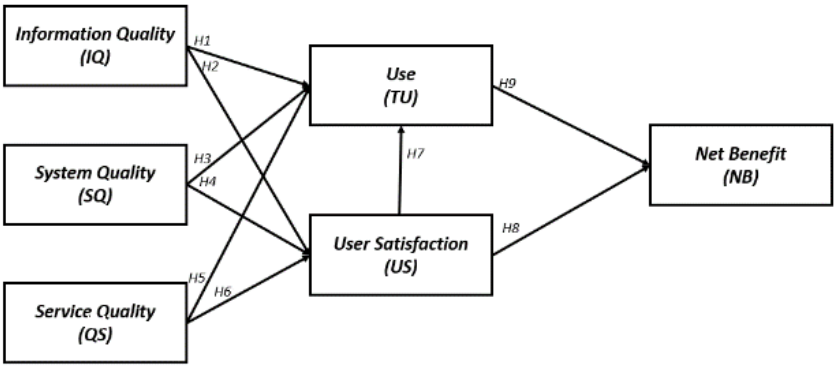


Figure 2. Research model

To: (i) elucidate the IS success challenges identified within the organization under study; (ii) deepen the understanding of the DeLone and McLean theoretical framework; (iii) both substantiate and contest the working hypothesis; and (iv) establish, identify, and refine the indicators, a targeted literature review was conducted to evaluate the success of IS in the Logistics Transportation Monitoring Application for PT. XYZ company. The operational definition is provided below.

Table 2. Research Indicators and Variables

Variables	Indicator	Code	Question	Source
Information Quality	*Accuracy*	IQ1	Application users receive information that is accurate and consistent with actual material data.	(Zhang et al., 2021; DeLone & McLean, 1992)
	Accuracy	IQ2	The information in this application is accurate and up to date.	(Zhang et al., 2021; DeLone & McLean, 1992)
	Completeness	IQ3	Users receive complete information from the application.	(Zhang et al., 2021; DeLone & McLean, 1992)
System Quality	*Reliability*	SQ1	Users rely on data obtained from applications to meet their work-related information needs.	(Zhang et al., 2021; DeLone & McLean, 1992)
	Response Time	SQ2	After using this application, users do not have to wait long to receive information.	(DeLone & McLean, 2003)
	Security	SQ3	This application ensures the security of sensitive data.	(Zhang et al., 2021; DeLone & McLean, 2003)
Quality of Service	*Responsive*	QS1	This application offers fast and accurate information to users.	(DeLone & McLean, 2003)
	Guarantee	QS2	Users feel safe sending or accessing data through the application.	(DeLone & McLean, 2003)
	Empathy	QS3	The material transaction time record is accurate according to the information listed in the	(DeLone & McLean, 2003)

			application.	
Use	*Daily usage time*	TU1	Users use this app every day.	(Iivari, 2005 ; DeLone & McLean, 2003)
	Usage References	TU2	This application system directs user references when performing the following tasks, right?	(Iivari, 2005: DeLone & McLean, 2003)
	Frequency of Use	TU3	When doing a job, users often continue to use the application.	(Iivari, 2005; DeLone & McLean, 2003)
User Satisfaction	*Information Satisfaction*	AS1	Users are satisfied with the information displayed by the application.	(Almarashdeh, 2016)
	Overall Satisfaction	AS2	Users are satisfied with all the features of the Application.	(Almarashdeh, 2016)
	Effectiveness	US3	Users will continue to use this application because it makes their work more effective.	(Almarashdeh, 2016)
Net Benefits	*Knowledge Enhancement*	NB1	After using the application, the user's understanding of the material will increase.	(Davis, 1989)
	Saving time	NB2	Users find it easy to use this application to complete tasks.	(Davis, 1989)
	Job Performance	NB3	This application makes user's work more productive.	(Davis, 1989)

The survey consisted of 18 questions, each with a 5-point Likert scale (1, disagree - 5, strongly agree) with a sample size of 133 users. Cronbach's Alpha coefficient was used to examine the internal consistency of each theoretically presented variable, and the results exceeded the minimum acceptable limit for this type of analysis.

