

Digital-Based Services, Information Transparency and the Effectiveness of Public Applications on User Satisfaction through Service Quality at the Class II Non-TPI Palopo Immigration Office

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Abstract

Digital transformation in public services is crucial in modern governance, particularly in immigration services, which demand efficiency, transparency, and accountability. The implementation of digital-based services, information transparency, and the effectiveness of public applications are seen as strategic instruments for improving service quality and public satisfaction. However, further study is needed to determine the contribution of these three factors to user satisfaction. This study aims to analyze the influence of digital-based services, information transparency, and the effectiveness of public applications on user satisfaction, with service quality as a mediating variable, at the Class II Non-TPI Palopo Immigration Office. A quantitative approach with explanatory research was used through Structural Equation Modeling-Partial Least Square (SEM-PLS) analysis, with Outer Model analysis (Convergent Validity Test & Reliability Test) and Inner Model (R-Square Test & Path Coefficient) on 92 respondents obtained using simple random sampling technique. The results of the study indicate that all independent variables, both directly and indirectly, have a positive and significant impact on user satisfaction. Directly, digital-based services, information transparency, and the effectiveness of public applications have been shown to increase user satisfaction. Furthermore, service quality successfully mediated the effects of these three variables on user satisfaction. The results of this study indicate that the digitalization of immigration services can be reflected in the strengthening of technological infrastructure (digital-based services), transparent information delivery (openness), and the development of stable and user-friendly applications (application effectiveness). This, in turn, can lead to a sustained increase in public satisfaction.

Keywords: Effectiveness, Information_Disclosure, Satisfaction, Quality, Digital-based_Services

1. Introduction

The development of information and communication technology has driven a major transformation in the delivery of public services in various parts of the world, including Indonesia. The Indonesian government has responded to this change by implementing an Electronic-Based Government System (SPBE), as stipulated in Presidential Regulation No. 95 of 2018, which aims to create integrated, efficient, and transparent government services.[1] However, the success of digitalizing public services depends not only on the availability of technology, but also on the effectiveness of the system, the transparency of information, and the direct experience and satisfaction of users.[2].

Digital transformation in the public sector now places greater emphasis on user orientation as the primary indicator of service success. Based on the theoretical realm, the DeLone and McLean Information System Success Model framework emphasizes that system quality, information quality, and service quality influence user satisfaction, which ultimately impacts the perceived benefits or outcomes (net benefits) of service users. The framework or

model in this study is relevant in the context of digital services, as it links digital system inputs (digital services, information transparency, and application effectiveness) with perceived outputs (service quality), through the mediating role of user satisfaction.[3]

Several recent studies have confirmed the importance of this research approach. System quality, service, and ease of access significantly influence public satisfaction with digital public service applications. System quality was the dominant factor in these research findings.[4] Other relevant research shows that implementing an integrated digital service system at Dukcapil (Civil Registry) accelerates service processes and increases transparency. However, its success depends heavily on ease of system access and the public's digital literacy.[5].

In the realm of immigration services, the M-Passport application is a concrete manifestation of digital transformation, successfully delivering convenience and efficiency. Through its document upload, arrival scheduling, and digital notification features, the application significantly contributes to reducing physical queues and expediting the passport application process. The implementation of this digital system shows significant potential for improving service quality, especially when the application's features are optimally optimized and technical support is continuously strengthened to ensure a smoother and more reliable user experience. Relevant studies also reveal that digital service innovation has a significant impact on public satisfaction. This satisfaction successfully mediates increased trust and perceptions of the quality of public services.[6].

Furthermore, information transparency integrated into the digital service system helps strengthen transparency and public trust. Clear, fast, and easily accessible information delivery is a crucial element in supporting a positive service experience. The combination of an effective application system and open public communication creates a strong foundation for continuously improving the quality of immigration services. The availability of comprehensive and easily accessible information directly impacts user satisfaction, fostering a sense of security, information, and well-being. When the application system operates effectively and public information is conveyed clearly, user perceptions of service quality improve significantly. In this context, satisfaction is not only an indicator of service success but also acts as a bridge between digital services and perceived service quality.

