

Perceived Ease of Use and Perceived Security of QRIS Toward a Cashless Society: A Literature Review

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ABSTRACT: *This study synthesizes the literature on perceived ease of use and perceived security as determinants of cashless-society behavior through Quick Response Code Indonesian Standard (QRIS) payments. Using a qualitative literature review / document analysis method (Bowen, 2009), seventeen theoretical and empirical sources published between 1989 and 2023 were analyzed, anchored by an original empirical study of accounting students at Universitas Pembangunan Nasional "Veteran" Jawa Timur. The review is organized around the Technology Acceptance Model and traces how perceived ease of use and perceived security have been conceptualized, measured, and related to cashless and QRIS-adoption outcomes across studies conducted in Indonesia and abroad. The synthesis indicates that both constructs are generally reported as positive and significant predictors of cashless-society behavior, although the relative strength of each varies with sample, setting, and the presence of complementary constructs such as perceived usefulness and trust. Two research propositions are advanced, and a conceptual framework linking institutional enablers, perceived ease of use, and perceived security to cashless-society adoption is proposed to guide future empirical validation.*

Keywords: *Cashless Society, Perceived Ease of Use, Perceived Security, QRIS, Technology Acceptance Model, Literature Review.*

INTRODUCTION

Financial technology has reshaped how households, merchants, and institutions transact, shifting economies away from sole reliance on physical cash toward electronic, card-based, and code-based payment instruments (Achord et al., 2019). Bank Indonesia frames this shift as part of a longer evolution of the national payment system, from commodity money and paper currency toward card-based and electronic instruments coordinated through its clearing and real-time settlement infrastructure (Bank Indonesia, 2020). This shift toward a "cashless society" an economy in which financial transactions are increasingly settled through digital information transfer rather than physical banknotes (Achord et al., 2019; Cashen, 2017), has been documented in both developed and emerging markets. Cnaan et al. (2021) show that digital banking channels can extend financial inclusion even in low-infrastructure rural settings, while Zhang and Luximon (2021) demonstrate that the security a user perceives in a single mobile-payment transaction shapes their willingness to rely on that channel again. In Indonesia, Bank Indonesia introduced the Quick Response Code Indonesian Standard (QRIS) to unify the many proprietary QR codes issued by banks and e-wallet providers into one interoperable standard, reducing the burden on merchants of displaying multiple QR codes and on consumers of maintaining multiple payment applications (Bank Indonesia, 2020).

University students are among the population segments most exposed to this shift, since campus life increasingly channels food, retail, and service payments through digital instruments. Ningsih et al. (2021) and Haidar (2022) both find that perceived usefulness, perceived ease of use, and perceived risk

shape Indonesian students' decisions to adopt QRIS-based electronic money. Most directly, Budiwitjaksono and Septa (2023), studying accounting students at Universitas Pembangunan Nasional "Veteran" Jawa Timur, report that both perceived ease of use and perceived security significantly and positively predict students' inclination toward a cashless lifestyle — the empirical study that motivates the present review.

Two constructs recur across this literature: perceived ease of use and perceived security, both traceable to Davis et al.'s (1989) Technology Acceptance Model (TAM). Perceived ease of use captures how effortless a technology feels to learn and operate, while perceived security captures users' confidence that their funds and personal data will not be exposed to fraud, loss, or misuse (Karjaluoto et al., 2020; Zhang & Luximon, 2021). Trinugroho et al. (2017) argue that both factors jointly determine how "ready" a society is to substitute cash with digital instruments, Adiani et al. (2021) show that this readiness differs across generational cohorts, and Hastomo and Aras (2018) link socialization and trust-building efforts to the pace at which cashless norms take hold in a community.

Findings across this body of work are not uniform. Some studies find ease of use and security to be the dominant predictors of cashless intention (Budiwitjaksono & Septa, 2023; Karjaluoto et al., 2020), while others place more weight on perceived usefulness, trust, or risk (Haidar, 2022; Ningsih et al., 2021), and still others emphasize macro-level enablers such as regulation, business-model readiness, and public education (Bank Indonesia, 2020; Andriani et al., 2022). This dispersion of emphasis, across studies conducted in different settings, with different samples, and different combinations of TAM constructs, makes it difficult for any single empirical study to represent the state of knowledge on the topic.