Data quality testing aims to find test questions that provide results in accordance with research requirements. Validity and reliability testing are conducted for this assessment. Validity testing is conducted to determine the expected validity of any questionnaire instrument (Chiu et al., 2007; Wang & Liao, 2008) . To verify the validity of the question items, the Pearson correlation approach was used. The significance level was set at 0.05. Reliability Testing: The reliability of each question item was measured using the Cronbach's Alpha method, which relates to consistency across a series of assessments. An alpha value (reliability coefficient) of 0.6 is quite good, but not as strong as the commonly used figure of 0.7 (Teo et al., 2008; Floropoulos et al., 2010). Therefore, in this study, an alpha value of 0.7 was used.

RESULTS AND DISCUSSION

Results

First, the results of the descriptive data presentation of PT. XYZ are presented. Based on the gender distribution of application users, male application users numbered 92% and female application users numbered 8%. Java Island numbered 86%, Sumatra Island 8%, and other islands 11%, based on the user's residence. According to the application user status, PT. XYZ's native workers numbered 7%, LSP (3PL) 69%, subcontractors 22%, and customers 2%. The majority of application users were male, located on Java Island, and even more often employed by LSP as material transporters, according to this data distribution. The SmartPLS informatics package version 3.2.9 was used to develop structural equations based on components/variances for data

analysis (Ringle et al., 2014). To validate the measurement model, the following steps were taken: 1) Checking the actual and substantial validity; 2) Loadings to reflect the construct to determine the individual reliability of the items; and (iii) reviewing the convergent and discriminant validity of the construct.

Data analysis

A literature review on general systems theory, information systems evaluation models, and the business implications of IT services was conducted to determine the accuracy of the variables. Similarly, the previously proposed measurement scales were modified. Apparent validity was evaluated to verify whether the measurement scales appeared valid and understandable from a survey perspective (Abrego Almazán et al., 2017). This allowed for the screening of the material by numerous scholars and subject matter specialists, ensuring satisfactory findings, as proposed by Straub (1989). A series of tests were run to determine whether the survey had the necessary reliability to validate the measurement model. This means that the first test, which involves accepting an indication as part of a reflective construct, aims to ensure the individual reliability of the indicators. An external model check, as presented in Table 3, is necessary to determine the validity value of each variable and indicator.

Table 3. External Loading

Variables	Indicator	Code	AVE	External Loading	Validity
Information Quality	*Accuracy*	IQ1	0.828	0.897	Valid
	Relevance	IQ2		0.917	Valid
	Completeness	IQ3		0.915	Valid
System Quality	*Reliability*	SQ1	0.719	0.710	Valid
	Response Time	SQ2		0.915	Valid
	Security	SQ3		0.903	Valid
Quality of Service	*Responsive*	QS1	0.790	0.877	Valid
	Guarantee	QS2		0.895	Valid
	Empathy	QS3		0.894	Valid
Use	*Frequency of Use*	TU1	0.796	0.898	Valid
	Nature of Use	TU2		0.860	Valid
	Possible Use	TU3		0.918	Valid
User Satisfaction	*Information Satisfaction*	AS1	0.845	0.938	Valid
	Overall Satisfaction	AS2		0.932	Valid
	Effectiveness	US3		0.887	Valid
Net Benefits	*Knowledge Enhancement*	NB1	0.782	0.848	Valid
	Saving time	NB2		0.937	Valid
	Performance improvements	NB3		0.866	Valid

Table 3 presents the Loading Factor and AVE values pertinent to this study, which assess the variation attributed to measurement error in relation to the variation contributed by the indicators when evaluating the latent variables. Generally, the AVE value exceeds 0.5, and the Loading Factor for each construct is above 0.7 (Chin, 2000; Sánchez-Franco & Roldán, 2005) . Given that the outer loading value surpasses 0.7 and the AVE value is greater than 0.5, all indicators in this research meet the criteria for convergent validity (Straub, 1989). Additionally, the reliability of the latent variables, which is another aspect of evaluating the Outer Model, is assessed through two criteria: Composite Reliability and Cronbach's alpha of the indicator block that measures the variables, as illustrated in Table 4.

