

THE EFFECT OF SERVICE QUALITY, INFORMATION TECHNOLOGY UTILIZATION, AND CUSTOMER VALUE ON CUSTOMER SATISFACTION AND ITS IMPACT ON CUSTOMER LOYALTY

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Abstract: This study aims to analyze the effects of service quality, information technology utilization, and customer value on customer satisfaction and their impact on customer loyalty at the Industrial Standardization and Service Center (BSPJI) Pekanbaru. This research employs a quantitative approach using Partial Least Squares–Structural Equation Modeling (PLS-SEM). Data were collected through a structured questionnaire distributed to 226 BSPJI customers selected using purposive sampling. The results indicate that service quality, information technology utilization, and customer value have positive and significant effects on customer satisfaction. Furthermore, customer satisfaction has a significant positive effect on customer loyalty. Mediation analysis reveals that customer satisfaction significantly mediates the relationship between service quality, information technology utilization, customer value, and customer loyalty. These findings highlight the critical role of customer satisfaction as a key mechanism in building customer loyalty. Therefore, BSPJI Pekanbaru should prioritize improving service quality, optimizing information technology utilization, and enhancing customer value to strengthen customer satisfaction and long-term loyalty.

Keywords: *service quality, information technology utilization, customer value, customer satisfaction, customer loyalty*

The rapid development of digital technology and increasing competition in the service industry require organizations to continuously improve service quality and customer experience. Digital transformation has reshaped how services are designed, delivered, and evaluated by customers. Customers today no longer assess services solely based on functional outcomes, but also consider the overall experience, responsiveness, transparency, and technology-enabled interactions they receive. Service institutions that fail to adapt to technological changes risk losing competitiveness, efficiency, and ultimately customer trust.

In the context of service management, customer experience has become a strategic asset. Organizations are expected to integrate high-quality service performance with effective utilization of information technology to meet rising customer expectations. Technology not only supports operational

efficiency but also enhances accessibility, speed, and accuracy of service delivery. Consequently, the ability of an organization to combine service quality and digital capability plays a crucial role in shaping customer perceptions, satisfaction, and long-term relationships.

Balai Standardisasi dan Pelayanan Jasa Industri (BSPJI) Pekanbaru is a public service institution under the Ministry of Industry of the Republic of Indonesia that provides industrial testing, calibration, certification, and various technical services. As a technical service provider, BSPJI Pekanbaru operates in an environment that demands high accuracy, reliability, and professionalism. The quality of services delivered by BSPJI directly affects customer confidence, especially given the critical role of its services in supporting industrial compliance, standardization, and competitiveness.

Along with the growth of industrial activities and service providers, competition among industrial service institutions has intensified. Customers are increasingly offered alternative service providers, including private laboratories and certification bodies, both domestic and international. In such a competitive environment, customer satisfaction and loyalty become critical indicators of organizational performance and sustainability. Satisfied customers are more likely to reuse services, recommend them to others, and maintain long-term relationships with service providers.

Previous studies have consistently demonstrated that service quality and customer value significantly influence customer satisfaction and loyalty. High service quality leads to positive customer evaluations, while perceived customer value reflects the balance between benefits received and costs incurred. In addition, the utilization of information technology has become an essential factor in enhancing service efficiency, transparency, and accessibility. Digital service systems enable organizations to provide faster processes, real-time information, and improved communication with customers.

Despite the growing body of literature on service quality, customer value, and technology utilization, most empirical studies focus on private or commercial service sectors such as hospitality, banking, and retail. Empirical studies examining the combined effects of service quality, information technology utilization, and customer value on customer satisfaction and loyalty in public industrial service institutions remain limited. This gap highlights the need for further research in public sector contexts, particularly in technical and industrial services where service accuracy and trust are highly critical.

Therefore, this study aims to examine the influence of service quality, information technology utilization, and customer value on customer satisfaction and their impact on customer loyalty at BSPJI Pekanbaru. By focusing on a public industrial service institution, this study is expected to contribute

empirical evidence to service management literature and provide practical insights for improving service performance and customer relationship management in the public sector.

