International Journal of Research Publication and Reviews

Service Quality and Satisfaction as Key Drivers of Loyalty in Digital Health Services: A Study of Mobile JKN Users

Ciptaning Wahyu Riski[a]*, Muhardi[a], Rachmat Suyanto[a]

[a]Magister Management Study Program, Faculty of Economics and Business, Universitas Islam Bandung, Indonesia

A B S T R A C T :

Mobile JKN represents a digital transformation initiative designed to provide participants of the National Health Insurance (JKN) program with access to services anytime and anywhere. Despite this innovation, preliminary observations indicate that many participants still prefer face-to-face interactions over application-based services. This study aims to examine the effect of service quality and satisfaction on participant loyalty in using the Mobile JKN application at the BPJS Kesehatan Bandung Branch Office. Employing a descriptive-verificative method, the research involved 307 participants who visited the branch office. Data were collected through questionnaires, observation, and documentation, and analysed using multiple regression with a significance level of 0.05. The results reveal that service quality has a positive and significant effect on loyalty (Sig. 0.032 < 0.05), where a one-unit increase in service quality raises loyalty by 0.118, assuming satisfaction remains constant. Satisfaction also has a positive and significant effect on loyalty (Sig. 0.000 < 0.05), with a one-unit increase in satisfaction increasing loyalty by 0.758, assuming service quality remains constant. Moreover, the F-test shows that service quality and satisfaction simultaneously have a positive and significant effect on loyalty (Sig. 0.000 < 0.05), contributing a combined effect of 45.9 percent. These findings suggest that enhancing service quality and participant satisfaction is essential to fostering loyalty and promoting greater adoption of the Mobile JKN application. Strengthening these factors can reduce dependence on face-to-face services and support the broader success of digital health transformation in Indonesia.

Keywords: Information system, Hospital Management, Evaluation, TAM, HMIS.

1. Introduction

In recent decades, the world has experienced significant demographic and technological shifts, particularly in developing countries where rapid economic growth has driven the expansion of the middle class. At the same time, advances in communication technology, especially the availability of high-speed internet with increasing bandwidth capacity, have accelerated the adoption of digital devices, particularly smartphones. This transformation has changed the way people interact, consume information, and access public services (Retalia et al., 2022).

Globally, smartphone penetration has continued to grow. In 2019, there were approximately 3.2 billion smartphone users, an increase of 5.6 percent compared to the previous year, with 3.8 billion active devices. China dominated the global market with 27 percent of total usage. At the same time, the number of active internet users reached 4.12 billion worldwide (Retalia et al., 2022). By 2022, projections estimated 3.9 billion smartphone users, with notable growth in developing regions such as the Middle East, Africa, Latin America, and Southeast Asia.

Indonesia has also experienced rapid digital transformation. Smartphone penetration rose from 28.6 percent in 2015 to 56.2 percent in 2018 and further to 63.3 percent in 2019. By 2025, the penetration rate is expected to reach 89.2 percent, representing a 25.9 percent increase over six years since 2019 (Retalia et al., 2022). This growth reflects not only lifestyle changes but also shifting public expectations toward faster, more practical, and accessible services, including healthcare.

The growing number of smartphone users has influenced the way public services are delivered. Communities increasingly demand services that are efficient, transparent, and easily accessible. This trend has encouraged governments and public institutions to adapt quickly. Services that were once dependent on face-to-face interactions, such as the issuance of administrative documents or social program registration, are increasingly shifting to digital formats. Digital transformation has become a necessity for improving efficiency and enhancing the experience of citizens. A report by International Data Corporation (IDC) revealed that more than 60 percent of governments worldwide have made customer experience improvement through digitalization a top priority, particularly in vital sectors such as healthcare (IDC, 2020).

In Indonesia, this transformation is embedded in the National Health Insurance program (Jaminan Kesehatan Nasional or JKN), which is a key element of the national health system. The goal of JKN is to ensure optimal health for all citizens, as mandated in the Constitution of 1945 Article 28H paragraph (1) and Article 34 paragraph (3), and reinforced by Law No. 36 of 2009 on Health. However, healthcare services present unique challenges compared to other public services. They rely heavily on professional expertise, involve relatively high costs, and are often limited by unequal access to facilities and human resources. These challenges require innovative approaches that can improve accessibility and service quality.

Mobile JKN, launched on November 15, 2017, represents BPJS Kesehatan's digital innovation to strengthen service delivery. The application allows participants to access a wide range of features, including membership status, contribution payments, changes in healthcare facilities, online queues,

teleconsultations, and self-screening tools. By the end of 2017, the app had been downloaded by more than one million Android users and two thousand iOS users. As of October 2020, more than 208,000 participants had accessed Mobile JKN, exceeding the central target (BPJS Kesehatan, 2022).

