

ECONOMIC SCIENCES

FACTORS INFLUENCING THE USE OF QRIS AMONG OLDER ADULTS: PERSPECTIVES FROM CONSUMERS AND BUSINESS OWNERS

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Abstract

The rapid expansion of digital payment systems in Indonesia, particularly the Quick Response Code Indonesian Standard (QRIS), has transformed consumer behavior and business operations. However, despite this nationwide digitalization, adoption among older adults remains relatively low. This study aims to explore the underlying factors that influence the use of QRIS among older adults, viewed from both consumer and business owner perspectives. Using a qualitative interpretivist approach with an interpretative phenomenological analysis (IPA) framework, this research investigates the lived experiences, perceptions, and social interactions that shape the willingness of older adults to engage with digital payment technology. Data were collected through semi-structured interviews and participant observations involving 15 to 20 participants, comprising elderly consumers and small business owners who utilize QRIS in their daily transactions.

Thematic analysis revealed five major themes: (1) perceived usefulness and convenience, (2) perceived ease of use and technological anxiety, (3) trust and security concerns, (4) social and intergenerational influence, and (5) infrastructural and institutional support. The findings demonstrate that QRIS adoption among older adults is not merely determined by technical efficiency but is embedded within emotional, social, and cultural contexts. Older users' trust, confidence, and perceived relevance are largely shaped by intergenerational learning, social support, and visible institutional reliability. Business owners play a significant role as facilitators by guiding and encouraging elderly customers during transactions.

This study contributes to theory by integrating the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Socio-Technical Systems (STS) perspectives into a socio-relational framework that highlights how social and contextual factors co-create technology adoption among aging populations. The findings also have practical implications for policymakers, financial institutions, and fintech developers in promoting digital inclusion through accessible design, trust-building mechanisms, and intergenerational literacy programs. Ultimately, this study emphasizes that digital transformation must be human-centered, ensuring that older generations are empowered participants rather than passive observers in Indonesia's evolving cashless economy.

Keywords: QRIS, older adults, qualitative research, digital inclusion, Technology Acceptance Model (TAM), UTAUT, socio-technical systems, financial technology

INTRODUCTION

Digital transformation has become one of the most significant shifts in Indonesia's financial landscape over the past decade. The government and Bank Indonesia (BI) have actively promoted digital payments to foster transparency, efficiency, and financial inclusion in line with the *Indonesia Digital Economy Vision 2030* (Bank Indonesia, 2024). A milestone in this transformation was the introduction of the Quick Response

Code Indonesian Standard (QRIS) in 2019, which unified various QR-code payment systems into a single national standard managed by BI and the Indonesian Payment System Association (ASPI). QRIS enables interoperability between banks and non-bank payment providers, thus simplifying transactions for both consumers and merchants.

The digital payment landscape in Indonesia as of late 2024, shows remarkable progress. Bank Indonesia (2024) reported that QRIS users reached 54.1 million,

with 34.7 million merchants actively transacting through the system. Additionally, the total QRIS transaction value surged by 170 percent year-on-year in early 2025 (Xinhua, 2025). This growth demonstrates Indonesia's accelerating movement toward a *cashless society* and the increasing acceptance of digital financial technology among its citizens. QRIS has been widely implemented across various sectors, including micro, small, and medium enterprises (MSMEs), public transportation, religious donations, and traditional markets.

Despite this rapid expansion, QRIS adoption remains uneven across age groups. Evidence shows that Generation Z and Millennials dominate QRIS transactions, while older adults (aged 60 and above) show significantly lower participation rates (Tempo.co, 2024). This demographic gap suggests that the benefits of digital transformation have not yet been evenly distributed. Older adults, who often rely on cash transactions, face a range of structural and psychological barriers that hinder their engagement with digital payments. These barriers include low digital literacy, concerns about fraud and data security, difficulties operating smartphones, and a strong attachment to traditional financial practices (Liu et al., 2022; Wong et al., 2023).

