

Challenges, Acceptance, and Adoption of Electronic Payment at Teodoro Arcenas Trade Center Towards Efficient Local Development

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Abstract:

The adoption of electronic payment systems is increasingly essential for enhancing business efficiency, customer satisfaction, and market competitiveness in local trade centers. This investigated the acceptability, challenges, and adoption of electronic payment systems among local suppliers, buyers, and vendors at the Teodoro Arcenas Trade Center in Roxas City. An explanatory-sequential mixed methods approach was utilized, guided by the Unified Theory of Acceptance and Use of Technology, involving 560 respondents and 10 participants for qualitative interviews. Results revealed that challenges in using electronic payments were generally low to moderate, with issues such as limited payment terminals and internet connectivity being the most notable. Acceptance and adoption levels were high, with respondents recognizing the systems' security, ease of use, and usefulness. A significant relationship was found between acceptance and adoption, indicating that positive perceptions directly drive usage. Occupation significantly predicted acceptance, with vendors prioritizing operational efficiency, buyers valuing convenience, and suppliers emphasizing reliability and policy support. The study highlights the importance of improving digital infrastructure, expanding payment facilities, providing targeted training, and implementing occupation-specific policies to sustain adoption. These findings offer actionable insights for market administrators, policymakers, and payment providers to foster cashless transactions and support inclusive and efficient local economic development.

Keywords: Electronic Payment Systems, Adoption, Acceptance, Digital Payments, Development

INTRODUCTION

Despite rapid growth in digital financial technologies, the Philippines continues to maintain a largely cash-based economy in many traditional settings, especially public markets where vendors routinely conduct face-to-face retail transactions. National adoption of electronic payment systems has increased significantly, driven by mobile wallets and quick response-based transactions such as GCash and Maya, which boast tens of millions represent a major share of everyday digital payments in the country (Balita, 2025). Researchers studying digital payment transformation in the Philippines have documented a broad shift from cash toward digital platforms, influenced by smartphone penetration, policy initiatives, and consumer demand for contactless transactions (Susilo & Dizon, 2023). But the existing literature tends to focus on general population segments and urban contexts, leaving a gap in the electronic payment systems' adoption and utilization in informal commercial environments such as public markets.

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Beyond the economic cost of cash imposes a burden on both vendors and the central bank. While banks and economists have highlighted national expenditures for printing, minting, and replacing worn-out currency, there is limited empirical research linking these macroeconomic costs to vendor behavior and acceptance of digital payments in markets. In addition, vendors face theft and loss risks associated with carrying and handling large amounts of physical money, a practical constraint that digital payment systems can potentially alleviate.

Studies on electronic payment adoption have identified major factors in the adoption of digital financial tools, including the comfort of use and their perceived value. Research on digital payment adoption among Filipino consumers and small business owners highlighted that multiple factors impact the payment system's acceptance and use. Raon et al. (2021) found that traditional acceptance constructs, such as perceived risk, trust, and usefulness alone, were insufficient to fully explain consumers' intentions to adopt e-payment systems, indicating that additional drivers are relevant in the Philippine context.

Similarly, a study on small- and medium-sized enterprise (SME) owners reported that age, business experience, and the security and performance of e-wallet platforms significantly shaped owners' preferences for digital payment methods (Vales et al., 2025). The study of Baliyang (2025) on microenterprises in Baguio City indicated that observed comfort in usage and usefulness, and the trust in the cashless payment system played crucial roles in its adoption. Ali (2024) found that processing times and the observed safety had a major effect on digital payment acceptance corroborated these conclusions. However, despite evidence of theoretical drivers, the specific influence of operational factors, such as counterfeit money exposure, theft avoidance, and cost inefficiencies on actual utilization behavior among public market vendors remains underexplored. This discrepancy highlighted the need for broader inclusion challenges to intersect with market vendors' readiness and capacity to adopt digital payments.

Given these gaps, the researcher investigated the acceptability, challenges, and adoption of the electronic payment systems among local suppliers, buyers, and vendors at the Teodoro Arcenas Trade Center in Roxas City to draw insights on efficient local development.