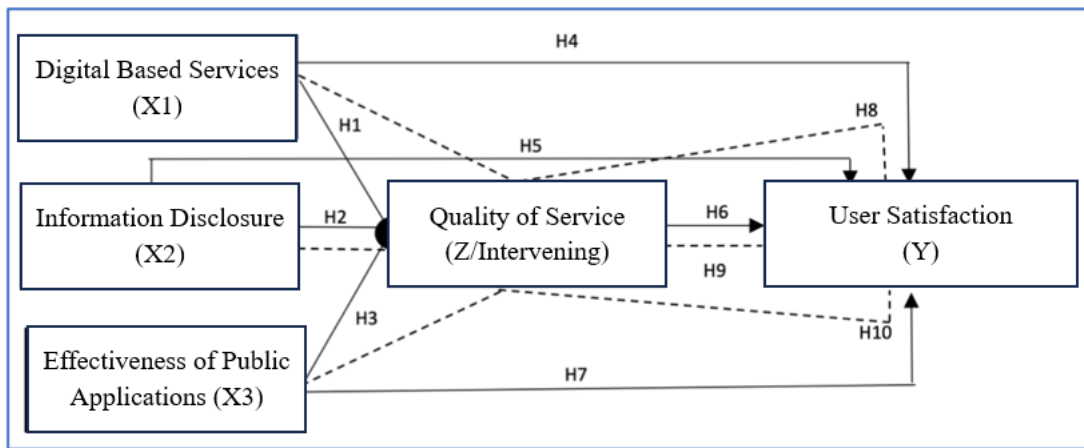
The conceptual model in this study aims to map the influence of digital-based services, information transparency, and application effectiveness on user satisfaction, with service quality as an intervening variable. This study is expected to analyze the interplay between these variables. Furthermore, it is expected to contribute to the development of user-experience-based digital public services and provide policy implications for improving the

quality of immigration services, particularly at the Class II Non-TPI Palopo Immigration Office.

2. Methodology

This study uses a quantitative approach with an explanatory research type, which aims to explain the causal relationship between the variables studied. The independent variables in this study are digital-based services, information disclosure and the effectiveness of public applications. The mediating variable is service quality. While the dependent variable is user satisfaction. The analysis method used is Structural Equation Modeling with the Partial Least Square (SEM-PLS) approach to test complex structural models with variables. The population in this study is all people who use immigration services at the Class II Non-TPI Palopo Immigration Office during the study period, namely from June to August 2025. Based on data from the Class II Non-TPI Palopo Immigration Office, the average number of visitors per 3 months reaches 800-1000 people who access various types of immigration services. Data were collected through a questionnaire with a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Questionnaires were distributed directly to respondents at the Class II Non-TPI Palopo Immigration Office during service operating hours. The sampling technique used simple random sampling with a population of 1000 people. The determination of sample size refers to the Slovin formula with a 95% confidence level ($\alpha = 0.05$) and a margin of error of 10%, so that a minimum sample size of 91 respondents was obtained. However, in this study, 92 respondents were used to anticipate the potential for invalid data or data loss during the data collection process. Based on the conceptual framework built, the hypotheses of this study are as follows: Digital-based services affect satisfaction; Information disclosure affects satisfaction; Application effectiveness affects satisfaction; Digital-based services affect service quality; Application effectiveness affects service quality; Service quality affects satisfaction; Digital-based services affect satisfaction through service quality as an intervening variable; Information disclosure affects satisfaction through service quality as an intervening variable; Service effectiveness affects satisfaction through service quality as an intervening variable.

Figure 1. Research Concept Framework



The data analysis technique uses SEM-PLS with the help of SmartPLS software. The analysis stages include: Outer Model Analysis (Convergent Validity Test and Reliability Test (Cronbach's Alpha > 0.7, Composite Reliability > 0.7)). Next, Inner Model Analysis is carried out (R-Square Test to measure the model's predictive ability, Path Coefficient Test to test the hypothesis and Indirect Effect Test to test the mediation effect. Finally, the Conclusion is presented through the results of the Hypothesis test by looking at the t-statistic and p-value. The hypothesis is accepted if the t-statistic > 1.96 and p-value < 0.05 at a significance level of 5%).

3. Result and Discussion

3.1. Results

Based on the data collected from all respondents, the following description of the respondent characteristics was obtained;

Table 1. Respondent Description

Characteristics	Frequency	Percentage
Gender		
Man	60	65.22%
Woman	32	34.78%
Age		
>20 years	26	28.26%
20-30 years	25	27.17%
31-40 years	28	30.43%
41-50 years	13	14.13%
Education		

High School/Vocational School	26	28.26%
Diploma	29	31.52%
S1	30	32.61%
S2	7	7.61%
Type of Service		
Passport	80	86.96%
Foreigners	2	2.17%
Other	10	10.87%

Based on the table above, the number of male respondents (65.22%) is greater than the number of female respondents (34.78%). The age group dominated by those aged 31-40 (30.43%). In terms of education, the majority were bachelor's degree graduates (32.61%). Passport services were the most common type, accounting for 86.96%.