Most Indonesian studies of QRIS adoption, including the empirical study this review builds on (Budiwitjaksono & Septa, 2023), rely on single-site, cross-sectional survey data, which limits how far any one set of findings can be generalized. A synthesis of how perceived ease of use and perceived security have been conceptualized and shown to relate to cashless-society outcomes across settings has, to the authors' knowledge, not yet been assembled for the Indonesian higher-education context specifically. This article therefore adopts a qualitative literature-review method to synthesize existing theoretical and empirical work on the Technology Acceptance Model, perceived ease of use, perceived security, QRIS, and cashless society, with the aim of (1) mapping how these constructs have been conceptualized and measured, (2) synthesizing the direction and consistency of their reported relationships with cashless-society and QRIS-adoption outcomes, and (3) proposing a conceptual framework and research propositions to guide future empirical validation, particularly among university-student populations such as those examined by Budiwitjaksono and Septa (2023).

LITERATURE REVIEW

Technology Acceptance Model (TAM)

The Technology Acceptance Model, introduced by Davis et al. (1989), explains individual technology adoption as a function of two beliefs: perceived usefulness and perceived ease of use. These beliefs shape a user's attitude toward using a system, which in turn shapes behavioral intention and actual use. TAM has since become one of the most widely applied frameworks for studying the adoption of financial and payment technologies, including contactless and QR-based payment systems (Karjaluoto et al., 2020). In the QRIS literature, TAM is typically adapted by focusing on the constructs most relevant to digital payments — most commonly perceived ease of use and perceived security — as antecedents of cashless-society behavior (Budiwitjaksono & Septa, 2018; Trinugroho et al., 2017).

Perceived Ease of Use

Perceived ease of use is defined by Davis et al. (1989) as the degree to which a person believes that using a particular system would be free of effort. Applied to QRIS, this construct reflects how easily a user can learn, understand, and operate a QR-based payment application, and how little effort is required relative to using cash (Karjaluoto et al., 2020).

Empirical studies consistently report perceived ease of use as a significant, positive predictor of digital-payment adoption. Ningsih et al. (2021) find that perceived ease of use significantly affects students' decisions to use QRIS-based electronic money, Karjaluoto et al. (2020) report a comparable effect for contactless payment systems more broadly, and Budiwitjaksono and Septa (2023) find that ease of use significantly and positively predicts cashless-society behavior among accounting students specifically.

Perceived Security

Perceived security refers to a user's confidence that a payment system protects their transaction data and funds from threats such as fraud, unauthorized access, or misuse (Zhang & Luximon, 2021). Because digital payments require users to disclose financial and personal information, perceived security is a precondition for sustained use rather than a one-time adoption decision (Cnaan et al., 2021).

Zhang and Luximon (2021) show, using a diary-based method that tracked more than a thousand payment events, that users' sense of security fluctuates with the specific task and technical context of each transaction rather than remaining constant across use. In the Indonesian QRIS context, Budiwitjaksono and Septa (2023) find that perceived security significantly and positively predicts cashless-society behavior among accounting students, a result consistent with Karjaluoto et al.'s (2020) finding that security concerns shape contactless-payment usage intention.

Quick Response Code Indonesian Standard (QRIS)

QRIS is Bank Indonesia's national standard that unifies the QR codes previously issued separately by banks and non-bank e-wallet providers into a single, interoperable code that any QRIS-compliant application can scan (Bank Indonesia, 2020). The standard was introduced to reduce merchants' burden of displaying multiple proprietary QR codes and to reduce consumers' burden of maintaining multiple payment applications, in support of Bank Indonesia's broader payment-system digitalization agenda (Bank Indonesia, 2020; Andriani et al., 2022).

Cashless Society

A cashless society is one in which financial transactions are increasingly settled through the transfer of digital information rather than physical banknotes (Achord et al., 2019; Cashen, 2017). Achord et al. (2019) note that this transition carries both benefits — lower cash-handling costs, greater transaction traceability, and expanded financial inclusion (Cnaan et al., 2021) — and risks, including exposure to system failures and the exclusion of populations without reliable access to digital infrastructure. Trinugroho et al. (2017) frame a society's "readiness" for this transition as a function of infrastructure access, perceived convenience, and perceived security operating together, while Andriani et al. (2022) document how Indonesia's transition has been shaped jointly by regulatory initiatives, business-model innovation, and public-education efforts.

