INTEGRA BUSINESS REVIEW
Volume 4, Issue 1, June 2026| pp. 26-45
https://doi.org/10.63208/21014-661

Check for updates

E- ISSN: 3047-261X

Merchant Loyalty and Digital Consumer Behavior in Data Driven Payment Ecosystems

Sudadi[1] ✉, Anggit Rumpoko[1], and Amie Kusumawardhani[1]

Universitas Diponegoro, Semarang, Indonesia[1]

ABSTRACT

This study conducts a Systematic Literature Review (SLR) to synthesize empirical and conceptual evidence on merchant and cashier behavior, operational experience, loyalty formation, and data-driven ecosystem strategies in digital payment environments. The review examines thirty peer-reviewed studies published between 2015 and 2025 to address three key questions: the determinants of frontline adoption, the mechanisms through which satisfaction and trust shape loyalty, and the emerging role of analytics in strengthening payment ecosystem performance. The analysis reveals that adoption is driven by perceived usefulness, ease of use, device reliability, and psychological readiness, while operational constraints such as network instability, limited digital skills, and inadequate support strongly influence day-to-day usage. Loyalty is formed through the interaction of system performance, satisfaction, trust, perceived value, and relational engagement with payment providers. Data-driven strategies including segmentation, churn prediction, and incentive personalization show substantial potential to enhance ecosystem sustainability, although practical implementation remains limited. The study consolidates previously fragmented insights into an integrated conceptual framework that explains how technological, behavioral, organizational, and analytics-based factors jointly influence merchant and cashier loyalty.

Keywords: *Data-Driven Ecosystems, Digital Payments, Loyalty, Merchant and Cashier Behavior*

CORRESPONDING AUTHOR:
Sudadi
Universitas Diponegoro, Semarang, Indonesia
contact: *sudadi.prasetyo1@gmail.com*

ARTICLE HISTORY
Received : January 30, 2026
Final Revised : May 12, 2026
Accepted : June 4, 2026
Published : June 30, 2026

© 2026 The Author(s) | This article is an open access article and distributed under the terms and conditions of the Creative Commons Attribution (CC BY-SA) license.

1. | INTRODUCTION

The rapid expansion of digital payment ecosystems has transformed transaction practices across retail, micro-enterprise, and service sectors. Technologies such as Electronic Data Capture (EDC), mobile wallets, and QR-based payment systems have become central infrastructures enabling seamless, secure, and efficient transactions. Their adoption is driven by shifting consumer expectations, regulatory encouragement for financial inclusion, and increasing digital literacy in emerging economies (Ozili, 2020; Jain & Jain, 2024; Muchtar et al., 2024). In Indonesia, national cashless initiatives have further accelerated the adoption of digital payment systems among both consumers and merchants, pushing financial institutions to strengthen their ecosystem management strategies (Aslam et al., 2021).

Merchants and cashiers serve as frontline actors who directly influence the continuity and quality of digital payment transactions. Their operational readiness, perceived ease of use, and responsiveness during payment interactions determine customer trust and shape the overall success of digital payments (Oliveira et al., 2016; Shaw, 2022). When frontline operators experience stable, fast, and low-error systems, they are more likely to endorse continued usage and promote adoption among customers (Baabdullah et al., 2019; Indrijawati et al., 2024).

Despite their pivotal role, existing research remains largely consumer-centric, with merchant and cashier perspectives receiving comparatively limited attention. Recent evidence from Indonesia also demonstrates the importance of examining digital payment adoption from the merchant perspective, particularly in QRIS-based ecosystems where compatibility, facilitating conditions, trust, and relative advantage influence merchant adoption (Rafferty & Fajar, 2022). Merchant-side studies are often fragmented and focused narrowly on general acceptance factors, overlooking operational constraints, capability gaps, perceived workload, or institutional support that may influence long-term loyalty (Liu & Tai, 2016; Ramayanti et al., 2024). This imbalance limits scholarly understanding of how frontline behavior and operational realities shape ecosystem sustainability.

The Technology Acceptance Model (TAM) provides a foundation for analyzing adoption behavior by emphasizing perceived usefulness and ease of use as primary determinants (Davis, 1989). In frontline payment contexts, these factors correspond to system clarity, device reliability, transaction speed, and ease of troubleshooting. Loyalty formation, meanwhile, involves sustained commitment driven by satisfaction, trust, perceived value, and accumulated positive experience (Oliver, 1999; Gee et al., 2008). Prior research shows that satisfaction and trust function not only as behavioral outcomes but also as mediators linking system performance to loyalty (Zhang et al., 2023; Widyawan et al, 2024).

Beyond behavioral and experiential drivers, the growing emphasis on data-driven ecosystem management offers new opportunities for strengthening merchant engagement. Transaction histories, behavioral indicators, and failure patterns enable

targeted interventions such as incentive personalization, churn prediction, and proactive troubleshooting (Wedel & Kannan, 2016; Allen et al., 2022; Salerno & Maçada, 2025). However, many financial institutions struggle to operationalize data insights due to fragmented systems and limited analytical capability (Wedel et al., 2020).

These conditions reveal a clear gap in the literature: limited synthesis exists on how merchant and cashier behavior, loyalty formation, and data-driven ecosystem strategies interact within digital payment environments, especially in emerging markets where operational conditions vary significantly. Existing reviews have not yet mapped these elements into a comprehensive, integrated framework supported by evidence from frontline contexts.

Therefore, this study conducts a Systematic Literature Review (SLR) of thirty peer-reviewed journal articles or peer-reviewed/reputable conference proceedings published between 2015 and 2025 to integrate empirical and conceptual insights on merchant and cashier behavioral determinants, loyalty drivers, and data-driven ecosystem strategies. The study aims to consolidate fragmented findings, clarify theoretical linkages, and propose a unified conceptual model to guide future research and practice. This research contributes by offering an integrated perspective on frontline loyalty formation and by highlighting opportunities for strengthening ecosystem sustainability through analytics-driven approaches.