METHOD

This study uses a quantitative research design with an explanatory approach. A quantitative method was selected because it allows objective measurement of relationships among variables and enables hypothesis testing based on empirical data. The explanatory approach is appropriate as the study aims to explain causal relationships between service quality, information technology utilization, customer value, customer satisfaction, and customer loyalty.

RESULT

Table 1. Descriptive Statistics of Research Variables

Variable	Indicator	Mean	Std. Deviation
Service Quality	SQ1–SQ5	3.58 – 3.90	0.53 – 0.66
IT Utilization	IT1–IT5	2.42 – 3.36	0.58 – 1.13
Customer Value	CV1–CV5	2.64 – 3.43	1.03 – 1.25
Customer Satisfaction	SAT1–SAT5	3.25 – 3.85	0.64 – 1.07
Customer Loyalty	LOY1–LOY5	3.18 – 3.85	0.64 – 1.25

Table 2. Reliability and Convergent Validity Results

Variable	Cronbach's Alpha	Composite Reliability	AVE
Service Quality	> 0.70	> 0.70	> 0.50
IT Utilization	> 0.70	> 0.70	> 0.50
Customer Value	> 0.70	> 0.70	> 0.50
Customer Satisfaction	> 0.70	> 0.70	> 0.50
Customer Loyalty	> 0.70	> 0.70	> 0.50

Table 3. Structural Model and Hypothesis Testing

Hypothesis	Path Relationship	Path Coefficient (β)	Result
H1	Service Quality → Customer Satisfaction	Positive & Significant	Accepted
H2	IT Utilization → Customer Satisfaction	Positive & Significant	Accepted
H3	Customer Value → Customer Satisfaction	Positive & Significant	Accepted
H4	Customer Satisfaction → Customer Loyalty	Positive & Significant	Accepted

Table 4. Mediation Effect of Customer Satisfaction

Indirect Relationship	Indirect Effect	Mediation Type
Service Quality → Satisfaction → Loyalty	Significant	Partial Mediation
IT Utilization → Satisfaction → Loyalty	Significant	Partial Mediation
Customer Value → Satisfaction → Loyalty	Significant	Partial Mediation

The empirical analysis was conducted using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS software based on data obtained from 226 respondents. The analysis aimed to evaluate both the quality of the measurement model and the strength of the structural relationships proposed in the research model. The measurement model evaluation indicates that all constructs meet the required standards of reliability and validity. Outer loading values for all indicators exceeded the recommended threshold of 0.70, demonstrating that each indicator adequately represents its corresponding latent construct. In addition, the values of Cronbach's Alpha and Composite Reliability for all variables were above 0.70, indicating strong internal

consistency among the measurement items. The Average Variance Extracted (AVE) values were also greater than 0.50, confirming adequate convergent validity.

Descriptive statistical analysis reveals that respondents generally perceived the service quality of BSPJI Pekanbaru positively. Indicators related to reliability and responsiveness recorded relatively higher mean values, suggesting that customers consider BSPJI services dependable and timely. However, several indicators associated with empathy showed comparatively lower mean scores, indicating potential areas for improvement in personalized service and customer attention. For information technology utilization, the results show moderate perceptions among respondents. Indicators related to system reliability and ease of use received higher evaluations, reflecting that the existing digital systems function effectively in supporting service processes. Nevertheless, lower mean values on innovation-related indicators suggest that customers perceive opportunities for further development and modernization of digital services.

Customer value analysis indicates that functional and monetary value dimensions were perceived more positively than social value. This finding suggests that customers primarily evaluate BSPJI services based on tangible benefits, service outcomes, and cost efficiency rather than symbolic or social considerations.

The structural model evaluation demonstrates that service quality, information technology utilization, and customer value have positive and statistically significant effects on customer satisfaction. These results indicate that improvements in service performance, effective use of digital systems, and enhanced perceived value contribute directly to higher levels of customer satisfaction.