Table 4. Composite Reliability and Cronbach's Alpha

Variables	Cronbach's alpha	Composite Reliability
Information Quality	0.896	0.935
Net Benefits	0.860	0.915
Quality of Service	0.867	0.918

System Quality	0.801	0.884
Use	0.872	0.921
User Satisfaction	0.908	0.942

The data shows that all variables have a Cronbach's alpha value greater than 0.70 for composite reliability. Consequently, it can be confirmed that all variables have valid values. The SmartPLS output image for the research model, which shows the extent to which the independent variables influence the dependent variable, looks like this:

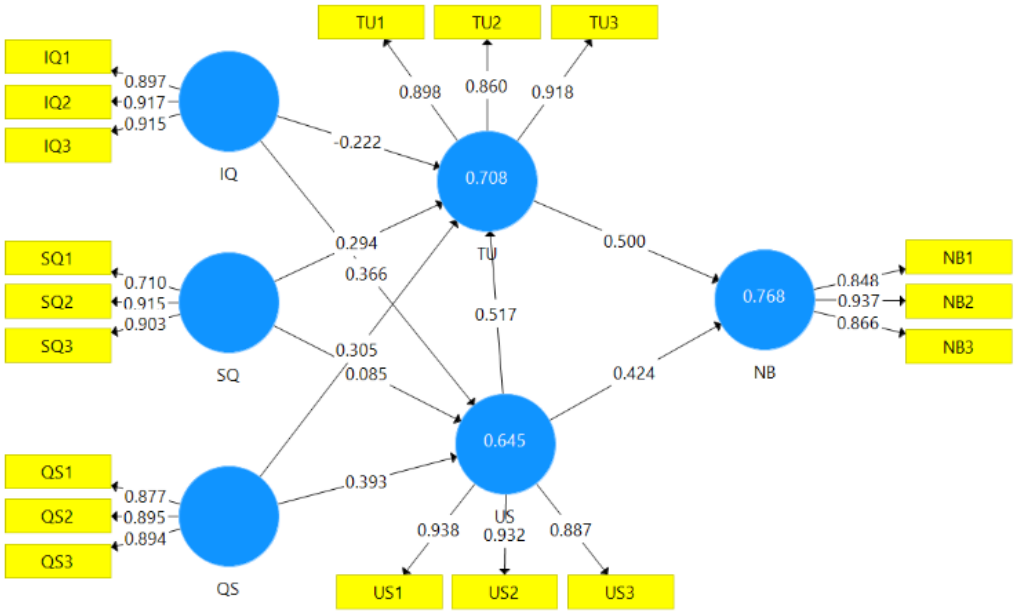


Figure 3. Research model output from SmartPLS

Structural models, often referred to as internal models, are grounded in substantive theory and articulate the connections among latent variables. These internal models can be assessed through structural models, which outline the anticipated relationships between latent variables within the research framework. The Bootstrapping technique employed in SmartPLS is capable of generating standard errors, path coefficients (β), and T-statistic values. This approach enables researchers to ascertain the statistical significance of the research model by scrutinizing the hypotheses associated with each link path. Table 5 presents the coefficients for each proposed path, along with the T-statistic values derived from the SmartPLS outcomes as follows:

Table 5. Path Coefficients and T-Statistics

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P value
IQ -> TU	-0.222	-0.231	0.124	1,795	0.073
IQ -> AS	0.366	0.380	0.132	2,767	0.006
QS -> TU	0.305	0.308	0.118	2,579	0.010
QS -> AS	0.393	0.396	0.157	2,505	0.013
SQ -> TU	0.294	0.306	0.124	2,379	0.018
SQ -> AS	0.085	0.066	0.176	0.480	0.631
TU-> NB	0.500	0.513	0.115	4,366	0.000
AS -> NB	0.424	0.412	0.116	3,647	0.000
AS -> TU	0.517	0.520	0.081	6,363	0.000

Analyzing the R-Square (R^2) of the endogenous or dependent variables, specifically usage, user satisfaction, and Net variables, allows for an evaluation of the model's capacity to elucidate the phenomenon or its nomological validity. The R-Square value serves to determine whether a specific independent latent variable significantly impacts the dependent latent variable.