Convergent Validity Test

The results of the outer model analysis show that all indicators have a loading factor > 0.7, indicating good convergent validity.

Table 2. Variable Factor Loadings

Analysis	Digital-Based Services					Information Disclosure					Effectiveness of Public Applications				Quality of Service			User Satisfaction				
	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	1	2	3	1	2	3	4	5	
loading	.731	.712	.736	.760	.795	.816	.820	.771	.865	.733	.864	.761	.815	.781	.886	.825	.833	.811	.723	.876	.844	
Factor	VALID					VALID					VALID				VALID			VALID				
tatus																						

Table 2 shows that all variables were deemed valid in the convergent validity test (>0.70). This indicates that the data obtained were consistent, had minimal bias, and could accurately describe the research results.

Reliability Test

Based on the table below, all variables show Cronbach's Alpha and Composite Reliability values > 0.7 and AVE > 0.5 , indicating that the research instrument is reliable and valid.

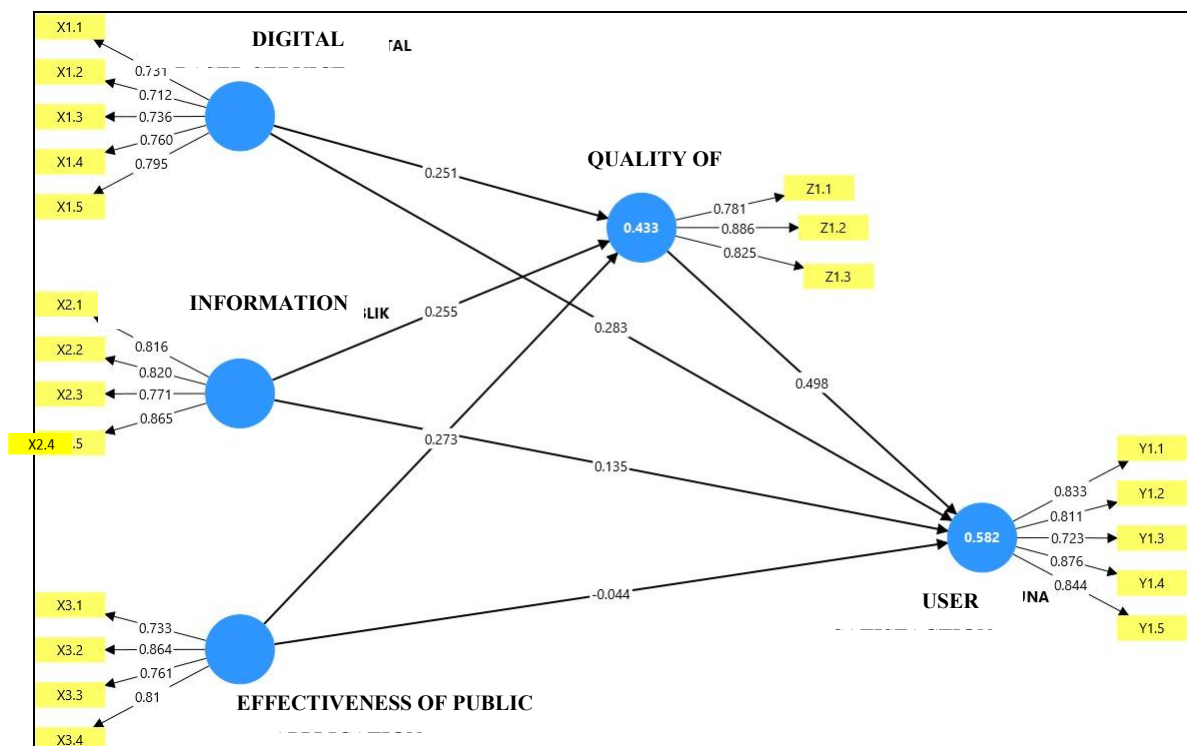
Table 3. Reliability Test Results

Variables	Cronbach's Alpha	Composite Reliability	AVE	Status
Digital-Based Services	0.804	0.863	0.559	Reliable
Information Disclosure	0.838	0.890	0.670	Reliable
Application Effectiveness	0.810	0.872	0.632	Reliable
Quality of Service	0.776	0.871	0.692	Reliable
User Satisfaction	0.876	0.910	0.671	Reliable

Inner Model Analysis

The following is a conceptual framework for the research which is also a graphical display of the SEM model.

Figure 2. SEM Model



R-square test

The R-Square value shows that the model is able to explain 83.2% of the variance in user satisfaction and 61.4% of the variance in service quality.