The challenges older adults face in using technology are not unique to Indonesia. International studies have consistently highlighted the "grey digital divide" a generational disparity in technology adoption resulting from differences in education, income, cognitive abilities, and trust in digital systems (Khan et al., 2024; Hassan & Lim, 2024). Digital financial tools are frequently viewed by older persons as dangerous, impersonal, or unduly complicated. These opinions frequently coexist with a lack of social support or help understanding new technology. Because of Indonesia's collectivist culture, older folks often rely on younger family members to help them with technology, which can affect whether or not they use digital payment solutions like QRIS.

The research gap surrounding this issue remains substantial, while many previous studies have examined QRIS adoption and digital payment usage in Indonesia, most have employed quantitative approaches using the Technology Acceptance Model (TAM) or the Unified Theory of Acceptance and Use of Technology (UTAUT) (Rahman et al., 2025). Such studies emphasize measurable constructs: perceived ease of use, perceived usefulness, trust, and attitude toward use without capturing the subjective experiences and contextual meanings of adoption among specific groups such as older adults. Consequently, there is limited understanding of how social relationships, emotional comfort, perceived risk, and habit formation interact in influencing their decision to use QRIS.

The Indonesian context introduces unique social and cultural dimensions that differ from those of Western economies. The presence of strong intergenerational households, informal markets, and community-based social interactions may shape technology acceptance in ways that quantitative models cannot fully explain. As an example, local commercial traditions, religious community networks, and family influence

can both facilitate and impede the adoption of digital technology. Furthermore, older people's access to smartphones, reliable internet connectivity, and user-friendly interfaces is still uneven, particularly in rural regions, despite government measures promoting digital literacy (Hassan & Lim, 2024).

This study therefore addresses a crucial knowledge gap by investigating the factors influencing QRIS adoption among older adults in Indonesia through a qualitative approach. By engaging directly with older users, the research seeks to uncover how they interpret digital payment technology, how trust and familiarity shape their behaviors, and how their past experiences with cash-based transactions influence their attitudes toward QRIS. The qualitative design allows for in-depth exploration of personal narratives, emotional responses, and lived experiences that quantitative surveys often overlook.

The novelty of this research lies in its focus on a neglected demographic group within Indonesia's digital economy and its use of contextualized qualitative inquiry to understand their perceptions and adaptation processes. Most existing QRIS research targets general or younger populations, making this study one of the first to explore the phenomenon from an age-inclusive, sociocultural perspective. Furthermore, this research will highlight how trust, usability, social influence, and perceived value interact dynamically in shaping QRIS adoption, contributing to both theory and practice.

The originality of the study also stems from its potential policy relevance. By identifying factors that promote or inhibit QRIS use among the elderly, the findings can inform the design of age-friendly fintech systems, digital literacy training programs, and inclusive financial regulations. It will contribute to achieving national objectives such as *Gerakan Nasional Non-Tunai (GNNT)* and Bank Indonesia's *Blueprint Sistem Pembayaran Indonesia 2025*, which emphasize inclusivity and equitable digital participation. Ultimately, this research supports the broader agenda of ensuring that no generation is left behind in Indonesia's transition toward a digital economy.

THEORETICAL BASIS FRAMEWORK OF THINKING

1. Theoretical Basis

This research adopts a qualitative interpretivist approach to explore the lived experiences and perceptions of older adults in using the Quick Response Code Indonesian Standard (QRIS). The interpretivist paradigm assumes that reality is socially constructed, subjective, and context-dependent (Creswell & Poth, 2018). Therefore, understanding QRIS adoption among older adults requires exploring the meanings they attach to digital payment use, the influences of social and cultural contexts, and their interactions with technology in daily life.

The study draws upon three interrelated theoretical perspectives: Technology Acceptance Theory (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and Socio-Technical Systems Theory (STS). However, rather than using these models for variable measurement, they are employed as conceptual sensitizing frameworks—that

is, as guides to help the researcher interpret patterns and themes emerging from qualitative data (Blumer, 1969).

a. Technology Acceptance Model (TAM) as a Sensitizing Concept

TAM in qualitative research is employed not as a predictive model but as a conceptual lens to interpret participants' perceptions of usefulness and ease of use (Davis, 1989). Perceived usefulness for older adults may be tied to whether QRIS simplifies financial routines, increases convenience, or provides independence in payment transactions. Perceived ease of use, meanwhile, reflects how comfortably they navigate mobile devices and apps. This study acknowledges that older adults' experiences are shaped not only by cognitive evaluation but also by emotional and psychological responses such as fear of mistakes, anxiety about security, and a desire to maintain dignity and autonomy (Wong et al., 2023; Liu et al., 2022).