Table 6. R-Square Values for Dependent Variables

	R Square	*Adjusted R Squared*
Notes	0.768	0.765
TU	0.708	0.699
WE	0.645	0.636

R2 demonstrates that the quality of information, system quality, and service quality significantly influence utilization, user satisfaction, and net benefits. Subsequently, the Goodness of Fit (GoF) value is computed. The formula employed for calculating the GoF value is as follows:

$$GoF = \sqrt{\overline{AVE} \times \overline{R^2}}$$

At what location is $\overline{AVE}$ the average AVE located, and for $\overline{R^2}$ that average value is:

GoF = 0.793 x 0.707 = 0.560

Considering that the GoF value is 0.560 (56%) > 0.36, which is considered high, it can be concluded that the model is largely acceptable for presenting the data.

Discussion

Results and Discussion of the Relationship Between Variables

The outcomes of the statistical calculations are displayed in Table 5, which illustrates the findings of the structural model analysis concerning the nine hypotheses. The results of the research validate the following nine hypotheses:

Ha1: Information quality has a positive influence on usage.

The quality of information on usage is shown to have a coefficient value (β) of -0.222 in the table above, a T-Statistic value of 1.795 < T-Table 1.96, indicating that it is not significant, and a P-value of 0.073 > P-Table 0.05. Consequently, H1 has been empirically proven to be unsatisfactory. This result contradicts a study on knowledge management systems Halawi (2007), which found a strong correlation between information quality and usage purposes. This may be because there are still some improvements that need to be made by the Logistics Transportation Monitoring system, such as the lack of up-to-date information in the application, which makes it difficult for users to find precise and accurate information regarding material information. However, the better the quality of information, the greater the utilization of the information system.

Ha2: Information quality has a positive effect on user satisfaction.

The information quality concerning user satisfaction is indicated by a coefficient value (β) of 0.366 in the preceding table, accompanied by a T-Statistic value of 2.767, which exceeds the T-Table threshold of 1.96, thereby signifying its statistical significance. Additionally, the P value is 0.006, which is less than the P-Table value of 0.05. Consequently, H1 has been empirically validated and accepted. This finding aligns with the research conducted by Petter (2008), which demonstrates that the quality of information significantly influences user satisfaction. Users of the portal anticipate that the information will effectively support their tasks and meet quality standards. This expectation is fulfilled when the information regarding material data and material positioning aligns with user requirements, ultimately leading to enhanced user satisfaction.

Ha3: System quality has a positive influence on usage.

The quality of the system in relation to usage is indicated by a coefficient value (β) of 0.294 as presented in the table above, alongside a T-Statistic value of 2.379, which exceeds the T-Table threshold of 1.96, thereby signifying its significance. Additionally, the P value is 0.018, which is

less than the P-Table value of 0.05. Consequently, H1 has been empirically validated and accepted. This theoretical foundation aligns with the meta-analysis conducted by Petter (2009), which established a correlation between system quality and usage. This relationship is plausible as users often depend on the information provided by the system to fulfill their work-related information requirements.

Ha4: System quality has a positive influence on user satisfaction.

The system quality concerning user satisfaction is represented by a coefficient value (β) of 0.085 in the aforementioned table, with a T-Statistic value of 2.379, which is greater than the T-Table value of 1.96, indicating its significance. However, the P value is 0.631, which exceeds the P-Table value of 0.05. Therefore, H1 has been empirically demonstrated to be unsatisfactory. significant relationship between system quality and user satisfaction. This discrepancy was observed during the evaluation of this hypothesis, potentially due to users' perceptions of system quality not being met, such as experiencing prolonged response times, which may be influenced by the user's internet connectivity, leading to dissatisfaction.

Ha5: Service quality has a positive influence on usage.

The quality of service in relation to usage is indicated by a coefficient value (β) of 0.305 in the table above, with a T-Statistic value of 2.579, which surpasses the T-Table value of 1.96, thus confirming its significance. Furthermore, the P value is 0.010, which is less than the P-Table value of 0.05. Consequently, H1 has been empirically validated and accepted. This finding corroborates earlier research by Petter (2008), which demonstrated that service quality has a significant impact on utilization. Users expect a standard of service that includes readily available assistance for resolving issues that may arise during application use.

Ha6: Service quality has a positive effect on user satisfaction.

The impact of service quality on user satisfaction is indicated by a coefficient value (β) of 0.393 in the preceding table, accompanied by a T-Statistic value of 2.505, which exceeds the T-Table threshold of 1.96, thereby signifying its statistical significance. Additionally, the P-value of 0.013 is less than the P-Table value of 0.05. Consequently, H1 has been empirically validated and accepted. This outcome corroborates the assertion made by Petter (2008), which posits a significant correlation between service quality and user satisfaction, attributed to user confidence in application security during data access or transfer.

