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ANALYSIS OF THE RELATIONSHIP BETWEEN DIGITAL SERVICE QUALITY, PERCEIVED VALUE, AND LOYALTY IN THE PUBLIC SECTOR: A STUDY AT SOCIAL SECURITY ADMINISTRATOR FOR EMPLOYMENT (BPJS KETENAGAKERJAAN) YOGYAKARTA BRANCH

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ABSTRACT

This study examines the relationships among E-S-Qual, perceived value, and customer loyalty among users of the BPJSTKU application at the BPJS Ketenagakerjaan Yogyakarta Branch. A quantitative approach was employed, using data collected from 200 respondents through structured questionnaires measured on a five-point Likert scale. The data were analyzed using Structural Equation Modeling (SEM) with AMOS 23. The findings indicate that E-S-Qual has a positive and significant effect on both perceived value and customer loyalty. Additionally, perceived value significantly influences customer loyalty and serves as a mediating variable in the relationship between E-S-Qual and customer loyalty. These results highlight the critical role of electronic service quality in shaping customer perceptions and strengthening loyalty. This study contributes to the literature by confirming the mediating role of perceived value and offers managerial implications for enhancing digital service performance.

INTRODUCTION

Indonesia's digitalization era has accelerated the development of technology-based innovations, particularly electronic services (e-services), which are defined as activities delivered through information technology (Rowley, 2006). These services are widely adopted

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across various sectors, including e-commerce, travel booking, and online marketplaces. The public sector has also embraced digital platforms, such as online tax systems and the BPJSTKU application developed by BPJS Ketenagakerjaan, which serves as the focus of this study. In this context, maintaining high electronic service quality (E-S-Qual) is crucial for fostering user loyalty and ensuring long-term sustainability. Previous studies suggest that users evaluate technology based on both positive and negative experiences, where perceived quality is shaped by the dominant experience (Mick et al., 1995; Parasuraman & Malhotra, 2000).

E-S-Qual represents consumers' overall evaluation of their electronic service experience. Initially conceptualized with multiple dimensions, it was later refined into four core dimensions: efficiency, fulfillment, system availability, and privacy (Parasuraman et al., 2005). Empirical studies in Indonesia have demonstrated that E-S-Qual significantly influences consumer loyalty. For instance, prior research on various digital platforms consistently shows that higher electronic service quality enhances user satisfaction and loyalty by improving transactional experiences.

Despite extensive research in profit-oriented private sectors, studies on E-S-Qual in the public sector remain limited. This limitation is often attributed to differences in organizational objectives, less clearly defined performance indicators, and more complex service environments (Kearsey & Varey, 1998). Nevertheless, evaluating E-S-Qual in public organizations is essential, as effective digital services can improve efficiency, reduce physical queues, and optimize resource utilization (Buckley, 2003). Existing studies in Indonesia indicate that while some dimensions of E-S-Qual are well implemented in public services, others still require improvement.

Given the limited empirical evidence in the public sector, this study aims to examine the effect of E-S-Qual on consumer loyalty, with perceived value as a mediating variable. Perceived value reflects consumers' evaluation of the benefits relative to the costs incurred and plays a significant role in shaping loyalty (Schiffman & Kanuk, 2009; Chinomona et al., 2014). This research focuses on BPJS Ketenagakerjaan, a public institution providing social security services. In practice, branch offices in Yogyakarta often experience long queues, particularly for Old-Age Security claims. To address this issue, the BPJSTKU application has been introduced to facilitate online queue booking and access to various services. Therefore, this study explores how E-S-Qual influences consumer loyalty through perceived value among BPJSTKU users in Yogyakarta.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

E-Service Quality (E-S-Qual) represents consumers' overall evaluation of electronic service experiences, reflecting the extent to which online services meet expectations without direct human interaction (Parasuraman & Malhotra, 2000; Pearson, Tadisina, & Griffin, 2012). Rooted in service quality theory (Kotler & Keller, 2012; Lupiyoadi, 2013), E-S-Qual emphasizes efficiency, fulfillment, system availability, and privacy (Parasuraman, Malhotra, & Zeithaml, 2005). Key dimensions include reliability, responsiveness, information quality, ease of use, site design, and security (Ladhari, 2010; Santos, 2003). Effective E-S-Qual enhances customer satisfaction, perceived value, and loyalty, particularly in e-commerce and online public services, highlighting its strategic role in digital service delivery and competitive advantage (Rowley, 2006; Francis & White, 2002; Ho & Lee, 2007).