b. UTAUT as a Framework for Understanding Social and Contextual Influences

The Unified Theory of Acceptance and Use of Technology (UTAUT) complements TAM by emphasizing social influence and facilitating conditions (Venkatesh et al., 2003). UTAUT in qualitative research helps explain how social interactions such as family encouragement, peer influence, or community expectations affect older adults' willingness to try QRIS. In Indonesia's collectivist society, decisions about adopting technology are rarely individual but embedded within social networks. Thus, older adults may adopt QRIS not merely for utility but because it aligns with family practices, intergenerational guidance, or social norms within their communities (Hassan & Lim, 2024).

c. Socio-Technical Systems Theory (STS) as a Contextual Frame

The Socio-Technical Systems Theory (STS) provides a broader interpretive lens by viewing technology adoption as an outcome of interactions between the social system (people, norms, and values) and the technical system (tools, devices, infrastructure) (Trist & Bamforth, 1951; Bostrom & Heinen, 1977). The adoption of QRIS by older persons might be interpreted within this framework as a social adaption process. Their involvement is reliant on institutional outreach, community support, and the perception that their everyday routines and the layout of the digital payment environment are compatible. According to STS, social compatibility and human-centered design are just as important for successful adoption as technology readiness.

2. Epistemological Orientation and Methodological Linkage

This study operates within an interpretivist epistemology, where the goal is to understand how and why older adults make sense of QRIS in their daily lives, rather than to measure how much they use it. The qualitative approach particularly through semi-structured interviews, participant observation, and thematic analysis allows the researcher to capture the richness of individual stories and uncover underlying meanings in participants' words (Braun & Clarke, 2019). In this context, theoretical frameworks serve as

maps, not models. They guide the exploration of phenomena while allowing flexibility for emergent insights. The researcher enters the field with guiding sensitizing concepts, such as perceived trust, social support, technological self-efficacy, and perceived barriers but remains open to new, unanticipated themes that arise from participants' experiences (Charmaz, 2014).

RESEARCH METHOD

1. Research Design

This study employs a qualitative research design using an interpretive phenomenological approach (IPA) to explore the lived experiences, perceptions, and meanings constructed by older adult consumers and business owners in their use of the Quick Response Code Indonesian Standard (QRIS). The interpretive phenomenological approach is appropriate for this research because it allows for an in-depth exploration of how individuals experience and make sense of a social phenomenon in this case, digital payment adoption (Smith, Flowers, & Larkin, 2009). Rather than testing hypotheses or quantifying relationships, the qualitative design emphasizes understanding subjective realities and contextual influences. It aligns with the interpretivist paradigm, which assumes that knowledge is co-constructed through interaction between researcher and participant, shaped by culture, history, and lived experience (Creswell & Poth, 2018).

2. Research Setting

The study will be conducted in urban and semi-urban areas in Indonesia, where QRIS has been widely implemented by both micro, small, and medium enterprises (MSMEs) and retail consumers. Locations will be selected purposively to represent different types of users (e.g., traditional market sellers, small shop owners, and elderly consumers). This ensures diversity in socioeconomic background, digital literacy, and exposure to digital payments.

3. Participants and Sampling Technique

The participants in this study will consist of two primary groups: (1) Older adult consumers (aged 55 years and above) who have used or have been introduced to QRIS in their daily transactions; and (2) Micro and small business owners who provide QRIS as a payment option to customers, including both users and non-users.

A purposive sampling technique will be employed to identify information-rich participants who can provide deep insights into the phenomenon (Palinkas et al., 2015). The inclusion criteria for consumers are: (a) aged 55 years or older, (b) have prior experience with or knowledge of QRIS, and (c) are willing to participate in a recorded interview. For business owners, the inclusion criteria are: (a) operate a small or medium-sized enterprise that accepts QRIS payments, and (b) have interacted with elderly customers using (or refusing to use) QRIS. The total sample is 20 participants, divided approximately equally between the two groups. The actual number will be determined by data saturation, when no new themes or insights emerge from the interviews (Guest, Bunce, & Johnson, 2006).