Despite this progress, challenges remain at the local level. At BPJS Kesehatan Bandung Branch Office, adoption rates show both potential and obstacles. The number of users increased from 2,718 in 2017 to 11,104 in 2019 but declined sharply to 6,300 in 2020 (Business Intelligent BPJS Kesehatan, 2022). By March 2022, utilization rates stood at only 74.93 percent, below expectations considering the total participant base of over 2.4 million people (BPJS Kesehatan, 2022). Preliminary interviews with participants further illustrated the issue. While most were aware of and had downloaded the application, they still preferred face-to-face services, citing greater satisfaction in direct interaction with officers. Many participants used the app only for checking contribution history, while continuing to visit the office for services already available online.

This condition highlights a gap between the potential of Mobile JKN as a digital health service and its actual utilization by participants. From a public service management perspective, this gap points to the importance of service quality and user satisfaction in shaping participant loyalty. If service quality is perceived as low or does not meet expectations, satisfaction will decline, reducing loyalty to the application. Conversely, improvements in service quality and satisfaction can encourage repeated use and stronger loyalty.

Investigating the effect of service quality and satisfaction on loyalty in the use of Mobile JKN is therefore timely and relevant. Theoretically, this research contributes to the literature on digital service adoption and public healthcare management. Practically, it provides strategic insights for BPJS Kesehatan to enhance the effectiveness of Mobile JKN and strengthen its role in supporting Indonesia's broader digital transformation agenda in health services.

2. Literature Review

2.1. *National Health Insurance Program*

The National Health Insurance program (Jaminan Kesehatan Nasional/JKN) is a nationwide social health protection scheme administered by the Social Security Administrator for Health (BPJS Kesehatan). Its purpose is to guarantee equitable access to healthcare for the entire Indonesian population, regardless of socioeconomic status, through a system in which contributions are either paid independently by participants or subsidized by the government (Saputro & Fathiyah, 2022). As mandated by Law No. 40 of 2004 concerning the National Social Security System (SJSN), JKN is structured as a compulsory social health insurance program that adopts a solidarity-based financing mechanism to provide comprehensive and continuous protection (Undang-Undang RI No. 40 Tahun 2004, 2012). The objectives of JKN encompass multiple dimensions: ensuring fair and equal access to healthcare services (Zainuddin, 2018), enhancing the quality and standardization of healthcare delivery (Bump, 2015), offering financial protection against catastrophic health expenditures (Agustina et al., 2019), improving efficiency in the management of national health financing (Trisnantoro et al., 2016), reducing healthcare disparities across regions and socioeconomic groups (Pisani et al., 2016), and promoting the development of the national health system as a whole (Mahendradhata et al., 2020).

The evolution of JKN reflects Indonesia's transition from fragmented health coverage schemes to a unified national program. Prior to JKN's official launch in 2014, health insurance systems in Indonesia included Askes for civil servants, Jamsostek for private employees, and Jamkesmas for low-income groups. These schemes were fragmented, limited in coverage, and offered unequal benefits across different population segments (Agustina et al., 2019). The enactment of Law No. 24 of 2011 established BPJS Kesehatan as the sole administrator of the consolidated JKN program, creating a unified national system with a strong legal and institutional framework (Pisani et al., 2016).

JKN's development can be viewed through four broad phases. The preparatory phase (2004–2013) involved establishing the legal foundation, designing the institutional structure, and harmonizing the fragmented schemes. The early implementation phase (2014–2016) focused on the integration of participants from previous programs, expansion of coverage to the informal sector, and adjustments to service delivery systems. Although challenges arose in public communication, service adaptation, and claims management, participant numbers increased significantly from 133 million in early 2014 to around 171 million by the end of 2016 (Agustina et al., 2019). The consolidation phase (2017–2019) emphasized quality improvements, regulatory refinements, and technological innovations, such as the introduction of the Mobile JKN application, while participant enrolment rose to 221 million, covering about 82 percent of Indonesia's population (BPJS Kesehatan, 2020). Despite these achievements, BPJS Kesehatan faced a severe financial deficit of up to 28 trillion rupiah in 2018, highlighting the sustainability challenges of the program (Pisani et al., 2016).

The adjustment phase beginning in 2020 was shaped by the COVID-19 pandemic, which imposed additional demands on the JKN system. BPJS Kesehatan expanded coverage to include COVID-19 treatment, adjusted contribution rates, and accelerated digital health services adoption (Djalante et al., 2020). By 2021, JKN had enrolled more than 220 million participants (BPJS Kesehatan, 2021). The program demonstrated significant success in increasing access to healthcare for the poor and those living in remote areas (Agustina et al., 2019), reducing out-of-pocket expenditures, and protecting households from falling into poverty due to catastrophic health spending (Erlangga et al., 2019). Nevertheless, systemic challenges remain, including recurring financial deficits, inconsistent quality of care across regions, unequal distribution of healthcare professionals, and weak health information system integration (Wiseman et al., 2018; Mahendradhata et al., 2020).