Previous studies indicate that digital service quality (E-S-Qual) significantly influences perceived value in online contexts. Lee and Overby (2004) identify two types of value in online shopping: utilitarian, reflecting functional benefits such as price savings, service, time efficiency, and gift selection, and experiential, encompassing entertainment, escapism, visual appeal, and interactivity, both positively affecting satisfaction and loyalty. Perceived value

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arises not only from products but also from service processes, including search, ordering, and delivery (Keeney, 1999). Empirical evidence supports this relationship, as shown by Zehir and Narcıkara (2016) in Turkey, Chinomona, Masinge, and Sandada (2014) in South Africa, Widiaputri, Suharyono, and Bafadhal (2018) in Malang, Lasyakka (2015) on Lazada, Puspitasari (2013) on online shops, Lien et al. (2011) in Taiwan, and Wang (2014) on m-government services in China.

H_1: *E-S-Qual positively affects perceived value.*

Perceived value, defined by Zeithaml (1988) as consumers' overall assessment of a product's utility based on perceptions of what is received versus what is given, is considered a critical factor in attracting and retaining consumers (Mosavi & Ghaedi, 2012) and a key construct for predicting consumer purchase behavior (Chen & Dubinsky, 2003). Consumers' future purchase intentions often depend on the value obtained from prior interactions, where relationship-building and continuous value delivery can enhance loyalty (Ibzan, Balarabe & Jakada, 2016). Empirical studies support this relationship: Gera & Singhvi (2011) found a positive and significant link between perceived value and consumer loyalty among 236 Indian university students using content-rich websites; Yoo & Park (2016) reported that perceived value from mass customization positively influenced loyalty among 303 female online shoppers in South Korea; Lin, Lobo, & Leckie (2017) demonstrated a significant positive effect of perceived value on loyalty in a green branding context with 826 respondents in China; Chahal & Kumari (2011) confirmed that consumer perceived value positively affects consumer loyalty among 515 inpatients at public hospitals in Jammu, India.

H_2: *Perceived value positively affects consumer loyalty.*

E-services are defined as the provision of services through electronic networks, such as the Internet, and serve as a strong source of competitive differentiation (Rust & Lemon, 2001), including e-commerce and e-governance. Customer loyalty can emerge when online providers deliver superior services compared to competitors, making service quality a critical determinant of loyalty (Reichheld & Schefter, 2000). Empirical studies confirm this relationship: Quach, Thaichon, & Jebarajakirthy (2016) found that ISP service quality dimensions positively influence customer loyalty among 4,000 residential internet users in Thailand; Lee & Wong (2016) reported efficiency, system availability, fulfillment, and privacy significantly affect mobile commerce loyalty in Malaysia among 214 respondents; Cheng, Fu, & de Vreede (2018) showed that online service quality in car services, assessed by information accuracy, competence, and empathy, positively impacts consumer loyalty among 294 respondents in China.

H_3: *E-S-Qual positively influences consumer loyalty.*

E-S-Qual also influences consumer loyalty indirectly through perceived value, which is conceptualized as the outcome of benefits relative to sacrifices, where quality represents benefits and price represents sacrifices (Monroe, 1990). Perceived value comprises four dimensions: emotional value, social value, quality/performance value, and price/value for money (Sweeney & Soutar, 2010). Consumers perceive fairness when the ratio of their received outcomes to inputs aligns with that experienced by the firm (Oliver, 1997). As a higher-order construct, perceived value drives consumer behavioral intentions, including loyalty (Sirdeshmukh, Singh, & Sabol, 2002). E-loyalty reflects the intention to repeatedly engage with a service, make purchases, and recommend it to others (Cry, 2008; Chen et al., 2009).

H_4: *E-S-Qual positively influences loyalty through perceived value.*

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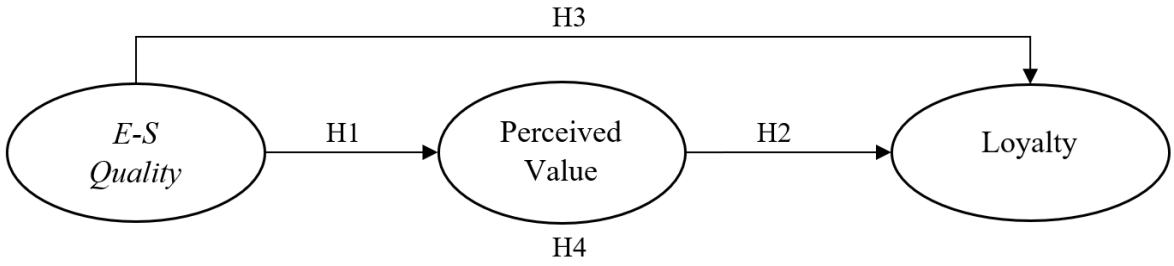

