TOWARDS SPATIAL INFORMATION SYSTEM ADOPTION USING EXTENDED TAM AND IS SUCCESS MODEL

Heni Anjani [1*]**, Dedi I. Inan**[1]**, Ratna Juita**[1]**, Marlinda Sanglise**[1]
[1]Informatics Engineering, Universitas Papua
email : *henianjani2019021@gmail.com

Abstract: By leveraging digital technology, Laporkitong enhances transparency and accountability, as well as facilitates public participation in the oversight and enforcement processes related to land use and natural resource management. The Laporkitong website functions as an online reporting application aimed at documenting instances of spatial planning violations in the West Papua Province. The lack of public knowledge about the Laporkitong application has led to numerous issues. Therefore, an analysis of the adoption of the Laporkitong application is necessary. This study aims to investigate the influence of Perceived Quality, Perceived Control, and Perceived Ease of Use factors as determinants of the residents' willingness to use the Laporkitong application, employing the Technology Acceptance Model (TAM) and DeLone and McLean IS Success (IS D&M) theories. As many as 160 valid respondents are gathered based purposive sampling technique and evaluated using Partial Least Square Structural Equation Modeling (PLS-SEM). The results inform that all seven hypotheses are accepted with the R-square of the intention to use is 0.273 indicationg 27.3% variance of the model can determine the outcome. Further discussion and conclusion regarding the implication of theoretical and practical contribution are also discussed.

Keywords: laporkitong; perceived control; perceived ease of use; perceived quality; technology acceptance model

Abstrak: Dengan memanfaatkan teknologi digital, Laporkitong meningkatkan transparansi dan akuntabilitas, serta memfasilitasi partisipasi publik dalam proses pengawasan dan penegakan terkait penggunaan lahan dan pengelolaan sumber daya alam. *Website* Laporkitong berfungsi sebagai aplikasi pelaporan *online* yang bertujuan untuk mendokumentasikan pelanggaran perencanaan tata ruang di Provinsi Papua Barat. Minimnya pengetahuan masyarakat terhadap aplikasi Laporkitong menyebabkan banyak permasalahan. Maka dari itu perlu dilakukan analisis mengenai adopsi pada aplikasi Laporkitong. Penelitian ini bertujuan untuk menyelidiki pengaruh faktor Kualitas yang Dirasakan, Kendali yang Dirasakan, dan Kemudahan Penggunaan yang Dirasakan sebagai penentu keinginan penduduk untuk menggunakan aplikasi Laporkitong, dengan menggunakan Model Penerimaan Teknologi (TAM) dan teori Kesuksesan Sistem Informasi (IS D&M) DeLone dan McLean. Sebanyak 160 responden valid dikumpulkan berdasarkan teknik *purposive sampling* dan dievaluasi menggunakan *Partial Least Square Structural Equation Modeling* (PLS-SEM). Hasilnya menunjukkan bahwa semua tujuh hipotesis diterima dengan R-square niat untuk menggunakan adalah 0,273, menunjukkan bahwa 27,3% variasi model dapat menentukan hasilnya. Diskusi lebih lanjut dan kesimpulan mengenai implikasi kontribusi teoritis dan praktis juga dibahas.

Kata kunci: laporkitong; pengendalian yang dirasakan; kemudahan penggunaan yang dirasakan; kualitas yang dirasakan; model penerimaan teknologi

INTRODUCTION

The Laporkitong application has been deployed by the Regional Development Planning, Research, & Development Agency (BAPPEDA), a public service agency situated in Manokwari, West Papua (https://kitorang.papuabaratprov.go.id/). Laporkitong is an online reporting application designed to report indications of spatial planning violations in West Papua Province [1]. This research case study focuses on the Laporkitong application in its website version.

The web application Laporkitong, plays a significant supporting the Sustainable Development Goals (SDGs) [2]. This application enables citizens to report various violations of spatial plans, permit discrepancies, and closures of access to public property areas, which are crucial steps in ensuring fair and sustainable resource management [3].