2. | LITERATURE REVIEW

Digital Payment Ecosystems

Digital payment ecosystems refer to interconnected infrastructures encompassing banks, payment providers, merchants, customers, and regulatory bodies that enable seamless electronic transactions across commercial sectors. Core technologies include Electronic Data Capture (EDC) terminals, mobile wallets, and QR-based payment systems that facilitate secure, efficient, and interoperable payment processing. Several studies emphasize that ecosystem development is shaped by platform interoperability, infrastructure stability, and regulatory support promoting digital financial inclusion (Rosário & Dias, 2023; Jain & Jain, 2024).

In emerging markets, ecosystem growth is accelerated by smartphone penetration, national cashless initiatives, and digitalization of micro-businesses (Ozili, 2020; Widyawan et al., 2024). However, the SLR shows that persistent challenges such as device instability, inconsistent network quality, fragmented provider coordination, and low digital literacy act as structural barriers, particularly for small merchants (Indrijawati et al., 2024; Santika et al., 2024). These constraints produce operational friction that frontline actors must absorb during real-time transactions, making ecosystem reliability a critical determinant of digital payment continuity. Synthesizing the reviewed studies reveals that while infrastructure and policy environments significantly facilitate ecosystem adoption, the actual sustainability of digital payment systems depends heavily on the experiences of merchants and cashiers who operate these technologies daily.

Merchant and Cashier Behavior in Digital Payments

Merchants and cashiers act as frontline operators whose behavioral, emotional, and cognitive responses shape the success of digital payment transactions. Evidence from the SLR confirms that adoption and continued use are influenced by a combination of technological, psychological, and organizational factors (Shaw, 2022; Zhang et al., 2023). Perceived ease of use, device reliability, and clarity of interface design consistently emerge as determinants that reduce operational stress and improve transaction accuracy (Ramayanti et al., 2024). Psychological influences including trust, perceived security, familiarity, and habit strengthen continuity intentions by reducing uncertainty and perceived risk (Liu & Tai, 2016; Andriyani, 2025). Trust in system stability and institutional credibility is particularly important for merchants, who perceive system errors as business risks rather than mere user inconveniences.

Organizational support plays a critical role: studies highlight that training availability, structured operational procedures, and responsive technical assistance significantly improve cashier confidence and problem-solving ability (Kurniawan et al., 2024; Muchtar et al., 2024). Conversely, weak support contributes to frustration, fallback to cash, and negative attitudes toward digital payments (Lubis & Juniwati, 2024). Across the reviewed literature, a consistent synthesis emerges merchants and cashiers are not passive technology users. Their expertise, workload, and situational pressures meaningfully influence adoption outcomes and ecosystem performance.

Technology Acceptance Theory (TAM) in Payment Contexts

The Technology Acceptance Model (TAM) provides a fundamental theoretical lens for analyzing frontline adoption of payment technologies. Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are widely validated predictors of intention and actual usage across digital payment contexts (Davis, 1989; Baabdullah et al., 2019). In merchant settings, PU reflects transaction speed, accuracy, and operational efficiency, whereas PEOU relates to intuitive interfaces, troubleshooting simplicity, and reduced cognitive load.

Recent SLR studies reinforce TAM's relevance in digital payment adoption. Indrijawati et al. (2024) , Jain & Jain (2024), and Kurniawan et al. (2024) show that PU and PEOU remain central in explaining adoption among small merchants in Asia, but only when combined with trust and institutional credibility. These findings indicate that TAM alone is insufficient for understanding frontline behavior in emerging markets, where environmental uncertainty, training gaps, and customer volume significantly mediate adoption decisions. Thus, the application of TAM within merchant and cashier contexts requires integration with trust factors, operational conditions, and ecosystem-level constraints.

Loyalty Constructs in Digital Payment Ecosystems

Loyalty in digital payment environments is conceptualized as a sustained commitment to continue using a platform, shaped by satisfaction, trust, perceived value, and consistent transaction experiences (Oliver, 1999; Gee et al., 2008). The SLR

indicates that satisfaction is driven by reliability, transactional speed, service responsiveness, and minimal error occurrences (Zhang et al., 2023; Widyawan et al., 2024). Trust is associated with security assurance, accurate billing, and institutional credibility (Liu & Tai, 2016; Muchtar et al., 2024).

Perceived value derived from promotional incentives, cost efficiency, and convenience also plays an important role, especially among small merchants with tight operating margins (Lubis & Juniwati, 2024). Experience consistency is repeatedly shown to reinforce loyalty through habit formation and reduced switching tendencies (Digital Consumer SLR, 2024). However, compared to consumer loyalty, merchant and cashier loyalty remain significantly underexamined. Key operational factors such as workload intensity, error recovery burden, stress, and task complexity are rarely incorporated as predictors of loyalty. This omission represents a major conceptual gap highlighted across the SLR.

Data-Driven Marketing and Ecosystem Management

Data-driven digital payment ecosystems leverage transaction histories, merchant behavior patterns, and operational performance indicators to enhance engagement and ecosystem resilience (Wedel & Kannan, 2016; Rosário & Dias, 2023). Analytics enable merchant segmentation, churn prediction, incentive optimization, failure pattern detection, proactive troubleshooting, and targeted communication strategies (Ajmal, 2025; Salerno & Maçada, 2025). Although such strategies have demonstrated potential for improving merchant satisfaction and reducing churn, many financial institutions struggle to operationalize analytics due to fragmented data systems, limited analytical capacity, and weak coordination between headquarters and frontline teams (Wedel et al., 2020; Kumar et al., 2021). The SLR reveals that data-driven interventions such as personalized incentives, real-time alerts, and adaptive support are promising but remain empirically underexplored within merchant ecosystems. This indicates an emerging yet insufficiently researched domain.