Figure 1. Research Framework
Source: Adopted from Zehir et al., (2014)

RESEARCH METHODS

This study employs a quantitative approach to examine the relationships among E-S-Qual, perceived value, and customer loyalty of BPJSTKU application users in Yogyakarta. The population consists of individual consumers utilizing the BPJSTKU application (Sekaran & Bougie, 2013), while the sample of 200 respondents was selected using a non-probability convenience sampling technique, which is suitable when the population size is unknown and participants are selected based on availability and willingness (Suliyanto, 2018; Hair et al., 2014). Primary data were collected via structured questionnaires using a five-point Likert scale to measure variables. Validity and reliability were confirmed through pilot testing with 45 respondents and Cronbach's alpha analysis. Hypotheses were tested using Structural Equation Modeling (SEM) via AMOS 23, following standard procedures for model specification, identification, and goodness-of-fit evaluation (Hair et al., 2014; Hasanah, 2017).

DATA ANALYSIS RESULTS & DISCUSSION

Respondent Profile

Table 1. Respondent Profile

Characteristics	Frequency	%
Gender		
Male	92	46.0
Female	108	54.0
Age		
13 – 25 years old	33	16.5
25 – 40 years old	120	60.0
40 – 55 years old	47	23.5
Education		
High School	30	15.0
Bachelor Degree	138	69.0
Master Degree	32	16.0
Duration of BPJSTKU Application Usage		
< 6 months	48	24.0
6–12 months	37	18.5
> 12 months	115	57.5
Frequency of BPJSTKU Application Usage in the Last Month		
< 5 times per month	173	86.5
5–10 times per month	22	11.0
> 10 times per month	5	2.5

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Source: Processed Primary Data (2020)

Based on Table 1, the descriptive analysis shows that the majority of respondents were female (54.0%), aged 25–40 years old (60.0%), and held a bachelor's degree (69.0%). Most participants had been using the BPJSTKU application for more than 12 months (57.5%). Regarding the frequency of application usage in the last month, the highest proportion of respondents reported using the app less than 5 times per month (86.5%), indicating that although users tend to have long-term experience with the application, frequent engagement remains relatively low.

Validity & Reliability Test Results

Validity testing ensures that questionnaire items are appropriate and relevant (Umar, 2008). Data are considered valid when the Pearson correlation coefficient (r count) exceeds the r table value and significance is below 0.05 (Priyatno, 2012). A pilot test with 45 respondents was conducted to assess item validity using SPSS. Reliability, indicating instrument consistency, was evaluated using Cronbach's Alpha, where values above 0.600 confirm acceptable internal consistency (Azwar, 2012; Malhotra, 1999).

Table 2. Pilot Test

Item		r-count	r-table	Cronbach's Alpha
E-S Quality				0.974
Ef1	The BPJSTKU application makes it easy for me to find the information I need.	0.806	0.312	
Ef2	The BPJSTKU application is easily accessible wherever I am.	0.756	0.312	
Ef3	The BPJSTKU application allows me to complete transactions (participant registration, online queue, card printing, balance checking, etc.) quickly.	0.827	0.312	
Ef4	Information in the BPJSTKU application is well-organized.	0.875	0.312	
Ef5	Processes on each page are fast.	0.841	0.312	
Ef6	The BPJSTKU application is easy to use.	0.836	0.312	
Ef7	The BPJSTKU application makes logging in quick and easy.	0.785	0.312	
Ef8	The BPJSTKU application is well-organized.	0.816	0.312	
KS1	The BPJSTKU application is always available.	0.697	0.312	
KS2	The BPJSTKU application can be opened and run properly.	0.834	0.312	
KS3	The BPJSTKU application is not corrupted.	0.802	0.312	
KS4	Pages in the BPJSTKU application do not freeze or display errors after I request information.	0.786	0.312	
PS1	The BPJSTKU application delivers what it promises (participant registration, online queue, card printing, balance checking, etc.).	0.672	0.312	
PS2	The BPJSTKU application provides options that make it easy for me to send information within an appropriate time frame.	0.866	0.312	
PS3	The BPJSTKU application presents the options I need.	0.867	0.312	
PS4		0.877	0.312	