Ha7: User satisfaction has a positive influence on usage.

User satisfaction regarding usage is reflected by a coefficient value (β) of 0.517 in the aforementioned table, with a T-Statistic value of 6.363, surpassing the T-Table value of 1.96, indicating significance. Furthermore, the P-value of 0.000 is less than the P-Table value of 0.05, leading to the empirical establishment and acceptance of H1. This hypothesis was tested against the meta-analysis conducted by Petter (2009), which demonstrated a robust relationship between user satisfaction and application usage, confirming the hypothesis. This relationship is attributed to user reliance on the system for subsequent tasks.

Ha8: User satisfaction has a positive influence on net profit.

User satisfaction concerning net benefits is represented by a coefficient value (β) of 0.500 in the table above, with a T-Statistic value of 4.366, which is greater than the T-Table value of 1.96, indicating statistical significance. The P-value of 0.000 is also less than the P-Table value of 0.05, leading to the empirical establishment and acceptance of H1. The testing of this hypothesis aligns with the research conducted by Petter (2008), which asserts a significant relationship between application usage and net benefits. This is due to the fact that application usage enhances the efficiency of users' work and deepens their comprehension of the material.

Ha9: Use has a positive effect on net benefits

User satisfaction in usage is indicated by a coefficient value (β) of 0.424 in the preceding table, accompanied by a T-Statistic value of 3.647, which exceeds the T-Table threshold of 1.96, thereby signifying its statistical significance. Furthermore, the P-value of 0.000 is less than the P-Table value of 0.05. Consequently, H1 has been empirically validated and accepted. The examination of this hypothesis aligns with the findings of Petter (2008), which assert a robust correlation between user satisfaction and the net benefits derived from the application. This correlation is attributed to the frequent use of the application by users during their work, as it is perceived to be highly beneficial for their tasks.

CONCLUSION

Through this evaluation, PT. XYZ can identify the strengths and weaknesses of its Logistics Transportation Monitoring Application, thereby facilitating informed decisions regarding future enhancements and improvements. The DeLone and McLean Information Systems Success Model, tested using SmartPLS with a sample of 133 users, indicated that information quality did not have a significant effect on system use ($\beta = -0.222$, $p = 0.073$) but had a significant effect on user satisfaction ($\beta = 0.366$, $p = 0.006$). Conversely, system quality had a significant effect on system use ($\beta = 0.294$, $p = 0.018$) but did not significantly affect user satisfaction ($\beta = 0.085$, $p = 0.631$). Service quality significantly affected both system use ($\beta = 0.305$, $p = 0.010$) and user satisfaction ($\beta = 0.393$, $p = 0.013$). Additionally, user satisfaction significantly influenced system use ($\beta = 0.517$, $p < 0.001$) and net benefits ($\beta = 0.424$, $p < 0.001$), while system use also had a significant positive effect on net benefits ($\beta = 0.500$, $p < 0.001$). These results underscore that service quality and user satisfaction are pivotal factors driving the use of the Logistics Transportation Monitoring Application and positively contributing to the benefits obtained by the organization.

The findings further suggest that information quality, system quality, and service quality contribute to user satisfaction, indicating that users perceive the application as capable of providing reliable information, satisfactory system performance, and adequate services. Consequently, higher levels of user satisfaction and system use are associated with greater net benefits for PT. XYZ. Overall, the DeLone and McLean Information Systems Success Model provides a robust framework for assessing the effectiveness of the Logistics Transportation Monitoring Application and its contribution to logistics and transportation operations. Considering these findings, future research should integrate user requirements and information security considerations into information systems success models. From a practical perspective, PT. XYZ should continuously improve information quality, system quality, and service quality while ensuring that system development aligns with user requirements to increase system use, user satisfaction, and organizational benefits.

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AUTHOR CONTRIBUTION STATEMENT

Dimas Putri Pratiwi contributed to the conceptualization, methodology, data collection, formal analysis, investigation, and the writing of the initial draft. Jarot S. Suroso was responsible for supervision, validation, reviewing the methodology, and editing the manuscript. All authors have reviewed and approved the final version of the manuscript.

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