Research Gaps Synthesized from Literature

Based on the reviewed literature, several gaps are evident:

Merchant and cashier perspectives are underexplored compared to consumer-focused adoption research (Oliveira et al., 2016; Shaw, 2022). Behavioral determinants linked to operational realities (workload, training, stress) have not been systematically synthesized. Loyalty mechanisms for merchants/cashiers remain theoretically fragmented, lacking integration with models like TAM and Loyalty Theory. Data-driven ecosystem strategies are not well-studied in relation to frontline engagement and loyalty (Wedel et al., 2020). Few SLR studies connect behavioral, technological, and data-driven dimensions in a single digital payment framework. These gaps justify conducting a systematic review that integrates behavioral, experiential, and data-driven elements to understand loyalty and ecosystem sustainability.

Summary of the Literature Review

The literature indicates that merchant and cashier behavior influences ecosystem adoption far more than traditionally acknowledged. TAM provides a foundation for understanding adoption, while Loyalty Theory explains sustained usage through satisfaction and trust. Evidence also shows that data-driven ecosystem management is becoming central to payment service strategy but remains conceptually and empirically underdeveloped. The insights from this review collectively justify the need for an integrative framework that captures the multidimensional drivers shaping frontline loyalty. This synthesis informs the methodological and analytical approach undertaken in this study.

Conceptual Framework

The conceptual framework developed in this study synthesizes technological, psychological, organizational, and experiential determinants identified across the thirty studies reviewed in the SLR. While consumer adoption has been extensively examined, merchant and cashier loyalty mechanisms remain underrepresented and fragmented in prior research. Satisfaction and Trust function as central mediators connecting system performance and organizational support to long-term loyalty outcomes. Technological characteristics influence frontline ease of use and operational certainty, whereas day-to-day operational experience shapes confidence and transaction performance. Psychological perceptions and organizational support further enhance emotional readiness and competence. Together, these drivers reinforce or weaken satisfaction and trust, ultimately influencing loyalty through continuity of usage and reduced churn. This model integrates previously isolated insights into a coherent ecosystem-based explanation of frontline loyalty and guides subsequent methodological and empirical development.

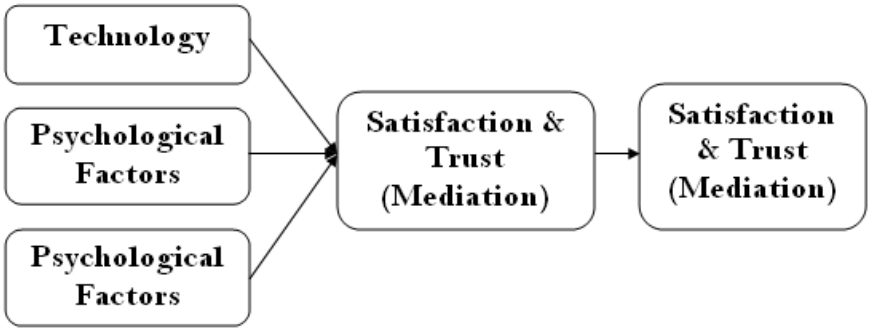


Figure 1. Conceptual Model of Merchant & Cashier Loyalty in Digital Payment Ecosystems

3. | RESEARCH METHOD

This study applies a Systematic Literature Review (SLR) approach to synthesize the diverse theoretical and empirical findings related to merchant and cashier behavior, loyalty formation, and data-driven strategies in digital payment ecosystems. The SLR

method is selected because existing scholarship on digital payment adoption remains fragmented, particularly in studies that address frontline actors rather than consumers. By following the PRISMA 2020 guidelines, this review ensures a transparent and replicable process through clearly defined stages of identification, screening, eligibility assessment, and final inclusion. The purpose of this design is to integrate patterns across multiple studies, address conceptual inconsistencies, and provide a solid empirical foundation for developing the proposed conceptual framework.

The search strategy was developed to capture interdisciplinary research spanning technology adoption, digital finance, behavioral sciences, and organizational studies. Searches were conducted across Scopus, ScienceDirect, SpringerLink, Taylor & Francis Online, Emerald Insight, Wiley Online Library, and complemented with Google Scholar for broader visibility. Keywords related to digital payments, merchant and cashier behavior, mobile payment adoption, QR-based systems, EDC usage, loyalty, satisfaction, trust, ecosystem experience, and data-driven analytics were combined using Boolean operators to maximize retrieval. This comprehensive search generated an initial body of literature that reflected the multifaceted nature of digital payment ecosystems and frontline behavior.

The selection of relevant articles followed predefined criteria to ensure methodological rigor and conceptual relevance. Studies were included when they were peer-reviewed, published between 2015 and 2025, written in English, and addressed behavioral, operational, experiential, or ecosystem-level determinants of digital payment usage involving merchants or cashiers. Both empirical and conceptual studies were included, provided they offered insights into adoption, loyalty, satisfaction, trust, organizational support, or data-driven strategies. Studies were excluded when they focused exclusively on consumers, presented purely technical system architecture unrelated to user behavior, lacked methodological clarity, or duplicated previously identified articles. These criteria ensured that the final set of papers reflected the depth and breadth of research relevant to frontline digital payment contexts.

Table 1. Inclusion and Exclusion Criteria

Criteria Type	Description
Inclusion	(1) Peer-reviewed journal articles or reputable/peer-reviewed conference proceedings; (2) Published between 2015 and 2025; (3) Written in English; (4) Full-text available for eligibility assessment and data extraction; (5) Address digital payment systems and at least one relevant dimension, including merchant/cashier behavior, adoption, satisfaction, trust, loyalty, operational experience, or data-driven ecosystem strategies; (6) Provide empirical or conceptual contributions relevant to the research objectives.