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PS5	The BPJSTKU application provides options that should be available in the BPJS Ketenagakerjaan application.	0.855	0.312	
PS6	The BPJSTKU application offers options that can be trusted according to what is displayed.	0.708	0.312	
	The BPJSTKU application accurately fulfills command requests (participant registration, online queue, card printing, balance checking, etc.).			
P1	The BPJSTKU application protects users' habitual information.	0.837	0.312	
P2	The BPJSTKU application does not share users' personal information.	0.860	0.312	
P3	The BPJSTKU application protects information regarding the JHT balance (only the user can check it).	0.831	0.312	
Perceived Value				0.924
PN1	The information and services I want are available on the BPJSTKU application.	0.874	0.312	
PN2	Overall, I feel comfortable using the BPJSTKU application.	0.931	0.312	
PN3	The extensions/features of the BPJSTKU application give me a sense of control over my rights (checking JHT balance, checking registered salary/wages by the company, checking paid/unpaid contributions, etc.).	0.919	0.312	
PN4	Overall value can be obtained from the BPJSTKU application in relation to participant contributions and participant activities.	0.888	0.312	
Loyalty				0.870
Lo1	I will talk positively about the BPJSTKU application to others.	0.840	0.312	
Lo2	I will recommend the BPJSTKU application to others who need guidance.	0.667	0.312	
Lo3	I will encourage friends or others to use the BPJSTKU application.	0.880	0.312	
Lo4	I will consider BPJSTKU as my first choice for transactions (participant registration, online queue, card printing, balance checking, etc.) in the future.	0.853	0.312	
Lo5	I will perform more activities (participant registration, online queue, card printing, balance checking, etc.) using the BPJSTKU application in the coming month.	0.824	0.312	

Source: Processed Primary Data (2020)

Based on Table 2, the BPJSTKU application demonstrates strong validity and reliability across all measured constructs. The E-S-Qual dimension shows high item correlations (r-count > r-table) and excellent internal consistency (Cronbach's Alpha = 0.974), indicating that features such as ease of access, fast transactions, and well-organized processes are perceived as valid and reliable. The security/protection, perceived value ($\alpha = 0.924$), and loyalty ($\alpha = 0.870$) dimensions also exhibit high reliability, confirming consistent measurement. Overall, these results suggest that users find BPJSTKU functional, trustworthy, valuable, and are likely to recommend or continue using it.

Data Normality

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Assessment of data normality assumptions must be fulfilled to ensure that the data can be further analyzed using SEM modeling techniques. Multivariate normality can be tested by observing the Critical Ratio (CR) values of the data; if the multivariate CR is below 2.58, the data can be considered normally distributed. The results of the normality test in this study are presented in Table 3.

Table 3. Data Normality

Variable	min	max	Skew	c.r.	kurtosis	c.r.
LO5	2.000	5.000	-.393	-2.270	-.229	-.662
LO4	3.000	5.000	-.289	-1.670	-1.126	-3.251
LO3	3.000	5.000	-.286	-1.653	-.941	-2.716
LO1	3.000	5.000	-.114	-.657	-1.043	-3.010
PN4	3.000	5.000	-.084	-.483	-1.265	-3.651
PN3	2.000	5.000	-.123	-.710	-1.075	-3.103
PN2	3.000	5.000	-.311	-1.794	-1.138	-3.286
PN1	3.000	5.000	-.174	-1.006	-1.212	-3.500
EF	2.625	5.000	-.209	-1.209	-.764	-2.204
KS	2.667	5.000	-.060	-.346	-.746	-2.154
PS	2.667	5.000	-.243	-1.401	-.846	-2.443
P	2.000	5.000	-.291	-1.679	-.380	-1.097
Multivariate					1.099	.424

Source: Processed Primary Data (2020)

The normality test in Table 3 shows the multivariate CR value is 0.424. Since this value is below the threshold of 2.58, the data in this study can be considered normally distributed.

Next, outliers are observations that exhibit unique characteristics, with values that differ significantly from other observations and appear as extreme values. Multivariate outliers can be evaluated using the Mahalanobis Distance. It is calculated based on the chi-square value with 30 degrees of freedom corresponding to the 30 indicators at a significance level of $p < 0.001$, using the formula $\chi^2(30;0.001) = 50.89$. The results of the analysis, indicating the presence or absence of multivariate outliers, are presented in Table 4.

Table 4. Mahalanobis Distance Test

Observation number	Mahalanobis d-squared	p1	p2
54	27.138	.007	.773
80	25.795	.011	.670
168	24.240	.019	.729
111	24.071	.020	.564
1	23.859	.021	.421
160	22.570	.032	.608
11	22.291	.034	.534
143	21.865	.039	.523
200	21.192	.048	.616
28	20.069	.066	.853

Source: Processed Primary Data (2020)

Based on Table 4, there are no values exceeding 50.89. All data points fall below 50.89, indicating that the data tested using Mahalanobis Distance do not contain any outliers.