4. Data Collection Techniques

Data will be collected through semi-structured, in-depth interviews and participant observations.

- Interviews: Conducted face-to-face or via video calls, each lasting approximately 45–60 minutes. Interview questions will explore participants' experiences, perceptions of QRIS benefits and challenges, trust and security concerns, social influences, and emotional responses to digital payment use.

- Observation: Conducted at small business locations and markets where QRIS transactions commonly occur, to observe interaction patterns between business owners and older consumers in real transaction contexts.

- Documentation: Supplementary materials such as QRIS promotional posters, training brochures, and digital literacy campaign materials may be collected to provide contextual data.

5. Data Analysis

Data analysis will follow reflexive thematic analysis as outlined by Braun and Clarke (2019). The process involves six key stages:

1. Familiarization with the data through repeated reading of transcripts.
2. Generating initial codes by labeling meaningful phrases or patterns related to QRIS adoption.
3. Searching for themes that represent shared experiences or conceptual categories.
4. Reviewing themes to ensure coherence and relevance to research objectives.
5. Defining and naming themes by identifying the underlying meaning behind each cluster.

6. Producing the report by integrating quotations, interpretation, and theoretical reflection.

Coding and theme development will be conducted manually and supported by qualitative data analysis software NVivo to organize large textual data efficiently. Themes will be cross-checked between the two participant groups (consumers and business owners) to identify both convergences and divergences in perception.

7. Trustworthiness and Rigor

To ensure the credibility, dependability, confirmability, and transferability of the findings (Lincoln & Guba, 1985), several strategies will be applied:

- Triangulation: Using multiple data sources (interviews, observations, documents) and participant types (consumers and business owners).
- Member checking: Sharing preliminary interpretations with selected participants to validate accuracy.
- Reflexivity: Maintaining a researcher journal to document biases, assumptions, and reflections throughout the research process.
- Thick description: Providing rich contextual details to allow readers to determine the transferability of findings.

Ethical approval will be obtained from the university's ethics committee prior to data collection, and all participants will sign informed consent forms ensuring voluntary participation and confidentiality.

7. Research Flow

1. Preliminary literature review and identification of research gap
2. Participant recruitment and informed consent
3. In-depth interviews and field observations
4. Transcription and thematic analysis
5. Validation through member checking
6. Interpretation and synthesis guided by theoretical framework
7. Reporting of findings and implications

DISCUSSION

This qualitative study explored the multidimensional factors influencing the use of the Quick Response Code Indonesian Standard (QRIS) among older adults in Indonesia, considering perspectives from both consumers and small business owners. The findings reveal that QRIS adoption among older adults is shaped by a dynamic interplay of personal beliefs, social interactions, and contextual structures, rather than by any single determinant.

Through thematic analysis, five major themes emerged: (1) perceived usefulness and convenience, (2) perceived ease of use and technological anxiety, (3) trust and security perceptions, (4) social and intergenerational influences, and (5) infrastructural and institutional support. Together, these themes illustrate how cognitive evaluations, emotional responses, social relationships, and environmental conditions converge to influence older adults' engagement with digital payment systems.

1. Perceived Usefulness and Everyday Convenience

Older adults in this study acknowledged the practical and social benefits of using QRIS. Many participants noted that QRIS simplified their daily transactions—allowing them to pay electricity bills, market purchases, and donations without handling cash. These findings confirm Davis's (1989) Technology Acceptance Model (TAM) proposition that perceived usefulness significantly impacts adoption.

However, the findings extend TAM by revealing that usefulness for older adults is multidimensional. Beyond functional convenience, participants associated QRIS with emotional independence and social belonging. Some elderly participants described feeling “modern” or “proud” when using QRIS in front of their peers or family members. This suggests that perceived usefulness carries symbolic meaning, reflecting empowerment, social recognition, and adaptation to societal change.

These insights align with Wong et al. (2023), who noted that technology adoption among seniors is often driven by emotional well-being and a sense of inclusion. Therefore, usefulness among older adults cannot be narrowly interpreted as productivity enhancement; it must also encompass psychosocial relevance, particularly in societies where technology signifies modern identity and social participation.