By leveraging digital technology, Laporkitong enhances transparency and accountability, as well as facilitates public participation in the oversight and enforcement processes related to land use and natural resource management. This is aligned with the SDGs, particularly Purpose 11 on sustainable cities and communities, and Purpose 16 on peace, justice, and strong institutions. Thus, Laporkitong serves not only as a reporting tool but also as an instrument for community empowerment and strengthening of good governance [2].

Referring to [4], the population growth in Manokwari is continuing to increase, and migration is on the rise, resulting in communities being compelled to construct housing that does not comply with regional spatial planning standards, thus leading to the growth of slum settlements and various physical issues including high building density. In re-sponse to these conditions, the Laporkitong website application serves as an appropriate solution as it can help mitigate the issues present in West Papua Province.

However, there are still challenges in its usage, such as the lack of public awareness of the Laporkitong website application, which has only been operational since 2022, and inadequate network support [5]. These constraints have resulted in less-than-optimal performance of the Laporkitong website application. Moreoever, there has been no specific research conducted regarding the adoption of the Laporkitong website application up to this point.

The article "Understanding e-learning continuance intention: An extension of the Technology Acceptance Model" comprehensively discusses the Technology Acceptance Model (TAM) and the Information System Success Model of DeLone and McLean (D&M) along with the variables inherent in these theories [6]. Further research [7] utilizes the TAM theory with significant outcomes on website users. The study by [8], confirms the application of TAM in Saudi Arabia within the higher education setting. The research conducted by [9], analyzes the Lazada application. The analysis results are declared significant. The study [10] analyzes e-learning and develops e-learning to be user-friendly. And study [11] analyzes the iJateng application, with research findings indicating that the iJateng application is user-friendly.

The goal of this research is to investigate influence of perceived quality, perceived control, and perceived ease of use factors as determinants of the intention of residents of West Papua Province to use the Laporkitong application. The Technology Acceptance Model (TAM)

and Information System Success Model of DeLone and McLean (D&M) [12], are utilized as the theoretical lens in this study. Both theoretical lenses have been recognized by various scholars as the most represenative theory underpining the investegitation of the intention to use a new information technology. Thus, both are imployed in this study.

METHOD

Method employed in this research utilizes a quantitative study. Quantitative method utilizes precise numerical data obtained from the field as a tool for analysis [1]. Researchers distributed online questionnaires to the entire population residing in West Papua Province over a period of three months. The study population includes all users of the Laporkitong website application in Manokwari, West Papua. Data collection involved distributing questionnaires via Google Forms. The researcher obtained 160 valid responses. The questionnaire included respondent identification, instructions, and statements representing each indicator of the variables: light quality, system quality, service quality, computer self-efficacy, internet self-efficacy, perceived ease of use, and satisfaction.

Based on the framework diagram, it can be elucidated that perceived quality (customers' opinions regarding a product's quality) correlates with user satisfaction in utilizing information systems [6] Perceived Quality is represented as Information Quality, System Quality, and Service Quality. Hence, this study hypothesizes that:
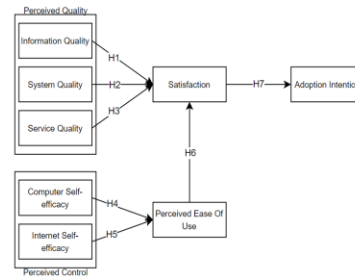

Figure 1. Reserach Model

H1: Information Quality significantly influences Satisfaction with the Laporkitong website application. H2: System Quality significantly influences Satisfaction with the Laporkitong website application. H3: Service Quality significantly influences Satisfaction with the Laporkitong website application.

According to Ajzen (1991) in [6], Perceived Control is an individual's perspective on the difficulty or ease of realizing a certain behavior. Perceived Control is presented as Computer Self-efficacy and Internet Self-efficacy. Hence, this study hypothesizes that: H4: Computer Self-Efficacy significantly influences Perceived Ease of Use of the Laporkitong website application. H5: The Laporkitong website application's perceived ease of use is highly influenced by internet self-efficacy. Perceived Ease of Use refers to how much a person thinks using a technology will be easy and won't need a lot of labor. People will use an information system if they think it's user-friendly. On the other hand, people won't use the information system if they think it's difficult to use. [10]. Hence, this study hypothesizes that: H6: Perceived Ease of Use significantly influences Satisfaction with Laporkitong website application.