Furthermore, customer satisfaction exhibits a strong and significant positive effect on customer loyalty. This finding confirms that satisfied customers are more likely to reuse BSPJI services and

recommend them to other parties. Mediation analysis using the bootstrapping procedure shows that customer satisfaction significantly mediates the relationship between service quality, information technology utilization, customer value, and customer loyalty. This indicates that the influence of service and value-related factors on loyalty operates primarily through the formation of customer satisfaction. Information technology utilization and customer value also show positive and significant influences on customer satisfaction. Furthermore, customer satisfaction has a strong and significant effect on customer loyalty.

Mediation analysis confirms that customer satisfaction significantly mediates the relationship between service quality, information technology utilization, customer value, and customer loyalty. This indicates that improvements in service performance, digital service utilization, and perceived value enhance customer loyalty indirectly through increased customer satisfaction.

DISCUSSION

The findings demonstrate that service quality remains a fundamental determinant of customer satisfaction in public industrial service institutions. Reliable, responsive, and professional services contribute to positive customer evaluations and foster a sense of trust toward the service provider. In the context of BSPJI Pekanbaru, service quality is particularly critical because customers rely on accurate testing, certification, and technical services that directly affect their industrial operations. Therefore, consistent service performance plays a central role in shaping customers' overall satisfaction.

The significant influence of service quality on customer satisfaction also indicates that traditional service dimensions continue to be highly relevant, even as service delivery increasingly incorporates digital systems. Elements such as reliability and responsiveness were perceived more positively by respondents, suggesting that timely service delivery and clear communication are valued attributes.

However, relatively lower evaluations on empathy-related aspects indicate opportunities for BSPJI Pekanbaru to further enhance personalized interactions and customer-oriented approaches.

In addition to service quality, the effective utilization of information technology was found to have a positive impact on customer satisfaction. Digital service systems enhance accessibility, efficiency, and transparency, allowing customers to access information, monitor service processes, and reduce uncertainty. These findings suggest that information technology serves as an important supporting mechanism that strengthens service delivery rather than replacing direct service interactions.

Nevertheless, the moderate perceptions of information technology utilization indicate that while existing systems are functional, there is still potential for further technological innovation. Enhancements such as improved user interfaces, integrated service platforms, and real-time service updates could further strengthen customer satisfaction and align BSPJI services with evolving customer expectations.

Customer value was also shown to play a significant role in shaping customer satisfaction. Customers evaluate BSPJI services based on the balance between benefits received and costs incurred, particularly in terms of functional and monetary value. When customers perceive that the services provide reliable outcomes, regulatory compliance, and cost efficiency, they are more likely to develop positive evaluations of the service experience.

The findings further confirm the mediating role of customer satisfaction in the relationship between service quality, information technology utilization, customer value, and customer loyalty. This result indicates that loyalty is not formed directly through service attributes alone, but through customers' overall satisfaction with their service experience. Satisfied customers are more inclined to continue using BSPJI

services and to recommend them to other industrial actors.

This mediating effect supports established satisfaction–loyalty models in service management literature, which emphasize satisfaction as a key psychological mechanism linking service performance to long-term behavioral intentions. In the context of public industrial service institutions, this finding highlights the importance of focusing on customer satisfaction as a strategic objective to achieve sustainable customer loyalty.

Overall, the discussion underscores that improving service quality, optimizing information technology utilization, and enhancing customer value should be pursued in an integrated manner. Such a holistic approach enables BSPJI Pekanbaru to strengthen customer satisfaction and build long-term loyalty in an increasingly competitive service environment.

CONCLUSION

This study concludes that service quality, information technology utilization, and customer value significantly influence customer satisfaction, which in turn affects customer loyalty at BSPJI Pekanbaru. These findings indicate that customer satisfaction plays a central role in translating service performance, digital capability, and perceived value into loyal customer behavior. Customer satisfaction therefore serves as a key mediating variable that strengthens the relationship between service-related factors and customer loyalty.