Exclusion	(1) Non-peer-reviewed publications, opinion papers, reports, editorials, or commentaries; (2) Studies focused exclusively on consumers without relevance to merchants or cashiers; (3) Studies focusing solely on technical system architecture without behavioral, operational, experiential, or ecosystem relevance; (4) Studies lacking sufficient methodological clarity or relevant information for data extraction; (5) Duplicate publications; (6) Studies published outside the 2015–2025 period or not written in English.

The screening process followed the PRISMA 2020 structure and began with the identification of studies from database searches. After removing duplicates, titles and abstracts were reviewed for topical relevance, followed by full-text assessments of methodological quality and conceptual alignment. This multi-stage review resulted in the inclusion of thirty articles that met all eligibility criteria. The process ensured that only studies with substantive contributions to digital payment behavior, operational realities, loyalty mechanisms, or data-driven ecosystem management were selected. A PRISMA flow representation is provided in the findings section as a summary of the selection pathway.

Four PRISMA stages were followed. Numbers below reflect the final SLR sample of 30 studies

Table 2. PRISMA Flow Summary

Stage	**Description**	**Number of Records**
Identification	Articles retrieved from all databases	312
	Duplicates removed	57
Screening	Records screened by title & abstract	255
	Records excluded	165
Eligibility	Full-text articles assessed for eligibility	90
	Full texts excluded (methodological issues / irrelevant context)	60
Included	Final studies included in synthesis	30

Data extraction was conducted through a structured protocol to ensure consistency across studies. Each article was examined for bibliographic information, methodological design, sample characteristics, contextual focus, theoretical foundations, and key findings. Extracted data were then coded into thematic categories, including technological determinants, behavioral and psychological factors, organizational support, frontline operational experience, and analytics-driven ecosystem strategies. This coding process allowed the synthesis of cross-study patterns

and identification of recurrent constructs influencing merchant and cashier loyalty. The approach also enabled comparative interpretation among studies that employed different research methods and contexts.

The quality of the included studies was evaluated using principles adapted from the Critical Appraisal Skills Programme (CASP), focusing on methodological clarity, appropriateness of research design, robustness of analytical procedures, and validity of conclusions. All included studies met the minimum standards for credibility and relevance, though the review noted variations in methodological depth. Studies on QRIS adoption and micro-merchant contexts often employed cross-sectional designs, limiting longitudinal insight. Similarly, research on data-driven ecosystem practices tended to be conceptual rather than empirical. These assessments informed the weighting of evidence when synthesizing findings and constructing the conceptual framework.

Table 3. Quality Appraisal of the 30 Included Studies

Quality Category	Criteria Description	Articles (n=30)	Example Studies
High Quality	Clear design, robust methodology, strong evidence–conclusion alignment	20	studies on merchant adoption, QR readiness, digital loyalty determinants
Moderate Quality	Adequate design but limited analytical detail	7	SME digital payment readiness studies
Low Quality	Conceptually relevant but limited methodological rigor	3	included for theoretical value

The synthesis process employed thematic analysis to integrate findings from diverse methodologies and contexts. Themes were developed inductively, identifying recurring constructs across the thirty studies. Three major thematic clusters emerged, encompassing behavioral and psychological drivers such as trust and perceived security, technological and operational determinants including device reliability and usability, and organizational and data-driven ecosystem factors such as training, support, incentives, and analytics-enabled interventions. The synthesis process allowed the identification of cross-cutting patterns and highlighted conceptual relationships that form the basis of the integrated framework presented earlier.

Overall, the SLR methodology provides a transparent and systematic approach to consolidating fragmented literature on merchant and cashier loyalty in digital payment ecosystems. Through comprehensive database searches, structured screening, rigorous quality appraisal, and thematic synthesis, this study ensures that the insights derived are grounded in robust evidence. The methodological approach provides a strong foundation for interpreting the findings and developing a conceptual model that reflects technological, behavioral, organizational, and data-driven dimensions of digital payment ecosystems.

Table 4. Summary of Several Studies Included in the Systematic Literature Review

Author(s) & Year	Method / Design	Context	Key Findings
Jain & Jain (2024)	Bibliometric SLR	Global digital payment adoption	Identifies core factors (usefulness, ease of use, trust) and notes gaps in merchant-focused research.
Rosário & Dias (2023)	Literature Review	Data-driven marketing	Highlights challenges in data integration, skills, and governance in analytics adoption.
Efendioğlu (2024)	Systematic Review	Digital consumer behavior	Maps motivations, risk perception, and habit; notes limited merchant-side studies.
Rafferty & Fajar (2022)	Empirical/ Conceptual	QRIS merchants in Indonesia	Finds merchant compatibility, facilitating conditions, trust, and relative advantage drive QRIS adoption.
Zhang et al. (2023)	Empirical	Mobile payments	Customer loyalty driven by satisfaction, service quality, and privacy/security.
Indrijawati et al. (2024)	SLR	Digital payment adoption	Identifies behavioral and technological determinants, emphasizing organizational support.
Andriyani (2025	Survey	QRIS adoption (Gen Z Indonesia)	Adoption driven by habit, trust, and social influence.
Baptista and Nunes (2025)	Conceptual	Digital ecosystems	Explains actor interdependence and platform-driven value creation.
Kurniawan et al. (2024)	SLR	Adoption of digital payments	Finds trust and risk as major global factors; highlights need for continuity studies.
Ajmal, 2025	Preprint / Data-driven model	Merchant ecosystems	Analytics improves incentive allocation and retention effectiveness.
Ramayanti et al. (2024)	Review	Digital payment intention & usage	Notes security, ease of use, and experience as dominant factors.
Muchtar et al. (2024)	Empirical (Extended UTAUT)	QRIS users (Indonesia)	Performance expectancy and facilitating conditions strongly influence adoption.
Allen et al. (2022)	Machine Learning / Empirical	MSM retailers and digital payments	Identifies predictors of digital payment adoption and shows the role of merchant/consumer incentives.
Sendjaja & Kawandari (2020)	Service Quality Study	EDC systems (Indonesia)	EDC service quality positively affects merchant loyalty.