METHODS

The explanatory-sequential mixed-method design utilized in this study was divided into two phases: quantitative data collection and analysis, and qualitative data collection and analysis, respectively. This strategy was appropriate since it allowed the researcher to assess the extent of electronic payment system adoption and challenges before going deeper into the underlying causes behind these trends. During the quantitative phase, a cross-sectional survey was utilized to collect data from a sizable sample at one particular moment. The survey was based on Venkatesh et al.'s (2003) Unified Theory of Acceptance and Use of Technology, which argued that performance expectancy, effort expectancy, social influence, and facilitating factors all had an impact on behavioral intentions and real technology use. The qualitative phase used a descriptive approach, employing interviews with the participants to obtain profound insights from their experiences, motivations, and challenges regarding electronic payment adoption. This phase was informed by Rogers' (2003) Diffusion of Innovations Theory, which explained how innovations were adopted based on aspects such as compatibility, relative advantage, triability, complexity, and observability. This phase helped contextualize the quantitative findings, providing a richer understanding of why certain adoption patterns occurred.

The Teodoro Arcenas Trade Center, a major public market and commercial center in Roxas City, served as the study's location. The trade center was selected as it exemplified a traditional marketplace transitioning toward digital payment systems. The market's diverse population of vendors, buyers, and local suppliers provided an ideal setting to investigate the electronic payments' challenges, acceptance, and adoption. Vendors varied in business size and technological experience, buyers differed in familiarity with digital transactions, and local suppliers interacted regularly with vendors, offering insights into the practicality and integration of digital payments. This diversity ensured a thorough understanding of the aspects influencing the adoption of electronic payments in a community-based commercial environment.

A total of 560 individuals made up the respondents, comprising 167 vendors, 378 buyers, and 15 local suppliers who had direct business dealings at Teodoro Arcenas Trade Center. Cochran's formula was used to find an appropriate number of respondents. The market administrator was interviewed to gather the population data for both buyers and vendors. There were between 280 and 290 stalls in the trade center overall, according to data from the market administrator. Because of their small size and lack of a regularly recorded population, local suppliers were not included in Cochran's calculation. Furthermore, this study established rigorous inclusion and exclusion criteria for buyers, vendors, and local suppliers to guarantee that only participants with meaningful and reliable information were included. The vendors needed to be 18 years old or above, actively running their stalls, regularly handling sales, and having actual or possible experience with electronic payment systems, since they were directly involved in day-to-day business transactions and the challenges of digital payment use. Buyers were also required to be at least 18 years old and to have made real purchases during the data collection period so that their answers would truly reflect consumer behavior, preferences, and willingness to use electronic payments. In the same way, local suppliers had to be adults who were actively delivering goods and taking part in payment transactions within the Teodoro Arcenas Trade Center, as their role was important for understanding how digital payments affected procurement, efficiency, and market logistics. Those who were minors, not actively involved in transactions, without relevant experience, or unwilling to participate were excluded. Generally, these conditions helped ensure that the information gathered came from individuals who were genuinely engaged in market activities and electronic payment use. The participants for the interview comprised 10 individuals from the said trade center of diverse ages and backgrounds.

During the quantitative phase, data were gathered from buyers, vendors, and local suppliers using a structured survey questionnaire. The questionnaire comprised closed-ended questions and Likert-scale items to measure crucial criteria such as electronic payment challenges, acceptance, and adoption. This ensured that the answers were measured and comparable, allowing for statistical analysis.

Semi-structured interviews using an interview guide were carried out with chosen participants for the qualitative phase in accordance with their survey answers. This tool made it possible to thoroughly investigate the aspects influencing the rejection or acceptance of the electronic payments, the challenges encountered, and possible policy enhancements. Participants were encouraged to provide in-depth views and firsthand knowledge about electronic payment systems using open-ended questions. A thorough grasp of the adoption of electronic payments was secured by the mix of surveys and interviews, which addressed both quantifiable trends and more complex contextual factors that affected acceptance and adoption.

The questionnaire was examined by specialists in research technique and business management to ensure it harmonized with the study's goals. Additionally, a small group pre-tested the questionnaire to ensure that it was easy to comprehend, relevant, and clear.

This study's data collection process was systematic to achieve accurate and trustworthy results. Surveys and interviews were conducted inside the trade center with official approval from the local market administrator. To assess the reliability and clarity of the research instrument, a pilot test was conducted with a small sample of respondents.