Satisfaction is defined as "an affective state that is an emotional response to a product or service experience" [6]. Hence, this study hypothesizes that: H7: Satisfaction significantly influences

Adoption Intention of the Laporkitong website application.

RESULT AND DISCUSSION

The data collection process was successfully conducted for 7 months, from July 2023 to January 2024. The researcher obtained 160 valid responses. The measurement model describes the relationship between indicators and hidden variables. Three criteria are employed in this study to evaluate the outer model: composite reliability, discriminant validity, and convergent validity [1]. As cited in [3], the loading factor value must be above 0.7 to be considered valid.

Convergent validity testing can be conducted by examining the loading factor values (outer loading) and the Average Variance Extracted (AVE).

For each construct, the goodness of fit of the model should be shown by a number larger than 0.50 [5]. Testing for reliability Two methodologies are employed in its execution: Cronbach's alpha (CA) and composite reliability (CR). If CA and CR have values above 0.70, then the construct is considered reliable [5].

Discriminant validity used in this research is Hetero Trait Mono Trait (HTMT) criterion. The result can be seen in table 4.

The inner model testing in this study aims to analyze the relationships between one variable and another. Two tests are conducted: Variance Inflation Factors (VIF) and R-Square [3]. VIF is use as on indicator of multicollinearity among independent variables. VIF value should be <5 and >0.2; otherwise, multicollinearity issues among constructs may be present [1]

The following criteria apply to the R-Square value's magnitude: an R-Square value of less than 0.25 is deemed weak, an R-Square value of 0.50 is deemed moderate, and an R-Square value of 0.75 is deemed high [3].

Table 1. Determination Coefficient (R^2)

	R-square	Category
AI	0.273	Weak
PEOU	0.211	Weak
S	0.488	Moderate

The R-Square values in this study are as follows: R-Square value of Adoption Intention is 0.273, demonstrating a poor degree of forecasting. Perceived ease of use has an R-Square value of 0.211, additionally suggesting a poor degree of prediction.

Satisfaction's R-Square value is 0.488, indicating a moderate level of prediction. This suggests that the variables information quality, system quality, service quality, computer self-efficacy, internet self-efficacy, perceived ease of use, and satisfaction collectively explain 27.3% of the variance in Adoption Intention, with weak predictive power. The remaining 72.7% is explained by other unexamined variables in this research model.

Furthermore, the R-Square value for the perceived ease of use variable is 0.211, indicating that computer self-efficacy and internet self-efficacy influence perceived ease of use by 21.1%, with weak predictive power. The remaining 78.9% is explained by other unexamined variables in this research model. Lastly, the R-Square value for the satisfaction variable is 0.488, indicating that information quality, system quality, service quality, computer self-efficacy, and internet self-efficacy collectively explain 48.8% of the variance in satisfaction, with moderate predictive power. The remaining 51.2% is explained by other un-

examined variables in this research model. Since the VIF and R-Square values of the constructs meet the requirements, further testing of the structural model can be conducted, as shown in Table 6.

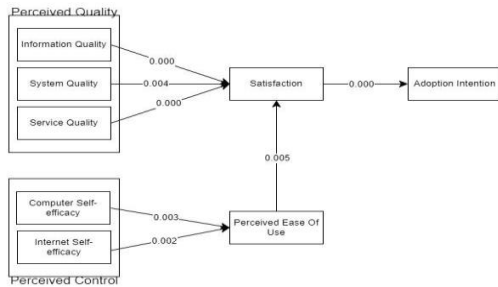Figure 2, depicting the final research models.

Figure 2. Final Result Model

H1 is accepted, indicating that In-

formation Quality significantly influences Satisfaction.

H2 is accepted, signifying that System Quality significantly affects Satisfaction. H3 is accepted, indicating that Service Quality significantly impacts Satisfaction. H4 is accepted, suggesting that Computer Self-efficacy significantly influences Perceived Ease of Use.