Previous Research

Table 1 summarizes seven empirical studies most directly relevant to the relationship between perceived ease of use, perceived security, and cashless/QRIS-adoption behavior, anchored by the study this review builds on (Budiwitjaksono & Septa, 2023).

Table 1. Summary of Reviewed Empirical Studies

No	Author(s) & Year	Focus / Key Variables	Method & Sample	Key Findings
1	Budiwitjaksono & Septa (2023)	Perceived ease of use, perceived security → cashless-society behavior	Quantitative survey; 84 accounting students, UPN "Veteran" Jawa Timur	Both perceived ease of use and perceived security significantly and positively affect cashless-society behavior.
2	Ningsih, Sasmita, & Sari (2021)	Perceived usefulness, perceived ease of use, perceived risk → decision to use QRIS e-money	Quantitative survey; university students	All three variables significantly and positively affect students' decision to use QRIS-based e-money.
3	Haidar (2022)	Ease of use, usefulness, risk, privacy control → interest in using QRIS	Quantitative survey; Universitas Jenderal Soedirman students	All four variables significantly affect student interest in using QRIS as a payment tool.
4	Adiani, Aprianingsih, & Purwanegara (2021)	Generational differences → e-wallet usage under cashless-society trends	Quantitative; path analysis; multi-generational respondents	Generation Z shows the most open and positive response to external influence on e-wallet adoption.
5	Hastomo & Aras (2018)	Socialization, trust-transaction culture → cashless society	Quantitative; simple linear regression; Jakarta respondents	Socialization and a trusted-transaction culture significantly influence the formation of cashless-society behavior.
6	Trinugroho, Sawitri, Toro, Khoiriyah, & Santoso (2017)	Society's readiness for a cashless payment system	Survey-based quantitative study	Readiness is jointly shaped by convenience, perceived security, and access to supporting infrastructure.
7	Karjaluo, Shaikh, Leppäniemi, & Luomala (2020)	Usage intention of contactless payment systems	Quantitative survey	Perceived ease of use and perceived usefulness are core predictors of usage intention; security concern moderates adoption.

Source: Authors' synthesis of reviewed literature, 2019.

METHOD

This article uses a qualitative literature review, also known as document analysis (Bowen, 2009), to synthesize existing theoretical and empirical work on the Technology Acceptance Model, perceived ease of use, perceived security, QRIS, and cashless society. Document analysis treats published texts as data to be systematically read, compared, and interpreted, allowing patterns of agreement and disagreement across studies to be identified without collecting new primary data (Bowen, 2009).

Sources were located through Google Scholar and the publishers' own platforms (Emerald, Cambridge Core, Taylor & Francis, De Gruyter) using combinations of the keywords "QRIS," "perceived ease of use," "perceived security," "cashless society," and "Technology Acceptance Model," restricted to sources published between 1989 — the year TAM was introduced — and 2025. Sources were included if they were peer-reviewed journal articles, publicly accessible university theses, institutional publications, or foundational theory texts directly addressing the Technology Acceptance Model, perceived ease of use, perceived security, QRIS, or cashless society; sources without a traceable DOI, publisher URL, or institutional-repository link were excluded so that every citation remains independently verifiable.

Seventeen sources met these criteria and were retained for synthesis: one foundational theory article (Davis et al., 1989), one methodological reference (Bowen, 2009), eleven peer-reviewed journal articles, two publicly accessible undergraduate theses, one institutional publication (Bank Indonesia, 2020), and one book (Andriani et al., 2022). Each source was read in full, coded for the constructs it examined (perceived ease of use, perceived security, or related TAM constructs) and the direction of the relationship it reported with cashless/QRIS-adoption outcomes, and then compared across sources to identify points of

convergence and divergence, reported next as a synthesis organized around perceived ease of use and perceived security in turn.

DISCUSSION

Perceived Ease of Use and Cashless Society

Across the sources reviewed, perceived ease of use is consistently reported as a significant, positive predictor of cashless and QRIS-adoption behavior (Budiwitjaksono & Septa, 2023; Ningsih et al., 2021; Haidar, 2022; Karjaluoto et al., 2020). Students and consumers who find a payment interface intuitive — requiring little time or effort to learn, understand, and operate — appear more willing to substitute cash with a QRIS-based instrument. This convergence is notable given that the underlying studies differ in sample, setting, and measurement instrument, which suggests the relationship is not an artifact of any single study's design. Based on this synthesis, the review advances:

P1: Perceived ease of use of QRIS is positively associated with cashless-society behavior among university students.