Next, confirmatory analysis is a method used to test a concept using a pre-established model with measurable indicators. The analysis is conducted by examining the loading factor of each indicator. The loading factor serves to measure construct validity, where a

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questionnaire is considered valid if its items effectively reflect the concept being measured. According to Hair et al. (2010), the minimum acceptable loading factor is ≥0.5, with an ideal value of ≥0.7. Indicators with loading factors below 0.5 are removed from the analysis.

Table 5. Loading Factor

			Estimate
EF1	<---	ESQ	.656
EF2	<---	ESQ	.615
EF3	<---	ESQ	.632
EF4	<---	ESQ	.670
EF5	<---	ESQ	.614
EF6	<---	ESQ	.759
EF7	<---	ESQ	.745
EF8	<---	ESQ	.768
KS1	<---	ESQ	.680
KS2	**<---**	**ESQ**	**.474**
KS3	<---	ESQ	.658
KS4	<---	ESQ	.570
PS1	<---	ESQ	.564
PS2	<---	ESQ	.820
PS3	<---	ESQ	.748
PS4	<---	ESQ	.824
PS5	<---	ESQ	.737
PS6	<---	ESQ	.622
P1	<---	ESQ	.690
P2	<---	ESQ	.705
P3	<---	ESQ	.649
PN1	<---	Perceived Value	.780
PN2	<---	Perceived Value	.826
PN3	<---	Perceived Value	.609
PN4	<---	Perceived Value	.710
Lo1	<---	Consumer Loyalty	.600
Lo2	**<---**	**Consumer Loyalty**	**.432**
Lo3	<---	Consumer Loyalty	.806
Lo4	<---	Consumer Loyalty	.807
Lo5	<---	Consumer Loyalty	.729

Source: Processed Primary Data (2020)

From Table 5, it was found that two indicators, LO2 and KS2, had loading factor values below 0.5 and therefore had to be removed from the analysis. After excluding these two invalid indicators, all remaining indicators in this study can be considered valid.

Confirmatory Analysis

The confirmatory model fit was assessed using the Goodness of Fit Index (GOFI). According to Hair et al. (2010), GOFI includes three types: absolute fit, incremental fit, and parsimony fit indices, totaling 25 criteria. However, SEM analysis via AMOS does not require all criteria to be met; fulfilling four to five, representing all three types, is sufficient. In this study, two criteria were selected from each type: CMIN/DF and RMSEA for absolute fit, CFI and TLI for incremental fit, and PGFI and PNFI for parsimony fit. The confirmatory analysis results are presented in Figure 2.

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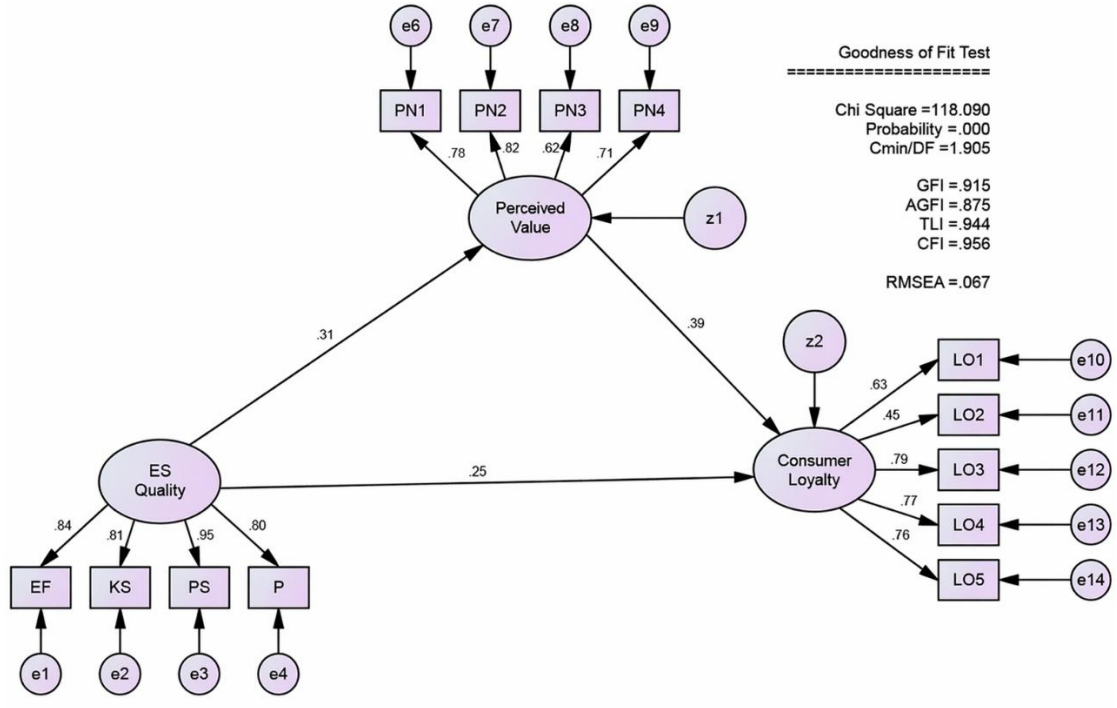