Survey questionnaires were provided to chosen respondents throughout the quantitative phase. The purposive convenience sample method was used to provide a diverse and accessible response. After gathering the quantitative data, all responses were examined, encoded, and analyzed using appropriate statistical tools to uncover patterns, trends, and noteworthy findings. The qualitative phase occurred after the quantitative analysis. With the consent of the participants, key informant interviews with selected buyers, vendors, and local suppliers were recorded, transcribed, and subjected to thematic analysis. Ultimately, a comprehensive picture of the variables affecting electronic payment acceptance and its effect on local development was produced by combining the findings of the quantitative and qualitative investigations.

To guarantee clarity, respect, and cultural sensitivity, ethical guidelines for using the native language (*Hiligaynon*) were closely adhered to during the study. To make sure they fully understood the purpose of the study, their rights, and how their data would be handled, participants were given

informed consent in the local language. When transcribing and evaluating responses, neutrality and accuracy in translation were noted. When translating Hiligaynon responses to English for academic reporting, a bilingual expert was consulted to verify that no context was lost or misconstrued.

RESULTS

Challenges Encountered in Adopting Electronic Payment Systems

Overall, the grand mean of 2.50 (Less Challenged) showed that respondents found electronic payment systems generally manageable, indicating a favorable outlook on adoption. This result aligned with the Technology Acceptance Model (Davis, 1989), which explained that perceived usefulness and ease of use significantly influenced users' intention to adopt technology.

Among the specific challenges, respondents identified the most significant issues as unreliable internet connection (Mean = 3.04, Moderately Challenged), insufficient payment terminals (Mean = 2.95, Moderately Challenged), and hidden charges (Mean = 2.66, Moderately Challenged). Other challenges, such as high system cost, technical errors, system complexity, difficulty convincing customers, lack of training, and trust concerns, ranked as less challenging.

The qualitative findings complemented this by identifying four major themes: technical and infrastructure barriers, digital literacy issues, trust and confidence issues, and institutional support gaps. Respondents frequently raised concerns about unreliable internet, lack of training, limited local government unit support, and unfamiliarity with the system. Overall, while electronic payment adoption was steadily increasing, targeted improvements in technical infrastructure, user training, and institutional support remained essential. Addressing these areas enabled vendors, buyers, and local suppliers to fully leverage the system, enhance transaction efficiency, and accelerate the market's transition toward a digitally empowered and more competitive environment at Teodoro Arcenas Trade Center.

Acceptance Level of Electronic Payment Systems

Quantitative results showed an overall high acceptance with a grand mean of 3.69 (SD = 0.62). Among the specific statements, respondents rated ease of use (Statement 10, Mean = 4.31, Very High Acceptance), openness to using electronic payments (Statement 7, Mean = 4.06, High Acceptance), and perceived improvement in transactions (Statement 8, Mean = 3.98, High Acceptance) as the most favorable, indicating that participants generally perceived e-payments as user-friendly, efficient, and beneficial to their daily operations. Other statements, such as convenience, speed, trust, and security, were rated from moderate to high acceptance, reflecting a generally positive disposition toward adopting electronic payments.

The qualitative findings complemented the quantitative results by identifying four major themes: openness to technology, perceived ease of use, perceived benefits, and trust and confidence. All participants highlighted convenience and willingness to adapt, while most recognized time-saving benefits and system security. Trust in the system and ease of use were noted by a majority, demonstrating that both operational and psychological factors influenced acceptance. The result showed that while respondents were generally receptive to electronic payments, views on ease of use, security, and confidence remained central to adoption behavior.

Level of Adoption of Electronic Payment Systems

Quantitative results indicated that overall adoption was high, with a grand mean of 3.94 (SD = 0.50617), suggesting that stakeholders at Teodoro Arcenas Trade Center actively integrated electronic payment systems into their daily transactions. Among the specific indicators, the highest-rated items included Statement 10, "Electronic payments were essential for staying competitive" (M = 4.49, Very High Adoption), Statement 6, "Willingness to adopt new systems" (M = 4.11, High Adoption), and Statements 8 and 9, which reflected ease of learning and fraud reduction (both M = 4.06, High Adoption). Other indicators, including improved customer experience, administrative efficiency, transaction tracking, confidence, and hybrid usage patterns, also received high adoption ratings. The qualitative findings complemented these results by identifying five major themes: regular usage,

market competitiveness, readiness to innovate, improved customer experience, and business efficiency. Frequent patterns revealed that all participants (P1-P10) consistently used electronic payments. Most participants expressed openness to adopting new systems, while several emphasized faster transactions and improved sales tracking. These findings confirmed that adoption at Teodoro Arcenas Trade Center was not only behavioral but also strategic and operational.