Author(s) & Year	Method / Design	Context	Key Findings
Irdana et al. (2021)	Qualitative	Traditional market merchants	Identifies readiness factors: cost, support availability, perceived risks.
Yoebrilianti et al. (2022)	Survey	Mobile payments during COVID-19	Pandemic accelerates adoption and loyalty through perceived safety.
Widyawan et al. (2024)	Case Study	QRIS for micro-enterprises	Reports efficiency benefits and barriers in literacy, network stability, and fees.
Santika et al. (2024)	Survey	MSMEs using QRIS	Adoption influenced by trust, risk, and perceived usefulness.
Lubis & Juniwati (2024)	Empirical	GoPay merchants	Loyalty program and perceived value significantly influence merchant loyalty.
Septianingrum, W. D., & Ismiyanti, F. (2023)	Empirical	EDC merchants	Device reliability and service quality drive continued usage.
Susanto et al. (2022)	SLR	Asian markets	Trust, perceived risk, and social influence are dominant adoption predictors.
Wicaksono (2025)	Empirical	QRIS merchants	Continuance intention shaped by trust and habit.
Rahmawati et al. (2024)	Survey	Digital wallet (young users)	Retention influenced by hedonic value, usability, and brand trust.
Salerno & Maçada (2025)	Conceptual	Data ecosystems	Emphasizes data culture, orchestration, and coordinated analytics flows.
Usman et al. (2025)	Survey	QRIS Indonesia	Identifies infrastructure, digital literacy, cash preference as major barriers.
Mahmuda & Hermawati (2024)	UX Evaluation	Cashier/merchant UX	Poor UX increases error rates and reduces satisfaction.
Kabut, S. A., & Windasari (2024)	Machine learning model	Merchant performance	Behavior-based churn prediction supports targeted interventions.
Al-Hattami (2023)	Empirical	Mobile wallet users	Loyalty driven by trust, value perception, and usage habit.

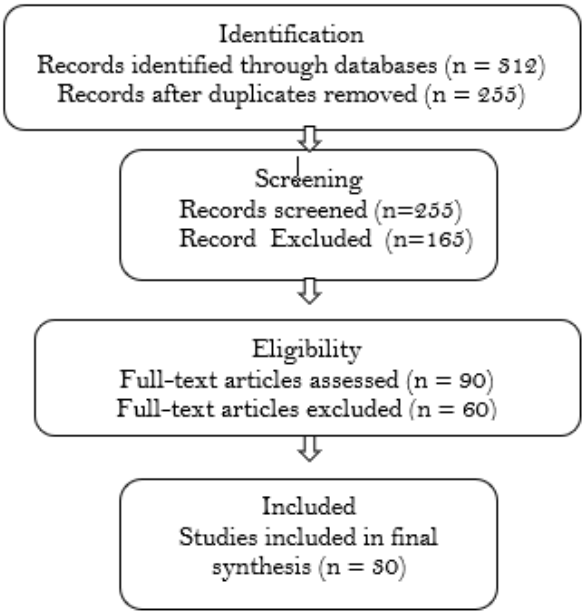


Figure 1. Prisma Flow Diagram

4. | RESULTS

The thirty articles included in this systematic literature review represent diverse geographical, technological, and organizational contexts surrounding digital payment ecosystems, including QR-based payments, QRIS, electronic data capture (EDC) terminals, mobile wallets, and merchant payment platforms. The studies were published between 2015 and 2025, reflecting the rapid expansion of research on digital payment adoption, user experience, merchant retention, and ecosystem development. Most studies employed quantitative survey approaches, while several used systematic literature reviews, qualitative methods, conceptual frameworks, or analytical approaches. The reviewed literature was commonly grounded in established technology and behavioral theories, particularly the Technology Acceptance Model (TAM), which emphasizes perceived usefulness and perceived ease of use as important determinants of technology acceptance (Davis, 1989). Recent systematic reviews similarly demonstrate that digital payment adoption is influenced by a combination of technological, behavioral, contextual, and social factors rather than by a single determinant (Indrijawati et al., 2024; Jain & Jain, 2024; Ramayanti et al., 2024).

Across the reviewed studies, digital payment adoption among merchants and frontline cashiers is shaped by the interaction of technological quality, psychological readiness, and organizational conditions. Perceived usefulness, perceived ease of use, system simplicity, reliability, and transaction efficiency consistently contribute to positive attitudes toward digital payment systems. The relevance of these factors is particularly evident in studies of QRIS and EDC adoption, where merchants evaluate whether payment technologies can facilitate transactions without creating additional operational complexity (Rafferty & Fajar, 2022; Santika et al., 2024; Mahmuda & Hermawati, 2024). Research on EDC implementation also indicates that the availability and functionality of payment infrastructure influence the practical acceptance of digital

payment technologies in traditional market environments (Irdana et al., 2019). Similarly, studies of QRIS adoption among MSMEs identify perceived benefits and usability as important considerations in determining whether merchants adopt and continue to use digital payment systems (Widyawan et al., 2024; Usman et al., 2025).

Beyond technological characteristics, psychological factors such as trust, perceived security, familiarity, and confidence play an important role in adoption and continued usage. Trust is particularly relevant because merchants and users must depend on payment providers to process transactions accurately, securely, and consistently. The importance of trust has also been demonstrated in research on mobile wallets, where trust can strengthen the relationship between service characteristics and customer loyalty (Al-Hattami et al., 2023). Similarly, evidence from QRIS research indicates that trust and habit contribute to continued use of QR-based payment systems (Wicaksono, 2025). These findings suggest that adoption should not be understood solely as a technological decision but as a socio-technical process involving perceptions of reliability, security, familiarity, and institutional credibility.