H5 is accepted, demonstrating that Internet Self-efficacy significantly affects Perceived Ease of Use. H6 is accepted, indicating that Perceived Ease of Use significantly influences Satisfaction. H7 is accepted, signifying that Satisfaction significantly influences Adoption Intention.

Table 2. Loading Factor Test Result

	AI	CSE	INFQ	ISE	PEOU	S	SERVQ	SYSQ
AI1	0.837							
AI2	0.885							
AI3	0.908							
CSE1		0.721						
CSE2		0.727						
CSE3		0.784						
CSE4		0.830						
INFQ1			0.799					
INFQ3			0.772					
INFQ4			0.795					
INFQ2			0.815					
ISE1				0.752				
ISE2				0.805				
ISE3				0.826				
ISE4				0.798				
PEOU1					0.807			
PEOU2					0.817			
PEOU3					0.804			
S1						0.788		
S2						0.834		
S3						0.809		
SERVQ1							0.808	
SERVQ2							0.783	
SERVQ3							0.805	
SERVQ4							0.815	
SYSQ1								0.771
SYSQ2								0.780
SYSQ3								0.807
SYSQ4								0.823

Table 3. Average Variance Extracted (AVE)

	Average Ariance Extracted (AVE)
AI	0.769
CSE	0.588
INFQ	0.632
ISE	0.633
PEOU	0.655
S	0.657
SERVQ	0.645
SYSQ	0.633

Table 4. Results of the Cronbach's Alpha Test and Composite Reliability

	Cronbach's Alpha (CA)	Composite Reliability (CR)
AI	0,850	0,909
CSE	0,782	0,851
INFQ	0,807	0,873
ISE	0,807	0,873
PEOU	0,737	0,851
S	0,739	0,852
SERVQ	0,817	0,879
SYSQ	0,807	0,873

Table 5. HTMT Result

	AI	CSE	INFQ	ISE	PEOU	S	SERVQ	SYSQ
AI								
CSE	0,186							
INFQ	0,425	0,346						
ISE	0,317	0,353	0,462					
PEOU	0,136	0,391	0,293	0,520				
S	0,659	0,367	0,685	0,493	0,547			
SERVQ	0,364	0,329	0,326	0,345	0,301	0,609		
SYSQ	0,181	0,406	0,490	0,523	0,230	0,589	0,422	

Table 6. Structured Model's Evaluation Results

Hypothesis	Path	T statistics	P values	Result
H1	INFQ -> S	4.118	0.000	Accepted
H2	SYSQ -> S	2.853	0.004	Accepted
H3	SERVQ -> S	3.662	0.000	Accepted
H4	CSE -> PEOU	2.953	0.003	Accepted
H5	ISE -> PEOU	3.033	0.002	Accepted
H6	PEOU -> S	2.825	0.005	Accepted
H7	S -> AI	10.002	0.000	Accepted

CONCLUSION

In this study, both theories of TAM and D&M employed to investigate influence of perceived quality, perceived control, and perceived ease of use factors as determinants of the residents of West Papua Province's intention to utilize the LaporKitong application. Based on the results and discussions previously outlined, all the independents and mediation variabels are accepted. This means that they are all statistically significant in determination the intenion to adopt Laporkitong aplication. This implies that for the application to be adopted, all the latent variables need to be improved and managed accordingly.

In the study, it can be concluded that all 7 hypotheses were accepted. This

indicates that information quality, system quality, service quality, computer self-efficacy, internet self-efficacy, perceived ease of use, and satisfaction influence users to have the intention to adopt the Laporkitong application.