Specifically, the respondents' perceptions varied across adoption indicators, with the highest mean score of 4.49, interpreted as "very high" adoption. This indicated that competitiveness was the strongest motivating factor influencing electronic payment adoption among respondents. The high mean score indicated that respondents saw digital payments as a strategic requirement for maintaining and improving market position rather than just a convenience. The relatively low standard deviation further indicated consistency in responses, reflecting a shared understanding of the importance of electronic payments in maintaining competitiveness. In this context, respondents' strong agreement that electronic payments are essential for competitiveness reflects high performance expectancy.

Insights Towards Efficient Local Development

The findings from the study provided compelling insights into how efficient local development could be promoted through the strategic electronic payment system adoption. Vendors, buyers, and local suppliers at Teodoro Arcenas Trade Center gradually integrated digital payments into their daily operations, reflecting a shift in behavior and a broader transformation in how the market functioned. In practice, this meant that a vendor like Participant 1, who had been selling vegetables for over 20 years, could quickly reconcile daily sales using GCash, reducing the need to manually count cash or track each transaction in a notebook. This operational efficiency translated into more time spent serving customers, improving product displays, or managing inventory activities that directly enhanced productivity and economic output within the market.

Digital payment adoption also strengthened market competitiveness, a critical driver for sustainable local development. Vendors recognized that offering cashless options allowed them to meet the expectations of modern consumers, particularly younger buyers preferring fast, seamless transactions. By ensuring that local enterprises remained competitive, the market became more dynamic and resilient, supporting both small-scale entrepreneurship and the overall economic health of the community.

The study also highlighted that the adoption of electronic payments did not replace cash entirely. Many vendors maintained a hybrid model to accommodate customers who continued to rely on cash, such as older buyers or those from lower-income households. This approach ensured inclusivity, allowing all segments of the local community to participate in market activities without being excluded due to technological barriers. In real-life terms, a buyer who preferred cash could still purchase goods without disruption, while other buyers enjoyed the convenience of cashless payments. This dual approach underscored the need for gradual, adaptable development strategies that balanced technological advancement with the realities of local consumer behavior.

The role of classification in shaping acceptance and adoption provided additional insights for efficient development. Vendors, buyers, and suppliers experienced different operational challenges and benefits, and this differentiation informed targeted interventions. For instance, local suppliers handling bulk deliveries, such as Participant 7 and Participant 10, benefited from digital payments that streamlined large transactions and reduced errors, ensuring timely payments and smoother coordination with multiple vendors. Meanwhile, buyers like Participant 4 and Participant 9 appreciated the security and convenience of cashless payments when purchasing perishable goods during peak market hours. Tailoring support and training to these distinct roles enhanced adoption and maximized the positive impact of digital systems across the entire market ecosystem.

Beyond operational and financial improvements, digital payments contributed to psychological empowerment and social trust. Vendors reported feeling more professional and credible when offering electronic payment options, which reinforced customer confidence and encouraged repeat patronage. In real-life scenarios, this looked like a long-time customer choosing a stall because the vendor offered fast, reliable digital payments, or a new buyer feeling confident purchasing high-value items

without carrying large amounts of cash. Such trust and professionalism enhanced the social fabric of the market, supporting a more resilient and well-functioning local economy.

Electronic payments generated valuable data that would guide governance and local development planning. Market management and Local Government Units used transaction logs to monitor sales trends, track revenue collection, and identify areas for infrastructure improvement. Consistent data on peak transaction times informed the scheduling of market personnel or targeted support programs for vendors struggling with cashless transactions. This real-time insight allows policymakers to make evidence-based decisions to improve efficiency and responsiveness of local development initiatives.

The experience at the Teodoro Arcenas Trade Center illustrated that efficient local development is not solely about infrastructure or policy, it is about creating an environment where technology is enhanced in everyday market operations, strengthens competitiveness, supports inclusive participation, and builds trust among all stakeholders. By promoting the adoption of electronic payment systems, local development became more strategic, adaptive, and sustainable, empowering vendors, buyers, and local suppliers while ensuring that the marketplace evolved to meet the demands of a modern, digitally connected economy.