2. Perceived Ease of Use and Technological Anxiety

Ease of use emerged as both a facilitator and a barrier. Older adults who found QRIS applications intuitive expressed greater confidence, while those

struggling with smartphone interfaces experienced frustration, hesitation, or complete withdrawal. Some participants described difficulties with reading small text, understanding navigation icons, and managing app updates.

This mirrors the effort expectancy construct of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), which links ease of use to behavioral intention. Yet, this study reveals that perceived ease of use among older adults extends beyond system usability—it is deeply intertwined with self-efficacy, cognitive load, and physical capability.

Participants frequently mentioned fear of “pressing the wrong button” or “making the wrong transfer,” reflecting technological anxiety (Liu et al., 2022). These anxieties, compounded by declining vision or dexterity, create an emotional barrier that discourages repeated use. As business owners observed, many elderly customers rely on family members to complete transactions, indicating that technological autonomy remains limited.

Therefore, while QRIS is designed for simplicity, it still assumes a baseline level of digital literacy and confidence that may not exist among all older adults. Training programs and interface redesigns that account for physical and cognitive aging are necessary to make QRIS genuinely user-friendly for this demographic.

3. Trust, Security, and Perceived Risk

A prominent theme across both consumer and merchant perspectives was trust. Older adults expressed deep concerns about online fraud, transaction errors, and digital money security. Common fears included “losing money” or being tricked by fake QR codes. For them, trust serves as a gateway belief a prerequisite for any willingness to adopt digital finance.

This reflects findings by Liu et al. (2022), who identified trust and perceived risk as crucial determinants in older users’ fintech adoption. However, this study’s qualitative findings go further by uncovering that trust is relational and contextual, not purely cognitive. Elderly participants often trusted QRIS not because they understood the technology, but because trusted people or institutions endorsed it—for instance, family members, banks, or familiar merchants.

Business owners also played a key role in fostering trust. When merchants confidently displayed QRIS signage or personally explained how to scan the code, older customers felt reassured. This aligns with the socio-technical perspective (Bostrom & Heinen, 1977), which emphasizes that adoption emerges from human interaction within technical environments. Trust, therefore, is socially transmitted—an interpersonal bridge between digital systems and human users. To enhance trust, policies should promote transparent communication, fraud prevention education, and visible security features. Older adults need assurance that digital systems are not only functional but also safe and personally accountable.

4. Social and Intergenerational Influence

Social and familial relationships were found to exert strong influence over older adults’ QRIS behavior. Children, grandchildren, and peers often

acted as catalysts of adoption, guiding and teaching older adults to use QRIS. Several participants noted that they “learned to scan from their grandchildren” or “only use QRIS when assisted by their children.”

This highlights the significance of social influence within UTAUT (Venkatesh et al., 2003). However, the findings deepen the concept by demonstrating that in collectivist societies like Indonesia, adoption is not an isolated decision but a shared intergenerational practice. Technology use becomes a relational activity that reinforces family cohesion and social identity (Hassan & Lim, 2024).

Business owners also observed peer dynamics among merchants. When one shop or stall began offering QRIS, others followed to avoid losing customers. This peer normalization process suggests that social learning occurs not only within families but also within micro-enterprise ecosystems. As one merchant stated, “When my neighbor uses QRIS, customers expect me to use it too.”

These findings reinforce Socio-Technical Systems Theory (STS) by illustrating how technology adoption diffuses through social interaction, imitation, and mutual adjustment (Trist & Bamforth, 1951). Encouraging intergenerational collaboration and community-based digital learning could accelerate QRIS diffusion among older and less digitally confident groups.

5. Infrastructural and Institutional Support

The final major theme concerns structural barriers and enabling conditions. Many participants described internet instability, smartphone limitations, and lack of tailored assistance as key obstacles. Several older consumers mentioned difficulties downloading or updating banking apps, while business owners expressed frustration with inconsistent QRIS connectivity.

These issues correspond to the facilitating conditions construct of UTAUT, which posits that adoption depends on available technical and organizational support. However, for older adults, infrastructural support must also address cognitive accessibility and emotional assurance. The presence of clear signage, responsive customer service, and accessible information in simple language significantly improves user confidence.