BIBLIOGRAPHY

[1]   P. W. Azizah and M. Sanglise, "Apa Yang Memotivasi Seseorang Mengakses Aplikasi Mobile Laporkitong? Perspektif Teori Uses And Gratification (U&G) Dengan PLS-SEM," *J. Ris. Sist. Inf. Dan Tek. Inform. (JURASIK*, vol. 9, no. 1, pp. 383–390, 2024, [Online]. Available: https://tunasbangsa.ac.id/ejurnal/index.php/jurasikMotivasiseseorang mengaksesaplikasimobileLaporKitong

[2]   N. P. Permatasari, A. W. Wijayanto, and W. Marsisno, "Analisis Cluster Kondisi Keterampilan , Akses dan Fasilitas Teknologi Informasi dan Komunikasi di Indonesia Cluster Analysis Conditions of Access , Facilities , and Information and Computer Technology Skills in Indonesia," vol. 13, no. 148, 2024, doi: 10.34010/komputika.v13i1.10796.

[3]   N. Wanma, D. I. Inan, L. Y. Baisa, and W. Papua, "Evaluasi User Experience Dan User Interface Aplikasi Laporkitong Dengan End User Computing Satisfaction something that is of great concern and determines the experience of using it for the people of".

[4]   R. Indriani, S. Tilaar, A. J. Tinangon, K. Arkuki, and K. F. Pante, "ISSN 2442-3262 ANALISIS TINGKAT KEKUMUHAN KAWASAN PERUMAHAN DAN MANOKWARI BARAT Abstrak Jurnal Perencanaan Wilayah dan Kota Jurnal Perencanaan Wilayah dan Kota," vol. 7, no. 1, pp. 11–22, 2020.

[5]   S. M. Rahakbauw, D. I. Inan, and R. Juita, "Analyzing Privacy Concern and Technology Anxiety as Determinants of Web-Based Laporkitong Adoption Level: UTAUT 2 Perspective," pp. 1–10.

[6]   J. C. Roca, C. M. Chiu, and F. J. Martínez, "Understanding e-learning continuance intention: An extension of the Technology Acceptance Model," *Int. J. Hum. Comput. Stud.*, vol. 64, no. 8, pp. 683–696, 2006, doi: 10.1016/j.ijhcs.2006.01.003.

[7]   D. Y. Prasetyo, "ANALISIS PENERIMAAN INFORMASI PENGGUNA WEBSITE DENGAN MENGGUNAKAN TECHNOLOGY ACCEPTANCE MODEL (STUDI KASUS: dpmd.inhilkab.go.id)," *Selodang Mayang J. Ilm. Badan Perenc. Pembang. Drh. Kabupaten Indragiri Hilir*, vol. 6, no. 3, pp. 178–187, 2020, doi: 10.47521/selodangmayang.v6i3.174.

[8]   S. Alharbi and S. Drew, "Using the Technology Acceptance Model in Understanding Academics' Behavioural Intention to Use Learning Management Systems," *Int. J. Adv. Comput. Sci. Appl.*, vol. 5, no. 1, 2014, doi: 10.14569/ijacsa.2014.050120.

[9] S. Maghfiroh and I. K. D. Nuryana, "Penerapan Metode TAM dan DeLone And McLean IS Succes untuk Mengevaluasi Keberhasilan Aplikasi Lazada," *JEISBI J. Emerg. Inf. Syst. Bus. Intell.*, vol. 3, no. 3, pp. 24–32, 2022.

[10] Y. Y. Marwanta, "Perekayasaan Model Sistem Informasi E-Learning Menggunakan Modifikasi Technology Acceptance Model Untuk Pembelajaran Siswa Sekolah Menengah Kejuruan," *Semin. Ris. Teknol. Inf. (SRITI).*, pp. 283–294, 2016, [Online]. Available: https://studylibid.com/doc/114809

6/perekayasaan-model-sistem-informasi-e-learning

[11] P. Fahlevi and A. O. P. Dewi, "Analisis Aplikasi Ijateng Dengan Menggunakan Teori Technology Acceptance Model (TAM)," *J. Ilmu Perpust.*, vol. 8, no. 2, pp. 103–111, 2019.

[12] C. H. Buzin, S. A. Dewhurst, and R. L. Seecof, "Temperature sensitivity of muscle and neuron differentiation in embryonic cell cultures from the Drosophila mutant, shibirets1," *Dev. Biol.*, vol. 66, no. 2, pp. 442–456, 1978, doi: 10.1016/0012-1606(78)90250-6.