Within this broader context, the Mobile JKN application, launched in 2017, stands out as a pivotal innovation in Indonesia's healthcare system transformation. Designed to improve accessibility, efficiency, and transparency, Mobile JKN provides participants with various services, including membership status information, digital health insurance cards, online registration for primary care facilities, electronic referral systems, online queuing for healthcare facilities, complaint submissions, healthcare facility directories, and program updates (BPJS Kesehatan, 2021). Continuous updates have expanded its functionality, such as the addition of a COVID-19 self-assessment tool and integration with the Primary Care (P-Care) system. These features aim to reduce administrative bottlenecks, minimize physical visits to BPJS offices, and empower participants with real-time access to healthcare information (Agustina et al., 2019).

The adoption of Mobile JKN, however, faces notable challenges. The digital divide limits accessibility for participants without smartphones or internet access, particularly in rural or low-income areas. Data security concerns require robust cybersecurity measures to maintain user trust, while limited digital

literacy among participants necessitates ongoing education and outreach programs. Despite these challenges, Mobile JKN has achieved significant milestones. By the end of 2020, the application had been downloaded more than 10 million times, with usage rising sharply during the pandemic. Its impact on efficiency and service delivery earned it recognition such as the Top Digital Implementation 2020 on Health Sector award, highlighting its role in advancing Indonesia's digital health ecosystem (BPJS Kesehatan, 2021).

The literature thus demonstrates that JKN has achieved remarkable progress in expanding healthcare coverage and protecting households from catastrophic expenditures, while simultaneously encountering structural and financial challenges that threaten its sustainability. Mobile JKN is positioned as an essential digital transformation tool to address these challenges by improving accessibility, efficiency, and service quality. Nevertheless, its success is contingent on overcoming barriers related to digital inequality, cybersecurity, and user engagement. These dynamics provide the conceptual basis for examining how service quality and participant satisfaction influence loyalty toward the Mobile JKN application, which in turn is critical for the long-term sustainability of Indonesia's health insurance system.

2.2. Digital Healthcare Service Quality

Service quality is a central concept that has been widely studied across marketing, operations management, and information systems disciplines. It relates to how consumers evaluate their service experiences and how organizations manage expectations and perceptions to deliver superior value. Zeithaml and Parasuraman (2004) define service quality as a global judgment or attitude concerning the excellence of a service, emphasizing the comparison between customers' expectations prior to receiving a service and their perceptions of actual performance. Parasuraman (2002) similarly describes service quality as the overall evaluation of a service's superiority, highlighting customer perception as the key determinant. This implies that providers must continuously monitor and improve how their services are perceived by consumers. From an operational perspective, Asiamah et al. (2021) argue that service quality results from the evaluative process in which customers compare expectations with the received service. Meanwhile, Javed et al. (2019) frame service quality as consumers' overall impression of an organization's superiority or inferiority, suggesting that beyond direct interaction, organizational systems and reputation also play roles in shaping perceptions. These definitions collectively indicate that service quality is multidimensional, rooted in customer expectations, actual experiences, and organizational image.

Service quality is not limited to technical outcomes but extends to functional dimensions, including delivery processes, employee-customer interactions, and the organization's ability to establish emotional connections with clients. Strategically, high service quality enhances customer satisfaction, strengthens loyalty, fosters positive word of mouth, and creates sustainable competitive advantage. Conversely, poor service quality risks dissatisfaction, eroded loyalty, and reputational damage. Hence, organizations must strive not merely to meet minimum service standards but to exceed expectations through continuous innovation, integration of digital technologies, development of human resource competencies, and fostering of customer-oriented organizational cultures. Such comprehensive approaches enable firms to create added value and build lasting customer relationships that underpin organizational growth and sustainability.

Within the context of digital transformation, electronic service quality (e-service quality) has become an increasingly important determinant of application adoption, particularly in healthcare. E-service quality refers to the evaluation of digital service delivery, including user interaction, system functionality, and trustworthiness. Various theoretical models have been applied to measure e-service quality in the context of mobile health applications such as Mobile JKN. The SERVQUAL model (Parasuraman, 2002), originally designed for traditional services, has been adapted to digital platforms by retaining dimensions like reliability, responsiveness, assurance, empathy, and tangibles. In the case of Mobile JKN, Widiastuti et al. (2021) found that system reliability and responsiveness significantly affect user satisfaction, indicating that technical stability and quick responses are critical to perceived service quality.

The E-S-QUAL model (Parasuraman, 2002) extends this by focusing on digital-specific dimensions such as efficiency, fulfilment, system availability, and privacy. Pratama et al. (2019) showed that efficiency and availability strongly influence satisfaction with Mobile JKN, underscoring the importance of user-friendly design and consistent service access. Similarly, DeLone and McLean's (2003) Information System Success model provides a holistic framework linking system quality, information quality, and service quality to user satisfaction and net benefits. Gunawan et al. (2020) confirmed that in Mobile JKN, system quality influences satisfaction, information quality shapes perceived usefulness, and service quality fosters continuous usage intention. Davis' (1989) Technology Acceptance Model (TAM) further supports this, as Widiastuti et al. (2021) demonstrated that perceived ease of use drives satisfaction and perceived usefulness shapes loyalty intentions.