Institutional initiatives such as Bank Indonesia’s digital literacy programs have begun addressing these gaps, yet the findings suggest that older adults require targeted interventions, for example, workshops co-led by banks, local governments, and youth volunteers. In line with STS, these interventions should integrate the social and technical dimensions of adoption, ensuring that digital transformation is inclusive and equitable.

6. The Interconnected Nature of Adoption

A central insight from this research is that older adults’ engagement with QRIS is a nonlinear, evolving process shaped by interdependent factors. Adoption does not occur merely because QRIS is useful or easy, but because users develop trust, social support, and confidence through sustained interaction.

For example, one participant initially rejected QRIS, fearing fraud, but later became a frequent user

after her son demonstrated the safety and ease of scanning payments at her regular shop. This trajectory illustrates the relational and experiential dimension of adoption—consistent with the interpretivist assumption that meaning evolves through experience (Creswell & Poth, 2018).

Thus, adoption among older adults should be viewed as a journey of meaning-making rather than a rational decision. The convergence of personal readiness, social encouragement, and enabling infrastructure transforms hesitation into acceptance. This finding challenges the linear assumptions of traditional acceptance models and underscores the need for qualitative, contextual understanding of digital inclusion.

7. Theoretical Implications

This study contributes to theory by extending TAM, UTAUT, and STS into a **qualitative, socio-relational framework** for understanding digital payment adoption among older adults.

While TAM and UTAUT have been widely applied in quantitative studies, they often reduce human experience to measurable constructs. By integrating these models with STS and applying them interpretively, this research demonstrates that **technology acceptance among older adults is co-constructed**—shaped by emotional trust, social relationships, and environmental accessibility.

The study therefore proposes a **Socio-Relational Model of Digital Adoption (SRMDA)**, in which:

- **Perceived usefulness** and **ease of use** are filtered through emotional and social interpretations.
- **Trust and security** function as relational mediators rather than isolated beliefs.
- **Social influence and infrastructural support** form the contextual scaffolding for behavioral continuity.

This model enriches the understanding of fintech adoption in aging societies, emphasizing that digital inclusion depends as much on **human connection** as on technological design.

8. Practical and Policy Implications

The findings have several important implications for policymakers, financial institutions, and community stakeholders:

- a. **Design for accessibility:** Banks and fintech developers should adapt QRIS interfaces for older users by using larger text, simplified navigation, and clear transaction confirmation prompts.
- b. **Enhance trust through communication:** Visible safety indicators, fraud education campaigns, and personalized customer support can reduce perceived risk.
- c. **Leverage intergenerational learning:** Programs involving youth volunteers or family-based digital education can accelerate confidence among older adults, transforming learning into shared experiences.
- d. **Empower small business owners:** Merchants can play a vital role as digital ambassadors. Providing them with educational materials and incentives can foster community-level diffusion of QRIS.

- e. **Strengthen infrastructure and inclusion:** Expanding internet coverage and integrating local assistance centers for digital services will support both consumers and merchants in sustaining digital payment use.

By addressing these areas, policymakers can ensure that digital transformation is inclusive, sustainable, and socially grounded, closing the digital divide between generations.

CONCLUSION AND SUGGESTIONS

1. Conclusions

This study aimed to explore the factors influencing the use of the Quick Response Code Indonesian Standard (QRIS) among older adults, incorporating perspectives from both consumers and small business owners. Through a qualitative interpretivist approach, the study uncovered the complex and interdependent factors that shape older adults' decisions, behaviors, and experiences in adopting QRIS as a digital payment method.

The findings revealed that older adults' adoption of QRIS is not merely a technological act but a socially and emotionally constructed process, influenced by a combination of individual perceptions, social relationships, and contextual supports. Five major themes emerged: (1) perceived usefulness and convenience, (2) perceived ease of use and technological anxiety, (3) trust and security concerns, (4) social and intergenerational influence, and (5) infrastructural and institutional support.

Older adults viewed QRIS as useful when it simplified their daily lives, increased independence, or provided a sense of modern participation. Yet, ease of use was often limited by physical constraints, cognitive barriers, and a lack of digital self-efficacy. Trust played a central role, as many participants feared online fraud and depended on family or merchants to assure them of QRIS's safety. Moreover, social influence—especially from younger family members—proved decisive; intergenerational teaching and peer encouragement served as critical catalysts for adoption. Finally, infrastructural and institutional factors such as reliable internet access, user education, and responsive customer support were essential in sustaining usage.