Table 4. R-square value

Variables	R-square	R-square adjusted
User Satisfaction	0.824	0.832
Quality of Service	0.633	0.614

Hypothesis Testing

a. Direct Effect Hypothesis Test

Table 5. Results of the Direct Effect Hypothesis Test

Hypothesis	Variables	T-Statistics	P-value	Results
H1	Digital-Based Services -> User Satisfaction	3,516	0.001	Accepted
H2	Information Transparency -> User Satisfaction	2,456	0.016	Accepted
H3	Application Effectiveness -> User Satisfaction	2,406	0.044	Accepted
H4	Digital-Based Services -> Service Quality	2,620	0.010	Accepted
H5	Information Disclosure -> Service Quality	2,473	0.015	Accepted
H6	Application Effectiveness -> Service Quality	2,954	0.004	Accepted
H7	Service Quality -> User Satisfaction	4,184	0.000	Accepted

Based on this table, all variables are proven to have a direct impact on user satisfaction and service quality.

b. Indirect Effect Hypothesis Test

Table 6. Results of the Indirect Effect Hypothesis Test (Mediation)

Hypothesis	Variables	T-Statistics	P-value	Results
H8	Digital-Based Services Quality -> User Satisfaction	2,203	0.030	Accepted
H9	Information Disclosure Quality -> User Satisfaction	2,052	0.043	Accepted
H10	Application Effectiveness Quality -> User Satisfaction	2,168	0.033	Accepted

Based on the table above, all indirect influence test results for each variable were proven to be significant. Therefore, service quality successfully mediated the variables of digital-based service, information transparency, and application effectiveness in increasing user satisfaction

3.2. Discussion

3.2.1 The Influence of Digital-Based Services, Information Transparency and the Effectiveness of Public Applications on User Satisfaction

The results of this study indicate that digital-based services, information transparency, and the effectiveness of public applications have a positive and significant impact on user satisfaction at the Class II Non-TPI Palopo Immigration Office. These results align with the Information System Success model, which states that service quality, information quality, and system quality are the main determinants in increasing user satisfaction with digital government systems. Based on the context of this study, the success of the digital transformation of immigration services is evident through the high satisfaction scores of users who responded positively to the ease of service, clarity of information, and efficiency of the application system.[7].

Specifically, digital-based services have been shown to improve the efficiency and convenience of immigration services. This finding is supported by a study that found that the quality of digital services impacts perceived ease of use and public satisfaction.[8]At the Palopo Immigration Office, the use of an online queuing system, application status notifications, and registration via app has reduced waiting times and avoided physical queues. However, optimal effectiveness also depends on the quality of the internet connection, the app

interface, and system reliability. Furthermore, information transparency plays a significant role in building user trust and satisfaction. When service information is presented clearly, completely, and up-to-date, users will feel valued.[9]Research in Bandung City shows that information transparency in e-government increases satisfaction while preventing public distrust of government services.[3].

The effectiveness of public applications, as a proxy for system quality, also has a significant impact on user satisfaction. Stable, responsive, and easy-to-use applications expedite service processes and reduce user frustration. This aligns with other research findings that emphasize the importance of efficient digital systems in creating public value.[10]However, the effectiveness of the system in the field can also be influenced by the readiness of the technological infrastructure, internal human resources, and user adaptation to digital platforms. Therefore, the success of digital services in Palopo reflects the integration of effective technological systems and a commitment to transparent and responsive service, ultimately resulting in increased user satisfaction.

3.2.1 The Influence of Digital-Based Services, Information Disclosure and the Effectiveness of Public Applications on Service Quality

The results of this study indicate that digital-based services, information transparency, and the effectiveness of public applications each have a positive and significant influence on service quality at the Palopo Immigration Office. This finding aligns with the Digital Public Service Quality (PS-DigQual) framework, which assesses digital services based on three main aspects: system quality, operational quality, and information quality. This means that digital-based public services are considered high quality if the system runs smoothly, the process is efficient, and the information provided is clear and accurate. The study also emphasizes that the success of digital services is highly dependent on adequate technological infrastructure, uncomplicated service processes, and open and easy-to-understand information delivery.[11].

In the digital-based service dimension, this finding is consistent with various studies on digital transformation in the public sector, which show that digitalization of service processes (e.g., online queuing systems, digital registration, automatic notifications) has the potential to increase efficiency, accessibility, and responsiveness to user needs.[12]In the context of immigration services at the Palopo Class II Non-TPI Immigration Office, digital services can eliminate physical barriers such as distance to the office, waiting times, and operational hour restrictions. This allows users to experience easier, faster, and more flexible services. Furthermore, information transparency plays a crucial role in strengthening trust and reducing

user uncertainty. Providing clear, complete, and accessible information improves public perception of the quality of service received. Other relevant studies confirm that accurate and transparent information is fundamental to building positive perceptions of digital public services, particularly in bureaucratic sectors often perceived as complex and closed.[13].