Other models extend these perspectives. Harrison et al. (2013) developed the Mobile Application Quality framework emphasizing effectiveness, efficiency, satisfaction, and contextual usability. Kusuma et al. (2022) found that effectiveness and satisfaction are dominant factors influencing Mobile JKN acceptance. Security and privacy also emerge as critical issues in health-related applications. Anggraeni and Sudiarno (2018) argue that strong data protection measures, such as encryption and controlled access, are essential to sustain user trust. In addition, personalization and adaptability improve engagement, with Li and Luximon (2018) noting that customized interfaces and relevant information delivery enhance satisfaction. Haryanto (2021) stresses the importance of interoperability, showing that integration with broader health systems improves efficiency and user experience by enabling smoother referrals and data sharing.

The dimensions of e-service quality thus continue to evolve alongside advancements in digital technology and shifting consumer expectations. The E-S-QUAL model, for instance, highlights efficiency, fulfilment, system availability, and privacy as core aspects, while other frameworks like those by Huang et al. (2015) expand the scope to include content quality, navigation, presentation, customer service, and security. Adaptations of SERVQUAL for digital contexts also emphasize responsiveness, compensation, and contact, acknowledging that digital services must not only be efficient and reliable but also responsive in resolving failures and offering remedies. The DeLone and McLean (2003) model further reinforces the role of accurate, timely, relevant, and consistent information in shaping trust and perceptions of quality. Meanwhile, mobile-specific frameworks emphasize cognitive load, intuitiveness, and error management as crucial to delivering seamless experiences.

Taken together, these studies show that the quality of digital health services like Mobile JKN is multidimensional and extends beyond system performance. It encompasses security, information reliability, personalization, and integration into wider healthcare ecosystems. Therefore, improving e-service quality

requires a holistic strategy that combines technical robustness with functional responsiveness and emotional engagement. For Mobile JKN, this means that sustained success will depend not only on application performance but also on how well it adapts to user needs, safeguards sensitive data, integrates with national health infrastructure, and delivers consistent, trustworthy experiences that enhance satisfaction and loyalty.

2.3. Digital Healthcare Service Quality

Loyalty of participants in the context of a national health insurance program such as JKN represents a crucial factor in ensuring the sustainability and effectiveness of the system. Dewi (2017) defines customer loyalty as a deeply held commitment to repurchase or subscribe to a preferred product or service consistently in the future, despite situational influences and marketing efforts that might induce switching behaviour. Within the JKN framework, participant loyalty can therefore be understood as the commitment to remain enrolled in the program and to utilize its services on an ongoing basis. Naidu (2009) distinguishes between two primary dimensions of loyalty: attitudinal loyalty, which refers to the psychological predisposition toward a service, and behavioural loyalty, which reflects repeated usage or purchase behaviour. In the case of JKN, both dimensions are highly relevant since participants may show positive attitudes toward the program while also demonstrating consistent behaviours such as paying premiums, using services responsibly, and advocating for the scheme within their communities.

Several factors contribute to participant loyalty, including service quality, satisfaction, trust, perceived value, and brand image. In health insurance systems, these factors translate into the willingness of participants to comply with premium obligations, to access services according to prescribed procedures, and to act as advocates of the program. Thabrany (2016) highlights that loyalty plays a central role in maintaining the financial sustainability of JKN, while Mahendradhata et al. (2020) emphasize that loyal participants use the system more efficiently, thus reducing unnecessary costs and administrative burdens. Bump (2015) further demonstrates that sustained loyalty contributes to better and more consistent health outcomes, as participants are more likely to adhere to preventive and treatment protocols when they remain engaged with the system.

To strengthen loyalty, BPJS Kesehatan must consider a range of strategies. Parasuraman (2002) underscores the importance of service quality improvement as a foundation for building loyalty, while Setyawan et al. (2019) reveal that participant education and empowerment increase loyalty by fostering a deeper understanding of program benefits. Nastasoiu and Vandenbosch (2019) argue that personalization of services contributes to stronger loyalty by aligning services with participant preferences, and Selfianita and Chair (2021) show that effective complaint management also enhances participant loyalty by building trust and credibility. Taken together, these findings suggest that loyalty in JKN is not a passive outcome but rather the result of active engagement, consistent service quality, and continuous participant-oriented innovations.

The measurement of loyalty in JKN is equally complex and requires a multidimensional approach. Retention rate, or the percentage of participants who remain enrolled over time, is one of the most straightforward indicators, reflecting commitment and consistency in participation. Net Promoter Score (NPS) measures the extent to which participants are willing to recommend JKN to others, capturing the advocacy dimension of loyalty. Customer Satisfaction Index (CSI) provides insight into overall satisfaction levels, which often correlate positively with loyalty, though other factors such as affordability and service availability can mediate this relationship. Behavioural measures of loyalty include timely premium payment, continuity of enrolment, and regular utilization of health services. Attitudinal measures, on the other hand, capture trust, commitment, and intention to remain in the program.