Perceived Security and Cashless Society

Perceived security is also reported as a significant, generally positive predictor (Budiwitjaksono & Septa, 2023; Zhang & Luximon, 2021; Cnaan et al., 2021), though its reported strength is less uniform than that of ease of use. Zhang and Luximon (2021) show that security perception can fluctuate transaction by transaction rather than remaining a fixed trait of the user, while Haidar (2022) finds that a related construct — privacy control — carries a comparably strong effect alongside security concerns. This pattern suggests perceived security may interact with a user's digital literacy, prior experience of fraud or system failure, and the specific payment context, rather than operating as a uniform, context-free predictor. Based on this synthesis, the review advances:

P2: Perceived security of QRIS is positively associated with cashless-society behavior among university students.

Conceptual Framework

Figure 1 synthesizes the reviewed literature into a conceptual framework. Institutional enablers — QRIS's interoperability design, Bank Indonesia's regulatory support, and public-education and socialization efforts (Bank Indonesia, 2020; Andriani et al., 2022; Hastomo & Aras, 2018) — are positioned as antecedents that shape how easy and how secure QRIS is perceived to be, which in turn shape cashless-society behavior, consistent with the direct relationships reported by Budiwitjaksono and Septa (2023) and Trinugroho et al. (2017).

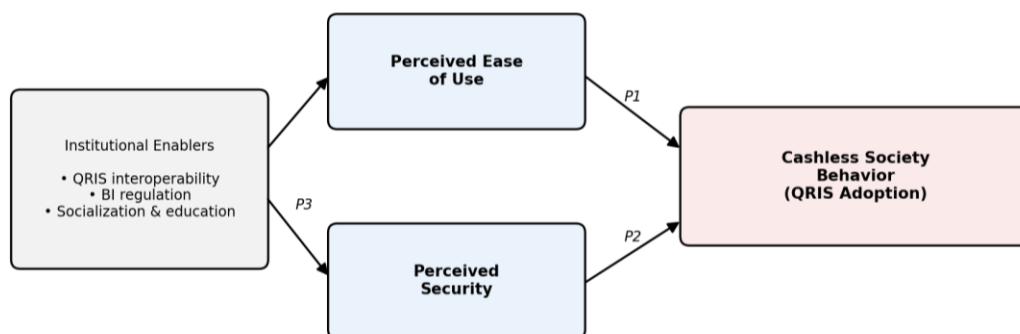


Figure 1. Conceptual Framework of Perceived Ease of Use and Perceived Security toward Cashless Society

P3: Institutional enablers — regulatory support, business-model readiness, and public education — strengthen the positive relationship between perceived ease of use, perceived security, and cashless-society behavior.

CONCLUSION

This review synthesizes theoretical and empirical literature on perceived ease of use and perceived security as determinants of cashless-society behavior through QRIS. Anchored in the Technology Acceptance Model (Davis et al., 1989) and in an original empirical study of accounting students at Universitas Pembangunan Nasional "Veteran" Jawa Timur (Budiwitjaksono & Septa, 2023), the literature converges on both constructs as generally positive and significant predictors of cashless-society behavior, with perceived ease of use showing the more consistent effect across studies and perceived security showing an effect that is significant but more sensitive to sample and context.

These findings carry practical implications: payment providers and universities seeking to encourage cashless transacting should keep QRIS interfaces simple to learn and operate while continuing to invest in security assurances, fraud-prevention communication, and digital-literacy education, since ease of use alone appears insufficient where users remain uncertain about the safety of their funds and data.

As a literature review, this article synthesizes existing findings rather than collecting new primary data; the propositions advanced here (P1–P3) are therefore conceptual and require empirical testing. Future research could test these propositions with multi-campus or multi-city samples, longitudinal designs that track security perception over repeated transactions as Zhang and Luximon (2021) suggest is warranted, and models that incorporate complementary constructs such as perceived usefulness and trust alongside ease of use and security.

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