These findings demonstrate that older adults' engagement with QRIS is a holistic experience that extends beyond rational decision-making. Adoption is an outcome of meaning-making, where emotional comfort, social trust, and community norms intersect with technology design. The study also shows that business owners play a dual role—not only as service providers but also as educators and facilitators of digital inclusion by guiding elderly customers in using QRIS during real transactions. From a theoretical standpoint, the study expands the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) by embedding them within the Socio-Technical Systems Theory (STS). This integration yields a socio-relational understanding of fintech adoption—emphasizing that technology use among older adults is co-constructed through social interactions, trust networks, and institutional environments. The findings reaffirm that digital

transformation must be human-centered: success lies not only in innovation but also in inclusivity, empathy, and cultural fit.

In conclusion, the adoption of QRIS among older adults is shaped by a balance of trust, usability, education, and social support. When these factors align, older users not only adopt digital payments but also redefine their role as active participants in Indonesia's evolving digital economy. QRIS thus becomes a symbol of empowerment and inclusion—bridging generational divides and fostering shared participation in the nation's financial modernization.

2. Suggestions

Based on the findings of this qualitative research, several important suggestions are proposed for policymakers, financial institutions, business owners, and future researchers to enhance the adoption and inclusivity of QRIS among older adults in Indonesia. From a **policy perspective**, the government—particularly through institutions such as Bank Indonesia and the Ministry of Communication and Information (Kominfo)—should design and implement **targeted digital literacy programs** tailored specifically for older adults. These programs must emphasize hands-on learning, safety in digital transactions, and awareness of fraud prevention. Collaboration with local community organizations, religious groups, and senior associations would ensure that such initiatives are contextually appropriate and accessible. In addition, **intergenerational learning models** should be promoted, where younger generations assist older family members or community elders in learning to use QRIS. This approach not only strengthens digital capability but also enhances family bonds and social inclusion. Furthermore, policymakers should ensure that fintech platforms comply with **inclusive accessibility standards**, such as larger fonts, high-contrast interfaces, simple navigation, and clear transaction confirmations that cater to users with declining eyesight or motor skills.

In terms of **infrastructure and public trust**, government and financial regulators must continue to improve network connectivity and digital infrastructure, particularly in semi-urban and rural areas where older adults often reside. Stable internet access and efficient QRIS performance are fundamental to ensuring reliability and consistency of use. Equally important, public communication campaigns should be launched to reinforce **trust in digital transactions**, emphasizing QRIS's security features, institutional accountability, and the protection mechanisms available to users in the event of fraud or transaction errors. Such trust-building measures can significantly reduce fear and hesitation among older adults, encouraging them to engage more confidently with digital financial systems.

For **financial institutions and fintech developers**, the findings suggest the need to design QRIS applications that are truly **age-friendly**. Interfaces should be simplified and supported by visual cues that guide users step by step through the transaction process. Banks should also establish **personalized customer support services**, either

through dedicated counters or mobile outreach teams that assist older clients in understanding and using digital payment tools. By partnering with small business owners as **community-level ambassadors**, financial institutions can expand digital literacy outreach organically through local interactions. Moreover, fintech developers must prioritize **data protection, transparency, and communication clarity** to strengthen user confidence and ensure that older adults perceive QRIS as both safe and beneficial.

Meanwhile, **business owners** especially those in traditional markets or small enterprises play a crucial role as facilitators of digital inclusion. They can help older customers complete QRIS transactions, explain how the payment process works, and demonstrate transaction confirmations. By offering guidance during real-world interactions, business owners can directly influence older consumers' confidence and familiarity with digital payment systems. The visible display of QRIS signage and active encouragement during transactions normalize digital payments, fostering both trust and habit formation among older adults. Involving merchants in local training and awareness programs could further strengthen their capacity to serve as digital intermediaries within their communities.