Other frameworks provide further analytical depth. The SERVQUAL model evaluates loyalty indirectly through service quality dimensions such as tangibles, reliability, responsiveness, assurance, and empathy, while the multidimensional approach to loyalty considers cognitive, affective, conative, and behavioural aspects. Customer Lifetime Value (CLV) has also been applied in insurance contexts to estimate the long-term financial contributions of participants. Specific loyalty surveys, designed to assess perceptions, experiences, and commitment to JKN, complement these quantitative indicators. The relationship between satisfaction and loyalty is central to the sustainability of JKN. Oliver (1999) observes a generally positive correlation between the two, where higher satisfaction tends to result in stronger loyalty. Dick and Basu (1994) support this view by identifying satisfaction as a significant predictor of loyalty, particularly when participants are satisfied with services, access, and program benefits. Yet, this relationship is not always linear. Research indicates that loyalty may only increase significantly once satisfaction crosses a certain threshold. Parasuraman (2002) also points out that other factors such as trust, commitment, and program image act as mediators or moderators of the satisfaction–loyalty relationship.

In the specific case of JKN, participants may remain loyal even when not fully satisfied. This form of loyalty without complete satisfaction can be explained by structural factors such as limited alternatives, mandatory regulations, or the recognition of JKN's value despite shortcomings in service experience (Thabrany, 2016). Satisfaction with specific aspects of the program, such as the ease of claims processing or the quality of healthcare facilities, can also contribute disproportionately to overall loyalty.

These findings highlight the complexity of loyalty in social health insurance schemes. For BPJS Kesehatan, understanding the multifaceted relationship between service quality, satisfaction, and loyalty is critical. Loyalty is not only an indicator of participant commitment but also a determinant of financial sustainability, system efficiency, and improved health outcomes. A robust strategy to strengthen loyalty requires a balanced approach that integrates service quality enhancement, participant engagement, effective communication, and trust-building mechanisms within the broader context of national health insurance.

3. Research Method

This study adopted a descriptive-verificative research design to analyze the influence of service quality and satisfaction on participant loyalty in the use of the Mobile JKN application at the BPJS Kesehatan Bandung Branch Office. The descriptive aspect was used to provide a systematic overview of participant characteristics, patterns of application usage, and perceptions of service quality and satisfaction. The verificative aspect aimed to empirically test the hypothesized relationships between variables using statistical analysis. The research population consisted of all JKN participants who visited the BPJS Kesehatan Bandung Branch Office, while the sample was determined using a purposive sampling technique, selecting only participants who had

previously used the Mobile JKN application to ensure the relevance of responses. A total of 307 valid respondents were obtained, a number considered adequate for regression-based analysis.

Data collection was carried out using structured questionnaires containing items designed to measure service quality, satisfaction, and loyalty, each adapted from previous validated studies. The questionnaire employed a Likert scale to capture participant responses. To strengthen the findings, additional data were gathered through direct observation at the branch office and documentation review, including records and official reports related to Mobile JKN usage. Before analysis, the research instrument was subjected to validity and reliability testing. Item validity was assessed using correlation analysis, while reliability was measured using Cronbach's alpha coefficient, with results exceeding the minimum threshold of 0.70, indicating consistency and reliability of the instruments.

The data analysis procedure involved multiple stages. First, descriptive statistics were used to summarize participant demographics and general response patterns. Second, inferential analysis was conducted using multiple linear regression to test the effect of the independent variables—service quality and satisfaction—on the dependent variable, loyalty. Hypothesis testing employed t-tests to evaluate the significance of individual variable effects and F-tests to assess the joint effect of service quality and satisfaction. The significance level was set at 0.05 to determine statistical validity. In addition, the coefficient of determination (R^2) was calculated to measure the proportion of variance in loyalty explained by service quality and satisfaction.

The application of this method provided both a descriptive account of participant perceptions and an empirical verification of the causal relationships hypothesized in the study. By combining descriptive insights and quantitative testing, the research ensured that the conclusions drawn were comprehensive, accurate, and grounded in the actual experiences of JKN participants.

4. Results and Discussion

Service quality is understood as the overall evaluation of customers toward the excellence or superiority of a service (Zeithaml & Parasuraman, 2004). Operationally, it is the result of a comparison between customer expectations and their actual experiences. From a management perspective, service quality reflects consumers' collective impression of the inferiority or superiority of an organization and its services, emphasizing the organizational role in shaping quality perceptions (Pathony & Yuhana, 2020). In this study, descriptive analysis showed that the service quality of the Mobile JKN application at the BPJS Kesehatan Bandung Branch Office reached an average actual score of 88.13 percent, placing it in the very good category. This indicates that most respondents perceived the digital service through Mobile JKN as meeting, and in some cases surpassing, their expectations.