The reviewed literature further demonstrates that operational experience represents an important link between adoption and sustained usage. Although merchants may initially adopt digital payment systems, recurring operational problems can weaken their willingness to use them consistently. Network instability, slow transaction confirmation, device malfunction, interface complexity, and inconsistent platform performance are among the barriers identified across the literature. Research on QRIS adoption among micro businesses, for example, identifies practical barriers that can reduce the benefits perceived by merchants (Widyawan et al., 2024). Likewise, research examining EDC user experience emphasizes the importance of usability and the quality of interaction between merchants and payment devices (Mahmuda & Hermawati, 2024). These findings indicate that successful digital payment implementation requires not only initial adoption but also reliable day-to-day operational performance.

Human and organizational capabilities constitute another important dimension of operational experience. Limited digital literacy, insufficient troubleshooting skills, inadequate training, and unclear operational procedures may increase uncertainty among frontline users. Organizational support, including training, technical assistance, responsive customer service, and clear escalation mechanisms, can therefore influence the persistence of digital payment usage. Sendjaja and Kawandari (2020), for example, demonstrate the importance of improving EDC service quality in strengthening merchant loyalty. This is consistent with the broader argument that digital ecosystems depend on relationships and interactions among multiple actors rather than solely on technological infrastructure (Baptista & Nunes, 2025).

Loyalty and retention emerge as further outcomes of positive digital payment experiences. The literature indicates that loyalty is associated with satisfaction, trust, perceived value, service quality, system performance, and relationship quality. Oliver

(1999) conceptualizes loyalty as a commitment that develops beyond temporary satisfaction, while contemporary digital payment research demonstrates that trust and perceived value remain important in explaining continued usage. In mobile payment contexts, consumption value and alternative attractiveness have been found to influence customer loyalty (Zhang et al., 2023), while mobile wallet research highlights the moderating importance of trust (Al-Hattami et al., 2023). In the merchant context, service quality and supportive relationships with payment providers can similarly contribute to retention (Sendjaja & Kawandari, 2020). Incentives also represent an important mechanism for encouraging digital payment acceptance and continued engagement. Machine-learning research demonstrates that incentive structures can be optimized according to merchant characteristics and behavioral patterns (Allen et al., 2022), while more recent research emphasizes data-driven approaches to merchant incentive optimization (Ajmal, 2025).

The synthesis also identifies data-driven ecosystem management as an emerging area within the reviewed literature. Transactional data, behavioral records, customer profiles, and performance indicators can support merchant segmentation, retention analysis, incentive personalization, and early identification of operational problems. Kabut and Windasari (2024), for instance, propose predictive CRM analytics using RFM segmentation, customer profiling, and behavioral analytics to support merchant retention in B2B payment environments. More broadly, data-driven marketing research emphasizes the growing role of analytics and emerging technologies in improving decision-making while also identifying challenges related to data quality, integration, privacy, and organizational capabilities (Rosário & Dias, 2023). Salerno and Maçada (2025) further highlight the importance of data-driven organizational culture and coordinated data ecosystems for transforming dispersed data resources into strategic capabilities.

The thirty studies demonstrate that digital payment adoption, operational experience, loyalty, and merchant retention are interconnected rather than isolated outcomes. Technological usefulness and ease of use provide an important foundation for adoption, while trust, security, familiarity, service quality, and organizational support influence the quality of operational experience and continued usage. Positive experiences can subsequently strengthen satisfaction, perceived value, loyalty, and retention. At the ecosystem level, data-driven strategies provide opportunities to improve segmentation, incentive design, service responsiveness, and predictive retention management. However, fragmented systems, limited analytical capabilities, operational disruptions, and insufficient organizational support continue to constrain the realization of these benefits. The overall evidence therefore supports a socio-technical perspective in which digital payment ecosystem performance depends on the alignment of technology, human capabilities, organizational support, service relationships, and data-driven management.

5. | DISCUSSION

The findings of this systematic literature review confirm that digital payment adoption cannot be explained solely by technological acceptance. Perceived usefulness and perceived ease of use remain fundamental determinants, consistent with the Technology Acceptance Model (TAM) (Davis, 1989). However, evidence from QRIS, EDC, and mobile payment studies indicates that adoption and continued usage are also shaped by trust, service quality, operational reliability, perceived benefits, and contextual conditions (Rafferty & Fajar, 2022; Santika et al., 2024; Indrijawati et al., 2024). This suggests that TAM provides an important foundation but should be interpreted within a broader socio-technical ecosystem in which technological performance interacts with human and organizational factors.

Trust represents a particularly important mechanism linking system experience with continued usage and loyalty. Research on mobile wallets demonstrates that trust strengthens customer loyalty, while QRIS research highlights the role of trust and habit in continued payment usage (Al-Hattami et al., 2023; Wicaksono, 2025). From a merchant perspective, trust is also associated with perceptions of transaction security, provider reliability, service responsiveness, and operational consistency. Thus, the evidence extends conventional technology-acceptance perspectives by positioning trust not merely as an individual psychological perception but as an important relational component of digital payment ecosystems.

The synthesis further indicates that loyalty develops through interconnected experiences involving system performance, satisfaction, perceived value, trust, and continued usage. Consistent transaction processing, reliable devices, transparent fees, and effective service support can strengthen positive experiences, whereas technical disruptions and inadequate assistance may undermine them. This interpretation is consistent with Oliver's (1999) conceptualization of loyalty and with contemporary evidence emphasizing value, trust, and alternative attractiveness in mobile payment loyalty (Zhang et al., 2023). Service quality is similarly relevant to merchant retention, particularly in EDC environments (Sendjaja & Kawandari, 2020).