Figure 2. Confirmatory Analysis Results
Source: Processed Primary Data (2020)

Table 6. Goodness of Fit

Criteria	Critical Value	Model Results	Conclusion
X2- Chi-square	Diharapkan Kecil	118.090	Not Fit
Probability	≥ 0,05	0,000	Not Fit
RMSEA	≤ 0,08	0,067	Fit
GFI	≥ 0,90	0,915	Fit
AGFI	≥ 0,90	0,875	Marginal
TLI	≥ 0,90	0,944	Fit
CFI	≥ 0,90	0.956	Fit
CMIN/DF	< 2	1.905	Fit

Source: Processed Primary Data (2020)

From the results of the goodness-of-fit test for the Initial Model in Table 6, it can be seen that many of the initial model's goodness-of-fit criteria were not met. Therefore, it can be concluded that the initial model in this study is not yet fit.

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Table 7. Validity and Reliability

Item	Std. Loading	Std. Error	CR	AVE	Conclusion
E-S Quality			0.964	0.651	Reliable
Ef1	0.656	0.286			Valid
Ef2	0.615	0.378			Valid
Ef3	0.632	0.301			Valid
Ef4	0.670	0.346			Valid
Ef5	0.614	0.335			Valid
Ef6	0.759	0.240			Valid
Ef7	0.745	0.275			Valid
Ef8	0.768	0.258			Valid
KS1	0.680	0.350			Valid
KS3	0.658	0.294			Valid
KS4	0.570	0.377			Valid
PS1	0.564	0.328			Valid
PS2	0.820	0.189			Valid
PS3	0.748	0.306			Valid
PS4	0.824	0.259			Valid
PS5	0.737	0.273			Valid
PS6	0.622	0.321			Valid
P1	0.690	0.259			Valid
P2	0.705	0.278			Valid
P3	0.649	0.341			Valid
Perceived Value			0.889	0.669	Reliable
PN1	0.780	0.221			Valid
PN2	0.826	0.175			Valid
PN3	0.609	0.390			Valid
PN4	0.710	0.286			Valid
Consumer Loyalty			0.921	0.747	Reliable
Lo1	0.600	0.187			Valid
Lo3	0.806	0.170			Valid
Lo4	0.807	0.189			Valid
Lo5	0.729	0.198			Valid

Source: Processed Primary Data (2020)

Based on the analysis results from Table 7, it can be seen that the construct reliability of all variables has reached ≥ 0.7. As for the variance extracted in this study, each variable shows a value above 0.5. Therefore, it can be concluded that the questionnaire used in this study is considered reliable.

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Next, modifications were made to the path analysis model to achieve a model that can be considered fit, as shown in Figure 3.