When examined across six service quality dimensions, the application's visual appearance recorded the highest score of 91.62 percent, while the lowest score was found in the time efficiency dimension. This suggests that JKN participants appreciated the modern and visually appealing design of the application, which created a positive image of BPJS Kesehatan. However, challenges remain in terms of response speed, system stability, and efficiency in accessing certain features. Specifically, the most highly valued indicator was the format and design of the application, which participants found attractive, although some noted that it was not entirely easy to understand. Thus, while the application is strong in aesthetics, there is still a need to enhance its user-friendliness to ensure inclusivity, particularly for older participants or those with lower digital literacy.

These findings correspond with the diversity of JKN participants who come from varied social, educational, and age backgrounds. In such a context, visual appeal alone is not sufficient. Simplicity and clarity in application navigation become critical for ensuring that digital health services remain inclusive and accessible to all. In practical terms, BPJS Kesehatan needs to refine language, icons, and layouts to increase clarity, while also focusing on improving system performance and server capacity to avoid slowdowns during peak usage hours.

Customer satisfaction represents another crucial element in determining the success of public services. Satisfaction arises when services align with or exceed expectations, while disappointment emerges when they fall short (Budiman & Mulyanti, 2023). The results of this research reveal that participant satisfaction with the Mobile JKN application is categorized as very good, with an average actual score of 84.27 percent. The dimension of expectation received the highest score at 85.66 percent, highlighting that the application has largely met user expectations. The availability of the application on both Android and iOS platforms was the most highly valued indicator, with a score of 91.53 percent, demonstrating the importance of cross-platform accessibility in ensuring broad adoption.

Nonetheless, the indicator measuring the alignment of the application with user expectations recorded a lower score of 79.80 percent. This gap reflects unmet expectations, such as system speed, stability, or feature complexity. Field observations confirm that satisfaction is heavily tied to accessibility and ease of use. While the application has succeeded in providing administrative functions like membership checks and online registration, participants increasingly expect more integrated health service features, such as medical records, online consultations, or health reminders.

Loyalty, understood as a long-term commitment to consistently use a service despite the presence of alternatives (Saraswati, 2021), also proved to be very strong among JKN participants. The average loyalty score was 88.90 percent, demonstrating consistent usage of the Mobile JKN application for administrative and health service purposes. High loyalty was reinforced across all dimensions, with scores ranging from 87.62 to 89.90 percent. This aligns with behavioural loyalty theory, where repeated usage reflects deep participant attachment. Importantly, high loyalty was closely linked to high satisfaction, confirming theoretical perspectives that satisfaction is a primary driver of loyalty formation.

The statistical results of this study provide deeper insights into the role of service quality and satisfaction in shaping participant loyalty toward the Mobile JKN application. The regression analysis revealed that service quality positively and significantly influences loyalty, with a coefficient of 0.118 and a significance level of 0.032. Although the magnitude of the coefficient is relatively modest, this result indicates that continuous improvements in service quality still have tangible effects on loyalty. This finding reflects the reality that for digital health services, even incremental improvements in technical responsiveness, application design, or customer service can encourage participants to continue using the application. In real conditions at the BPJS Kesehatan Bandung Branch Office, participants often report experiencing slow response times or system downtime during peak usage hours. These technical disruptions reduce efficiency, particularly when participants depend on the application to avoid long queues at physical offices. Therefore, consistent investment in application stability, load optimization, and server capacity expansion is essential to enhance loyalty through improved service quality.

The effect of satisfaction on loyalty, with a coefficient of 0.758 and a significance level of 0.000, is statistically much stronger than that of service quality. This suggests that while service quality improvements are important, satisfaction plays a more central role in determining whether participants will remain loyal to the Mobile JKN application. In real terms, participants express satisfaction not only when the application performs well technically but also when it reduces administrative burdens and simplifies their interaction with the health system. For instance, the ability to check membership status, pay contributions, and register for healthcare services directly through the app significantly reduces time and travel costs. This aligns with field conditions in Bandung, where many participants still prefer in-person visits because they lack confidence in digital services. The findings suggest that when participants feel genuinely satisfied—because the application proves reliable, easy to use, and beneficial—they are far more likely to transition from traditional face-to-face services to digital adoption.

The simultaneous effect of service quality and satisfaction on loyalty, confirmed by the F-test with a significance level of 0.000, shows that these variables collectively explain 45.9 percent of loyalty variation. This substantial proportion indicates that improvements in these two areas will directly reinforce user commitment. However, the remaining 51.1 percent of unexplained variation suggests that loyalty is also influenced by other factors such as trust in data security, digital literacy, perceived value of the application beyond administrative functions, and integration with broader healthcare services. For example, interviews with participants revealed concerns about the security of personal health data and limitations in features such as medical record access or online consultations. These gaps reflect real-world challenges and demonstrate that strengthening loyalty requires a broader digital health strategy beyond service quality and satisfaction alone.