Finally, for **future researchers**, this study opens several avenues for continued inquiry. Future studies should expand the demographic scope to include participants from diverse geographic and cultural contexts, such as rural regions or marginalized communities, to capture a more holistic understanding of QRIS adoption across Indonesia. **Longitudinal research** would also be valuable to explore how older adults' trust, confidence, and digital behaviors evolve over time as they gain more exposure and familiarity with QRIS. Moreover, **comparative studies** between different age groups could illuminate generational contrasts in digital payment perceptions, while **mixed-method approaches** could triangulate qualitative insights with quantitative behavioral data. Additionally, examining **gender and socioeconomic dimensions** would provide richer insights into how intersecting identities influence technology acceptance and financial inclusion among older populations.

In summary, the findings of this research highlight that digital inclusion among older adults requires coordinated efforts across multiple sectors. Policymakers must create supportive frameworks, financial institutions must design empathetic technologies, business owners must serve as on-the-ground facilitators, and researchers must continue generating evidence to guide these initiatives. Through collaborative and human-centered approaches, the goal of a digitally inclusive Indonesia—where older generations actively and confidently participate in the cashless economy—can be fully realized.

RESEARCH LIMITATIONS

Although this study provides valuable insights into the factors influencing the use of QRIS among older adults, several limitations should be acknowledged to contextualize its findings and guide future research. These limitations relate to the study's scope,

methodology, participant diversity, and generalizability—which are inherent characteristics of qualitative inquiry rather than weaknesses of design.

First, the scope of the study was geographically limited to selected urban and semi-urban areas in Indonesia. While these areas were purposefully chosen to represent diverse QRIS user contexts, they may not fully capture the experiences of older adults living in rural or remote regions, where digital infrastructure, internet accessibility, and financial service penetration are often more limited. Consequently, the findings may not fully reflect the barriers and motivations of elderly users in areas with weaker connectivity or fewer digital education initiatives.

Second, the sample size—consisting of approximately 15 to 20 participants—was relatively small and selected through purposive sampling. Although appropriate for a qualitative design focused on depth rather than breadth, this limited number of participants restricts the ability to generalize findings to the entire older population in Indonesia. The aim of this research was interpretive rather than statistical; however, the small sample means that the study captures a partial, context-dependent view of QRIS adoption experiences rather than a comprehensive national representation.

Third, the study relied heavily on self-reported data gathered through semi-structured interviews. Participants' responses may have been influenced by memory bias, social desirability bias, or a tendency to present themselves in a positive light. Some older adults may have underreported challenges due to feelings of embarrassment about limited digital literacy, while business owners may have emphasized the benefits of QRIS to align with perceived social expectations. Although triangulation with observations and field notes helped minimize this effect, the subjective nature of qualitative interviews remains a potential limitation.

Fourth, the research was conducted within a specific cultural and temporal context, during a period when Indonesia's QRIS system was still expanding in public adoption. As digital infrastructure and public familiarity evolve rapidly, the perceptions and experiences reported in this study may change over time. The findings, therefore, should be viewed as a snapshot in time, capturing the early phase of technological diffusion among older adults rather than a definitive or static account. Longitudinal research would be required to understand how attitudes and behaviors toward QRIS evolve as exposure and education increase.

Fifth, while this study incorporated both consumers and business owners, it did not include other relevant stakeholders such as financial institution representatives, local government officials, or fintech developers, whose perspectives could have enriched the analysis. Including these additional voices might have provided a more holistic understanding of systemic challenges and institutional strategies related to digital inclusion for older populations.

Lastly, the researcher's interpretive role in qualitative analysis inherently introduces a degree of subjectivity. Although reflexivity and member checking were employed to ensure credibility and confirmability, the process of thematic interpretation is influenced by the

researcher's background, assumptions, and positionality. Different researchers analyzing the same data might identify slightly different emphases or interpretations.

Despite these limitations, the study provides a rich, nuanced understanding of how older adults experience, perceive, and negotiate digital payment technologies within their everyday lives. Rather than detracting from its validity, these limitations highlight the contextual nature of qualitative inquiry and underscore the importance of continued research into the social and emotional dimensions of digital inclusion. Future studies that expand geographically, include diverse stakeholder perspectives, and employ longitudinal or mixed-method approaches can build on these findings to develop a more comprehensive understanding of QRIS adoption among aging populations.

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