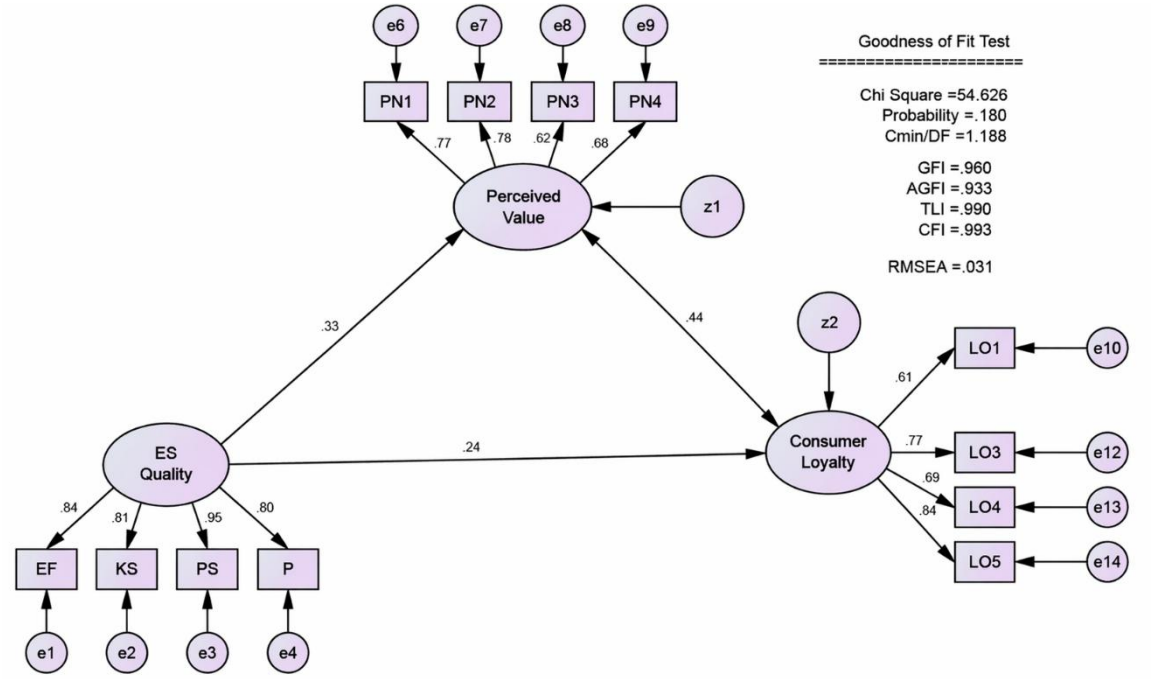

Figure 3. Final Path Analysis Model Diagram
Source: Processed Primary Data (2020)

After obtaining the final results of the modified model, a goodness-of-fit test was conducted. The results indicate that all criteria have been satisfied, and the model can be considered fit, as shown in Table 8.

Table 8. Goodness of Fit

Criteria	Critical Value	Model Results	Conclusion
X2- Chi-square	Expected smaller	54.626	Fit
Probability	≥ 0,05	0,180	Fit
RMSEA	≤ 0,08	0,031	Fit
GFI	≥ 0,90	0,960	Fit
AGFI	≥ 0,90	0,933	Fit
TLI	≥ 0,90	0,990	Fit
CFI	≥ 0,90	0.993	Fit

Source: Processed Primary Data (2020)

Structural Equation Model

Table 9. Regression Weight

Hypotheses	Estimate	S.E.	C.R	P value	Description
E-S Quality → Perceived Value	0.378	0.098	3.878	0.000	H1 Accepted
Perceived Value→ Loyalty	0.249	0.063	3.970	0.000	H2 Accepted
E-S Quality → Loyalty	0.161	0.054	3.003	0.003	H3 Accepted

Source: Processed Primary Data (2022)

Based on Table 9, hypothesis testing was conducted by examining the Critical Ratio (CR) and probability (P) values obtained from the data analysis. A hypothesis is accepted if the CR

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exceeds 1.96 and the P-value is below 0.05. First, E-S-Qual has a positive and significant effect on perceived value. The analysis shows a CR value of 3.878 and a P-value of 0.000. Since the CR exceeds 1.96 and the P-value is below 0.05, H1 is accepted. Next, perceived value has a positive and significant effect on customer loyalty. The results indicate a CR value of 3.970 and a P-value of 0.000. As the CR exceeds 1.96 and the P-value is below 0.05, H2 is accepted. Finally, E-S-Qual has a positive and significant effect on customer loyalty. The findings show a CR value of 3.003 and a P-value of 0.003. Given that the CR exceeds 1.96 and the P-value is below 0.05, H3 is accepted.

The final step is mediation testing, which is assessed by examining the significance of the indirect effects between variables. The results of the indirect effect analysis are presented in Table 10.

Table 10. Mediation Testing

Hypotheses	Sobel Test (T-test)	p-value	Conclusion
ES Quality → Perceived Value → Loyalty	2.760	0,005	Mediated

Source: Processed Primary Data (2020)

Based on Table 10, perceived value mediates the relationship between E-S-Qual and customer loyalty. The result shows that the indirect effect is significant, with a p-value of 0.005, which is below the 0.05 threshold. This indicates that perceived value serves as a positive and significant mediator between E-S-Qual and customer loyalty. Therefore, H4 is accepted, confirming that E-S-Qual indirectly influences customer loyalty through perceived value.