Finally, the effectiveness of public applications (i.e., application performance: reliability, speed, minimal bugs, module integration) can directly contribute to how users assess the quality of digital services. Even if a digital system is available, if the application frequently experiences disruptions, slow loading, or confusing navigation, perceptions of service quality will decline. The results of this study indicate that application effectiveness has a significant influence on service quality. This aligns with the information systems quality framework, which states that system quality and service quality are interrelated and influence user satisfaction and perceptions.[14]The success of the public application at the Class II Non-TPI Palopo Immigration Office in providing a rapid response, minimizing downtime, and securely managing user data supports the perception that the service provided is “good” or “high-quality.”

3.2.3 The Influence of Digital-Based Services, Information Disclosure and the Effectiveness of Public Applications on User Satisfaction through Service Quality

3.2.3.1 Digital-Based Service Mediation on User Satisfaction through Service Quality

The results of this study confirm that digital-based services not only directly influence user satisfaction but also significantly impact it through an indirect pathway, namely service quality as a mediating variable. This means that digital transformation in the service process does not necessarily automatically increase user satisfaction unless users perceive an improvement in the quality of the service they receive. In the context of the Palopo Class II Non-TPI Immigration Office, the implementation of an online queuing system, application tracking via an application, and information delivery based on social media platforms are key instruments in service digitization. However, user satisfaction is more influenced by how the service is implemented, particularly regarding speed, responsiveness, the absence of technical obstacles, and the ability to meet public expectations. The results of this study also align with the eService Quality theoretical model, which explains that the technical and functional dimensions of digital services (system reliability, ease of navigation, and speed of response) play a crucial role in shaping perceptions of service quality, which in turn can impact end-user satisfaction.[15]. Furthermore, other research also states that consistency in the quality of

digital services is proven to be an important mediator between service quality and user satisfaction of digital public services.[16].

3.2.3.2 Mediation of Information Disclosure towards User Satisfaction through Service Quality

Information transparency indirectly influences user satisfaction through service quality, acting as a mediator, according to the results of this study. Therefore, open and transparent information (e.g., procedures, time estimates, service requirements) does not automatically result in high satisfaction if users do not experience tangible service quality. In the context of the Palopo Class II Non-TPI Immigration Office, service users tend to value transparency more when there are fast and clear processes and services. This then forms the perception of quality service. Through the perception of service quality, service users ultimately feel satisfied and provide a positive assessment of the overall service experience.[17] This idea is supported by literature on transparency and the quality of public services, which states that transparency has a positive effect on citizen satisfaction.[18] Therefore, transparency or openness in immigration services has the potential to strengthen perceptions of the quality of immigration services.

3.2.3.3 Mediation of Application Effectiveness on User Satisfaction through Service Quality

The results of this study indicate that the effectiveness of public applications not only directly influences user satisfaction but also indirectly through service quality as a mediator. Perceptions of service quality are an important pathway for interpreting the technical benefits of applications into more tangible user satisfaction. This finding is supported by studies on e-services and digital services. Mobile application quality influences user satisfaction/loyalty through intermediary variables such as customer satisfaction.[19] App users also tend to feel satisfied and happy with the quality of a product or service if its performance exceeds their expectations. This is further reinforced by the MSQUAL model by Zhao et al., who found that the higher the quality of a mobile app's service, the greater the level of customer satisfaction.[20]. Other studies that focus on mobile applications also show a significant relationship between digital service quality and user satisfaction.[21]. In addition, the ease of use factor in mobile applications has been shown to have an impact on customer satisfaction.[22].

4. Conclusion

This study concludes that digital-based services, information transparency, and the effectiveness of public applications have a positive and significant impact on user satisfaction, both directly and indirectly through service quality as a mediating variable. These results indicate that the digital transformation of public services at the Class II Non-TPI Palopo

Immigration Office depends not only on the availability of technology, but also on how the technology improves the quality of service perceived by the public, such as process efficiency, information clarity, speed, and application reliability. Service quality proved to be a key factor bridging the influence of these three independent variables on user satisfaction. The success of the digitization of immigration services is reflected in the strengthening of technological infrastructure (digital-based services), transparent information delivery (openness), and the development of stable and easy-to-use applications (application effectiveness). This will ensure that public satisfaction continues to increase sustainably.

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