Organizational support constitutes an important enabling condition. Training, operational guidance, responsive troubleshooting, and accessible support can reduce uncertainty and improve users' ability to manage digital payment systems. These findings reinforce the importance of service and ecosystem relationships beyond the payment technology itself (Baptista & Nunes, 2025). Providers therefore need to combine technological improvements with appropriate operational and relational support.

Data-driven strategies provide an additional opportunity for ecosystem improvement. Transactional and behavioral data can support merchant segmentation, retention analysis, and targeted incentives (Kabut & Windasari, 2024; Allen et al., 2022). Recent scholarship also emphasizes the strategic importance of data-driven culture and coordinated data ecosystems (Rosário & Dias, 2023; Salerno & Maçada,

2025). Nevertheless, fragmented data infrastructure and limited analytical capabilities may restrict implementation. Future research should therefore examine how integrated analytics, organizational support, and targeted interventions influence merchant loyalty over time. Longitudinal, experimental, and cross-market studies would be particularly valuable for identifying causal mechanisms and contextual differences across payment technologies.

6. | CONCLUSION

This study conducted a Systematic Literature Review (SLR) of thirty peer-reviewed articles published between 2015 and 2025 to examine determinants of merchant and cashier behavior, loyalty mechanisms, and data-driven strategies in digital payment ecosystems. The findings demonstrate that adoption, operational experience, and loyalty are shaped by interconnected technological, psychological, organizational, and ecosystem-level factors. Perceived usefulness, ease of use, device reliability, and transaction efficiency remain important determinants, confirming the continued relevance of the Technology Acceptance Model (TAM). Trust, perceived security, habit, satisfaction, and perceived value further contribute to continued usage and loyalty, while organizational support through training, troubleshooting, and communication strengthens frontline confidence and operational effectiveness.

The review extends existing perspectives by demonstrating that technology acceptance models need to incorporate the operational realities of merchants and cashiers, including network disruptions, device errors, and transaction pressure. It also highlights that satisfaction and trust are influenced by organizational and ecosystem conditions rather than solely individual perceptions. Data-driven strategies offer additional opportunities for merchant segmentation, personalized incentives, proactive support, and performance optimization, although their practical implementation remains uneven. For practitioners, the findings emphasize the importance of reliable payment infrastructure, structured training, responsive support systems, integrated data capabilities, and transparent communication. Policymakers can further strengthen the ecosystem through interoperability, digital literacy, and coordination among ecosystem actors.

Several limitations should be acknowledged. The review focuses on English-language studies indexed in major databases, while many included studies use cross-sectional designs. Empirical evidence regarding real-world data-driven interventions also remains limited. Future research should employ longitudinal and experimental approaches to examine behavioral change and causal effects, while exploring stress, workload, and decision-making under transaction pressure. Comparative studies across countries and payment technologies could further clarify contextual differences in digital payment adoption and loyalty.

Acknowledgment

We gratefully acknowledge the contributions of individuals who supported the completion of this article.

Funding Information

This research did not receive any funding.

Conflict of Interest Statement

The authors declare that there is no conflict of interest.

Ethical Approval and Originality Statement

Ethical approval was obtained for this study. The manuscript represents original work and has not been previously published, nor is it under consideration by another journal.

Data Disclosure Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

Ajmal, H. (2025). Data-driven strategy for merchant incentive optimization in digital payment ecosystems. *Journal of Business and Management Revolution*, 5(1), 1–6. https://doi.org/10.37357/1068/jbmr/5.1.01

Al-Hattami, H. M., Al-Adwan, A. S., Abdullah, A. A. H., & Al-Hakimi, M. A. (2023). Determinants of customer loyalty toward mobile wallet services in post-covid-19: The moderating role of trust. *Human Behavior and Emerging Technologies*, *2023*, 1-13. https://doi.org/10.1155/2023/9984246

Allen, J., Carbo-Valverde, S., Chakravorti, S., Rodriguez-Fernandez, F., & Pinar Ardic, O. (2022). Assessing incentives to increase digital payment acceptance and usage: A machine learning approach. *Plos One*, *17*(11), e0276203. https://doi.org/10.1371/journal.pone.0276203

Andriyani, F., Siagian, B., Suciati, P., & Citra, A. (2025). QRIS adoption and utilization: Examining gen z's digital payment behavior among indonesian vocational students. *Jurnal Vokasi Indonesia*, *13*(1). https://doi.org/10.7454/jvi.v13i1.1233

Baptista, C. S., & Nunes, D. (2025). Digital ecosystems and their influence on business relationships. *Review of Managerial Science*, *20*(1), 29-51. https://doi.org/10.1007/s11846-025-00865-2

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

Efendioğlu, İ. H. (2024). Digital consumer behavior: A systematic literature review. *Prizren Social Science Journal*, *8*(1). https://doi.org/10.32936/pssj.v8i1.479

Indrijawati, A., Mediaty, Arham, Damayanti, S., & Wahid, M. Z. (2024). A systematic literature review: Determinants of user interest in digital payment services: Trends and causes. *Jurnal Economic Resource*, *7*(2), 113-132. https://doi.org/10.57178/jer.v7i2.1011

Irdana, N., Widodo, T., Kuntoro Priyambodo, T., & Achjari, D. (2019). EDC machine implementation model in traditional market as shopping tourism icon in Yogyakarta. In *KnE Social Sciences*. Knowledge E DMCC. https://doi.org/10.18502/kss.v3i23.5150

Jain, V., & Jain, N. (2024). From cash to clicks: A systematic review of digital payment adoption using the ADO framework. *NMIMS Management Review*, *32*(4), 277-291. https://doi.org/10.1177/09711023241312523

Kabut, S. A., & Windasari, N. A. (2024). A predictive CRM analytics framework for merchant retention: Applying RFM segmentation, customer profiling, and behavioral analytics in the B2B payment gateway company. *Return: Study of Management, Economic and Bussines*, *3*(6), 409-428. https://doi.org/10.57096/return.v3i6.246

Kurniawan, A. R., Prasetyo, D. D., & Indriani, F. (2024). The effect of e-payment on global consumers: A systematic literature review. *Research Horizon*, *4*(6), 53-60. https://doi.org/10.54518/rh.4.6.2024.392

Lubis, E. M., & Juniwati, J. (2024). Pengaruh persepsi nilai merchant, price discount, loyalty program terhadap kepuasaan pelanggan (studi pada pelanggan GoPay di aplikasi Gojek). *Prosiding Management Business Innovation Conference (MBIC)*. (March 6, 2024). Available on untan.ac.id. Accessed March 5, 2026.