Discussion

The findings reveal a consistent pattern of significant and positive relationships among E-S-Qual, perceived value, and customer loyalty at Social Security Administrator for Employment (BPJS Ketenagakerjaan) Yogyakarta Branch. First, E-S-Qual significantly enhances perceived value, as it reflects customers' evaluation of technological service performance and overall electronic service quality (Parasuraman & Malhotra, 2000). This finding supports the view that superior e-service quality enables firms to better fulfill customer needs and expectations (Kotler & Keller, 2012). Perceived value, defined as the trade-off between benefits and costs (Balamuralikrishnan, 2018), is therefore strengthened when high-quality electronic services are delivered. It aligns with prior studies by Balamuralikrishnan (2018) and Zehir & Narcıkara (2016), confirming the critical role of E-S-Qual in shaping customer value perceptions.

Second, perceived value is found to have a positive and significant effect on customer loyalty. As a central concept in marketing, perceived value influences customer preferences and long-term behavioral intentions (Overby & Lee, 2006). Customers who perceive higher value are more likely to engage in repeat usage and provide recommendations, reflecting stronger loyalty (Neupane, 2015; Sondoh et al., 2007). This finding is consistent with previous studies by Gera & Singhvi (2011) and Yoo & Park (2016), which demonstrate that enhanced perceived value contributes significantly to customer loyalty across digital and online contexts.

Third, E-S-Qual directly and positively influences customer loyalty. E-S-Qual represents users' overall evaluation of electronic service experiences, including usability, accessibility, and efficiency (Santos, 2003; Jeong & Lambert, 2001). High-quality electronic services not only improve satisfaction but also foster long-term customer commitment (Thakur, 2012; Hurriyati & Ratih, 2014). This result is supported by empirical evidence from Lee & Wong (2016) and Quach, Thaichon, & Jebarajakirthy (2016), emphasizing that dimensions of e-service quality are key drivers of customer loyalty in digital environments.

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Finally, the mediation analysis confirms that perceived value significantly mediates the relationship between E-S-Qual and customer loyalty. Perceived value, conceptualized as the balance between benefits and sacrifices (Monroe, 1990), plays a crucial role in translating service quality into loyalty outcomes. Its multidimensional nature, including emotional, social, quality, and price aspects (Sweeney & Soutar, 2010), strengthens customer evaluations and reinforces loyalty when expectations are met (Oliver, 1997). Overall, these findings highlight that improving E-S-Qual not only directly enhances loyalty but also indirectly strengthens it through increased perceived value, underscoring its strategic importance for online service organizations.

CONCLUSION

This study aims to examine the relationships among E-S-Qual, perceived value, and customer loyalty among BPJSTKU application users at Social Security Administrator for Employment (BPJS Ketenagakerjaan) Yogyakarta Branch. Based on data collected from 200 respondents and analyzed using SEM-AMOS 23, the findings reveal that E-S-Qual has a positive and significant effect on perceived value and customer loyalty. In addition, perceived value significantly influences customer loyalty and acts as a mediator in the relationship between E-S-Qual and customer loyalty. These results highlight the critical role of electronic service quality in enhancing customer perceptions and fostering loyalty. Overall, improving E-S-Qual is essential for strengthening perceived value and sustaining long-term customer loyalty in digital service contexts.

Managerial Implications

This study provides several important managerial implications for BPJS Ketenagakerjaan Yogyakarta Branch, particularly in managing the BPJSTKU application. First, E-S-Qual should be continuously improved to ensure that the application effectively meets customer needs and expectations. Delivering superior electronic service quality compared to competitors is essential for maintaining competitiveness and enhancing user experience. Second, perceived value must be strengthened by consistently providing reliable, efficient, and user-friendly services. Positive customer evaluations arise when the benefits received outweigh the costs or efforts, making it crucial for management to maintain high service standards. Third, fostering customer loyalty requires strategic efforts, including continuous service improvement and customer-oriented marketing strategies. By enhancing E-S-Qual and perceived value, BPJS Ketenagakerjaan can build long-term relationships with users. Ultimately, integrating these aspects will help sustain customer loyalty and improve overall service performance in the digital service environment.

Research Limitations

This study has several limitations that should be acknowledged. First, the sample size is limited to 200 respondents who are users of the BPJSTKU application at BPJS Ketenagakerjaan Yogyakarta Branch. Although sufficient for analysis, this sample may not fully represent the broader population of BPJSTKU users. Consequently, the generalizability of the findings is limited. This constraint is primarily due to time and cost limitations faced by the researcher. Future studies are therefore encouraged to involve larger and more diverse samples to improve representativeness and enhance the robustness of the results.

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