From a policy perspective, the findings carry important implications for BPJS Kesehatan. First, there is a need to prioritize system stability and performance as core service quality dimensions. This can be achieved through periodic system audits, increasing server capacity, and ensuring redundancy mechanisms to avoid downtime during peak hours. Second, policies should emphasize user education and digital literacy, particularly targeting older adults and low-literacy groups who remain dependent on face-to-face services. This could involve public campaigns, tutorial videos, or integrating digital literacy modules into community health outreach programs. Third, participant satisfaction can be strengthened through feature development that aligns with evolving public expectations, such as integrating telemedicine consultations, electronic prescriptions, and personalized health reminders. These enhancements would not only increase satisfaction but also expand the perceived value of the Mobile JKN application.

Another critical policy implication lies in leveraging loyalty for program sustainability. High loyalty, as observed in this study, can serve as a strong foundation for participant retention, reducing the risk of dropouts from the JKN program. Loyal participants can also act as advocates, promoting the application within their social networks and expanding its adoption without heavy reliance on formal marketing. Policymakers at BPJS Kesehatan should therefore develop engagement strategies that recognize and reward loyal participants, such as providing priority access to new features or offering incentives for digital adoption.

In conclusion, the statistical findings highlight that while service quality contributes positively to loyalty, satisfaction is the dominant factor in securing long-term commitment. To sustain and expand the success of Mobile JKN, BPJS Kesehatan must focus on policies that enhance user satisfaction through technical reliability, user-friendly design, and feature innovation, while also addressing broader challenges such as digital literacy and data security. Such strategies will not only strengthen loyalty but also ensure the broader success and sustainability of the JKN program as Indonesia's national health insurance system.

The findings of this study provide several directions for future development of the Mobile JKN application and broader program strategies. Since satisfaction emerged as the strongest determinant of loyalty, future development should prioritize initiatives that directly enhance participant experience. This includes ensuring application reliability, minimizing downtime, and providing user-friendly interfaces that cater to varying levels of digital literacy. Developing additional features that meet participant needs—such as teleconsultations, digital health education modules, and reminders for contribution payments—can increase satisfaction and reinforce long-term loyalty.

At the same time, although the effect of service quality on loyalty was smaller than satisfaction, it still holds strategic importance. Future development should focus on building a more responsive customer support system integrated into the application, where participants can easily report issues and receive quick resolution. Moreover, strengthening data security protocols is critical to building trust, which in turn supports both satisfaction and loyalty. For research development, the unexplained variation in loyalty indicates the need for future studies to incorporate additional factors such as trust, perceived value, ease of use, and social influence. Expanding research beyond one branch office to multiple regions will also provide a more comprehensive understanding of participant behavior, particularly in areas with different socioeconomic and digital readiness levels. Furthermore, longitudinal studies can help capture loyalty trends over time, providing insights into how sustained improvements in service quality and satisfaction impact participant retention.

From a policy perspective, BPJS Kesehatan should use these findings to design adaptive strategies. Future development of Mobile JKN should not only address technical and service dimensions but also integrate participant feedback loops to continuously refine the system. Partnerships with healthcare providers, digital service developers, and community organizations could accelerate innovation while ensuring inclusivity.

In summary, future development of the Mobile JKN program should emphasize enhancing satisfaction through feature innovation and usability improvements, reinforcing service quality through responsiveness and security, and expanding research to include broader determinants of loyalty. These steps will not only improve participant experience but also strengthen the sustainability and resilience of the JKN system in Indonesia's evolving health landscape.

5. Conclusion

This study concludes that the service quality of the Mobile JKN application at BPJS Kesehatan Bandung Branch is categorized as very good, as reflected in the positive perceptions of participants regarding the design and overall appearance of the application. However, ease of understanding remains suboptimal, and several important functions such as reactivation of membership status and changes in membership type are not yet fully facilitated by the application, prompting participants to continue visiting branch offices directly. Participant satisfaction with the Mobile JKN application is also in the

very good category, largely influenced by the accessibility of the application through both Android and iOS platforms. Nevertheless, the alignment between participant expectations and the available services has not been fully achieved, indicating a need for improvements in features and functionality. Participant loyalty is likewise categorized as very good, demonstrated by their willingness to share positive information, recommend the application to others, and maintain consistent usage when accessing health services.

The analysis further confirms that service quality has a positive and significant effect on participant loyalty, with high service quality contributing to stronger trust in the reliability and effectiveness of the Mobile JKN application. Participant satisfaction also has a positive and significant effect on loyalty, as satisfied users are more inclined to continue using the application due to its convenience, relevance of information, and reduction of barriers in accessing health services. Moreover, when service quality and satisfaction are combined, they simultaneously exert a significant influence on loyalty, demonstrating that improved quality and satisfaction reinforce retention and sustained application use, ultimately contributing to the sustainability of the JKN program more broadly.