Mahmuda, A., & Hermawati, R. (2024). Analisis user experience pada produk EDC (electronic data capture) BRI merchant di kota jakarta. *Anthropos: Jurnal Antropologi Sosial Dan Budaya (journal of Social and Cultural Anthropology)*, *9*(2), 81-98. https://doi.org/10.24114/antro.v9i2.55743

Muchtar, E. H., Trianto, B., Maulana, I., Alim, M. N., Marasabessy, R. H., Hidayat, W., Junaedi, E., & Masrizal. (2024). Quick Response Code Indonesia Standard (QRIS) e-payment adoption: Customers perspective. *Cogent Business & Management*, 11(1). https://doi.org/10.1080/23311975.2024.2316044

Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing*, *63*(4_suppl1), 33-44. https://doi.org/10.1177/00222429990634s105

Rafferty, N. E., & Fajar, A. N. (2022). Integrated QR payment system (QRIS): cashless payment solution in developing country from merchant perspective. *Asia Pacific Journal of Information Systems*, *32*(3), 630-655. https://doi.org/10.14329/apjis.2022.32.3.630

Rahmawati, A., Syahnur, K. N. F., & Falah, A. M. S. A. (2024). Analysis of customer retention determinant factors on generation z digital wallet services in indonesia. In *Hasanuddin Economics and Business Review* (pp. 119-139). Fakultas Ekonomi Dan Bisnis Unhas. https://doi.org/10.26487/hebr.v8i2.5706

Ramayanti, R., Rachmawati, N. A., Azhar, Z., & Nik Azman, N. H. (2024). Exploring intention and actual use in digital payments: A systematic review and roadmap for future research. *Computers in Human Behavior Reports*, *13*, 100348. https://doi.org/10.1016/j.chbr.2023.100348

Rosário, A. T., & Dias, J. C. (2023). How has data-driven marketing evolved: Challenges and opportunities with emerging technologies. *International Journal of Information Management Data Insights*, *3*(2), 100203. https://doi.org/10.1016/j.jjimei.2023.100203

Salerno, F. F., & Maçada, A. C. G. (2025). Data-driven culture and orchestrated data ecosystems: A conceptual model based on the resource-based view. *Revista De Gestão*, *32*(2), 123-135. https://doi.org/10.1108/rege-12-2024-0184

Santika, A. Z., Musyaffi, A. M., & Zairin, G. M. (2024). Factors influencing the adoption of QRIS digital payments in msmes. *Jurnal Akuntansi, Perpajakan Dan Auditing*, *5*(1), 191-208. https://doi.org/10.21009/japa.0501.13

Sendjaja, T., & Kawandari, R. (2020). Peningkatan kualitas layanan sistem electronic data capture untuk meningkatkan loyalitas merchant. *Jurnal Apresiasi Ekonomi*, *8*(1), 59-69. https://doi.org/10.31846/jae.v8i1.271

Septianingrum, W. D., & Ismiyanti, F. (2023). The impact of EDC's marketing, service, and infrastructure strategies on the growth of savings deposits at Bank Rakyat Indonesia Surabaya Pahlawan branch. *Jurnal Indonesia Sosial Teknologi*, *4*(9), 1441–1449. https://doi.org/10.59141/jist.v4i9.722

Susanto, E., Solikin, I., & Purnomo, B. S. (2022). A review of digital payment adoption in asia. *Advanced International Journal of Business, Entrepreneurship and SMEs*, *4*(11), 01-15. https://doi.org/10.35631/aijbes.411001

Usman, O., Hardini, I. R., & Kasofi, A. (2025). Integrated QR payment system: Cashless payment solution in developing countries from the perspective of MSMEs. *International Journal of Innovative Research and Scientific Studies*, *8*(2), 1424–1432. https://doi.org/10.53894/ijirss.v8i2.5470

Wicaksono, I. (2025). Role of habit and trust in driving the continuance of QR code payment usage: A study of QRIS consumers in Indonesia. *Journal of Marketing Innovation (JMI)*, *5*(2). https://doi.org/10.35313/jmi.v5i2.273

Widyawan, B., Barlian, A., Haryanto, J., & Haddad Bayhaqi, M. (2024). Exploring the benefits and barriers of QRIS adoption among micro businesses in North Bogor. *Journal of Accounting and Finance Management*, *5*(4), 636–643. https://doi.org/10.38035/jafm.v5i4.740

Yoebrilianti, A., Nurhyani, N., & Ikhsan, K. (2022). M-payment and covid-19: Understanding the determinants of consumers adopting and recommending digital payment system. *Jurnal Manajemen Dan Kewirausahaan*, *10*(1), 58-70. https://doi.org/10.26905/jmdk.v10i1.6614

Zhang, Q., Ariffin, S. K., Richardson, C., & Wang, Y. (2023). Influencing factors of customer loyalty in mobile payment: A consumption value perspective and the role of alternative attractiveness. *Journal of Retailing and Consumer Services*, *73*, 103302. https://doi.org/10.1016/j.jretconser.2023.103302