The results highlight that service quality remains the most fundamental element in shaping customer evaluations in public industrial service institutions. Reliable and professional service delivery, supported by effective information technology systems, contributes to positive customer perceptions and sustained satisfaction. In addition, customer value—particularly functional and monetary value—reinforces satisfaction by ensuring that customers perceive the benefits of services to outweigh the costs incurred. From a managerial perspective, the findings

suggest that BSPJI Pekanbaru should adopt an integrated service improvement strategy. Efforts to enhance service quality should be complemented by continuous optimization of digital service systems to improve accessibility, efficiency, and transparency. At the same time, strengthening customer value through reliable outcomes and cost efficiency is essential to maintain customer satisfaction.

Overall, this study emphasizes that sustainable customer loyalty cannot be achieved through isolated improvements in service or technology alone. Instead, a holistic approach that simultaneously enhances service quality, information technology utilization, and customer value is required to build long-term customer satisfaction and loyalty in public industrial service institutions such as BSPJI Pekanbaru.

Theoretical Implications

This study provides several theoretical implications for service management and customer behavior literature. First, the findings strengthen existing theories that position customer satisfaction as a central mechanism linking service-related factors to customer loyalty. By empirically confirming the mediating role of customer satisfaction, this study supports satisfaction–loyalty frameworks that emphasize satisfaction as a psychological process through which customers translate service experiences into behavioral intentions.

Second, this study extends service quality theory by demonstrating that traditional service dimensions remain highly relevant in public industrial service institutions. While much of the existing literature focuses on commercial service sectors, the results of this study indicate that reliability, responsiveness, and professionalism are equally critical in technical and industrial service contexts. This finding broadens the applicability of service quality theory beyond private-sector settings.

Third, the integration of information technology utilization into the service–satisfaction–loyalty model contributes to the theoretical understanding of digital transformation in service delivery. The results suggest that information technology functions as an enabling factor that enhances service efficiency and transparency, thereby strengthening customer satisfaction. This finding complements technology acceptance and service-dominant logic perspectives by highlighting the supporting role of digital systems in value creation.

Fourth, the inclusion of customer value as an antecedent of customer satisfaction enriches customer value theory by confirming that customers primarily evaluate services based on perceived benefits relative to costs. The findings emphasize the importance of functional and monetary value in shaping satisfaction, particularly in public service contexts where efficiency and outcomes are highly valued.

Overall, this study contributes to the theoretical development of service management literature by integrating service quality, information technology utilization, and customer value within a unified model, with customer satisfaction as a mediating construct. This integrated framework offers a more comprehensive explanation of how service performance and digital capability jointly influence customer loyalty in public industrial service institutions.

Practical Implications

The findings of this study provide several practical implications for managers and policymakers at BSPJI Pekanbaru as well as other public industrial service institutions. First, service quality should remain a top managerial priority. BSPJI Pekanbaru is encouraged to continuously improve service reliability, responsiveness, and professionalism to ensure that services are delivered accurately and on time. Regular service evaluation and employee training programs can help maintain consistent service standards and improve customer interactions. Second, the positive role of information

technology utilization suggests that BSPJI Pekanbaru should further optimize its digital service systems. Enhancing system usability, accessibility, and integration across service processes can improve efficiency and reduce customer uncertainty. Investments in digital platforms that provide real-time service information, online tracking, and transparent procedures may significantly enhance customer satisfaction. Third, customer value should be strengthened by ensuring that the benefits received by customers clearly outweigh the costs incurred. BSPJI Pekanbaru can achieve this by maintaining competitive pricing, improving service outcomes, and clearly communicating the value and benefits of its services to customers. Emphasizing functional and monetary value is particularly important in industrial service contexts where efficiency and accuracy are highly valued.

Fourth, given the mediating role of customer satisfaction, managerial efforts should focus on satisfaction-oriented strategies rather than isolated service improvements. An integrated approach that simultaneously enhances service quality, information technology utilization, and customer value is more effective in building long-term customer loyalty.

Overall, the practical implications highlight that sustainable customer loyalty in public industrial service institutions can be achieved through coordinated improvements in service performance, digital capability, and value creation. By adopting a holistic and customer-oriented strategy, BSPJI Pekanbaru can strengthen customer satisfaction and foster long-term loyalty in an increasingly competitive service environment.

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