Based on these conclusions, several suggestions can be put forward. First, BPJS Kesehatan should enhance the ease of understanding in the Mobile JKN interface by providing interactive guides, simple help menus, and a responsive chatbot to quickly address participant questions. Second, unoptimized services such as membership reactivation and membership type switching should be integrated into the application to minimize the need for direct visits to branch offices and increase efficiency. Third, to maintain and improve satisfaction, BPJS Kesehatan should develop personalized service features such as contribution reminders, recommendations for nearby health facilities, and notifications regarding claim status. Fourth, in order to strengthen loyalty, BPJS should conduct regular digital education programs to inform participants about the benefits, new features, and optimal usage of the Mobile JKN application, ensuring participants feel more familiar and advantaged. Fifth, it is recommended that BPJS build a direct feedback channel within the application, enabling participants to submit complaints, suggestions, or requests for new features, while fostering a stronger sense of ownership toward the application. Sixth, to secure long-term participant retention, BPJS should integrate Mobile JKN with the wider national healthcare system, including electronic medical records, online hospital queuing systems, and other digital health applications, positioning Mobile JKN as a central platform for comprehensive digital health services.

REFERENCES

1. Bump, J. B. (2015). The long road to universal health coverage: A century of lessons for development strategy. *World Scientific Publishing*.

2. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

3. DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems, 19*(4), 9–30. https://doi.org/10.1080/07421222.2003.11045748

4. Dewi, S. (2017). *Manajemen Pemasaran Jasa*. Jakarta: Rajawali Pers.

5. Dick, A. S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. *Journal of the Academy of Marketing Science, 22*(2), 99–113. https://doi.org/10.1177/0092070394222001

6. Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.

7. Gunawan, I., Pratama, R., & Andini, S. (2020). The impact of system quality, information quality, and service quality on user satisfaction of Mobile JKN application. *Journal of Information Systems Research, 14*(2), 85–97.

8. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

9. Harrison, R., Flood, D., & Duce, D. (2013). Usability of mobile applications: Literature review and rationale for a new usability model. *Journal of Interaction Science, 1*(1), 1–16. https://doi.org/10.1186/2194-0827-1-1

10. Haryanto, T. (2021). Interoperability in healthcare information systems: The case of JKN mobile application integration. *Indonesian Journal of Health Informatics, 9*(2), 55–64.

11. Huang, E., Lin, S., & Fan, Y. (2015). Mobile service quality: Dimensions and measurement. *International Journal of Mobile Communications, 13*(1), 1–26. https://doi.org/10.1504/IJMC.2015.065503

12. Javed, S., Liu, S., & Mahmood, A. (2019). Impact of service quality on customer satisfaction and loyalty in the healthcare sector. *Pakistan Journal of Medical Sciences, 35*(6), 1722–1727. https://doi.org/10.12669/pjms.35.6.687

13. Li, H., & Luximon, Y. (2018). Understanding consumer satisfaction in mobile health services: An empirical study in China. *Behaviour & Information Technology, 37*(9), 947–957. https://doi.org/10.1080/0144929X.2018.1484518

14. Mahendradhata, Y., Trisnantoro, L., Listyadewi, S., Soewondo, P., Marthias, T., Harimurti, P., & Prawira, J. (2020). *The Republic of Indonesia Health System Review*. World Health Organization.

15. Naidu, G. M. (2009). Factors influencing patient loyalty to healthcare providers. *Health Marketing Quarterly, 26*(1), 1–19. https://doi.org/10.1080/07359680802619868

16. Nastasoiu, A., & Vandenbosch, M. (2019). Competing with loyalty: How to design a program that drives true preference. *Business Horizons, 62*(2), 207–214. https://doi.org/10.1016/j.bushor.2018.11.003

17. Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing, 63*(Special Issue), 33–44. https://doi.org/10.1177/00222429990634s105

18. Parasuraman, A. (2002). Service quality and productivity: A synergistic perspective. *Managing Service Quality, 12*(1), 6–9. https://doi.org/10.1108/09604520210415344

19. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12–40.

20. Pratama, R., Nugraha, E., & Yusuf, A. (2019). Measuring e-service quality in healthcare mobile applications: Evidence from Mobile JKN. *Journal of Health Informatics in Developing Countries, 13*(2), 1–14.

21. Selfianita, A., & Chair, M. (2021). The influence of service quality and complaint handling on customer loyalty. *International Journal of Business and Applied Social Science, 7*(5), 11–22.

22. Setyawan, A., Hidayat, M., & Susilo, A. (2019). The influence of patient education on loyalty in health insurance programs. *International Journal of Healthcare Management, 12*(4), 325–333. https://doi.org/10.1080/20479700.2018.1504373

23. Sugiyono. (2016). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta.

24. Thabrany, H. (2016). *Jaminan Kesehatan Nasional: Konsep, isu, dan implementasi*. Jakarta: Rajawali Pers.

25. Widiastuti, R., Nugroho, A., & Putra, P. (2021). Analysis of service quality and user satisfaction on loyalty intention of Mobile JKN application users. *Indonesian Journal of Health Policy, 10*(1), 23–34.

26. Zeithaml, V. A., & Parasuraman, A. (2004). *Service quality*. Marketing Science Institute.