DISCUSSION

While electronic payment systems were generally manageable at the Teodoro Arcenas Trade Center (TATC), practical challenges still affected vendors, buyers, and local suppliers in their daily operations. Unreliable internet connectivity emerged as the most pressing issue, causing delays in transactions, frustrating buyers, and occasionally resulting in lost sales for vendors and suppliers. To address this, vendors and suppliers proactively used backup mobile data or hotspot solutions during peak hours, while buyers planned ahead by ensuring sufficient mobile balance or preferred payment apps were ready. The Local Government Unit (LGU) and market management partnered with internet providers to upgrade bandwidth, install additional Wi-Fi hotspots, and provide backup connections in key areas, creating a reliable digital environment that enabled smooth, uninterrupted transactions for all participants.

Limited access to payment terminals slowed transaction processing and forced vendors and suppliers to share devices during busy market hours. Vendors and suppliers organized shift-based usage of point of sale (POS) devices or explored portable mobile POS solutions to reduce wait times. Buyers adopted quick response (QR)-based payments or mobile wallets that did not rely solely on terminals. Market management and the LGU added more POS devices in high-traffic areas to ensure faster and smoother transactions with fewer delays. Hidden transaction fees discouraged some vendors, suppliers, and buyers from using e-payments, particularly for low-value transactions. Vendors and suppliers communicated transparent pricing to buyers, highlighting savings, rewards, or promotions that offset minor fees. Buyers chose payment apps with lower or no transaction charges. The LGU and payment providers conducted information campaigns to clarify fee structures and highlight the benefits of digital transactions, helping all parties build trust and confidence in electronic payments.

Social influence and customer behavior also impacted adoption. Some buyers preferred cash, which discouraged vendors from promoting e-payments. Vendors and suppliers modeled digital payment usage for buyers, explaining convenience, speed, and security. The LGU ran visible awareness campaigns, used signage, and featured success stories to normalize e-payments, showing that the system benefited the entire market ecosystem. When buyers, vendors, and suppliers saw digital transactions as the standard, adoption accelerated naturally. Finally, limited institutional support constrained consistent digital payment use. The LGU took an active role by providing infrastructure upgrades, additional devices, ongoing training, and clear guidance for vendors, suppliers, and buyers. Vendors and suppliers reported recurring issues and suggested practical improvements, while buyers provided feedback on transaction ease and reliability. TATC created an enabling environment where electronic payments were reliable, efficient, and widely adopted. Moreover, vendors, buyers, and local suppliers overcame current barriers, strengthened market operations, enhanced customer satisfaction, and positioned the TATC as a modern, digitally empowered traditional market.

The high acceptance scores for security disclosed that stakeholders are expected the usage of digital payments when they trust that transactions are recorded correctly and the system was safe. Fourth, acceptance of electronic payment reflected willingness to adopt new technology. Many participants demonstrated openness to learning and using digital payments, showing a positive attitude that facilitated the spread of innovation in the market. Their optimism on future with less cash aligned with national initiatives, such as QRPh standards and e-wallet programs. Finally, although acceptance was already high, it could improve further with targeted actions. Providing digital literacy training, simplifying systems for less experienced users, and ensuring stable internet would help all stakeholders benefit from electronic payments. Awareness campaigns emphasizing security, reliability, and convenience could also increase acceptance in areas where it remained moderate, such as speed or cash convenience.

The electronic payment adoption at the TATC demonstrated substantial operational and strategic benefits. Stakeholders experienced improved efficiency, stronger transaction security, and better financial management, while customers enjoyed greater convenience. The continued use of both digital and cash payments reflected a gradual technological transition, highlighting the importance of inclusive implementation strategies. Electronic payment systems supported local economic development by enhancing market efficiency, promoting financial transparency, and strengthening the adaptability of local market systems.

The findings aligned with Venkatesh et al.'s (2023) Unified Theory of Acceptance and Use of Technology constructs, particularly the performance expectancy and facilitating conditions, which suggested that confidence in system reliability and proper support enhanced adoption. Oliveira et al. (2016) found that mobile payment adoption is strongly driven by perceived usefulness, while Slade et al. (2015) observed similar patterns in proximity mobile payments. Irianto and Chanvarasuth (2025) demonstrated that operational efficiency and convenience motivate MSMEs in Indonesia to adopt digital payments, Ajao et al. (2023) reported that performance expectancy drives mobile payment acceptance in Nigeria, and Najdawi and Said (2021) discovered that younger consumers' adoption is influenced by perceived convenience and ease of use.

CONCLUSION

Electronic payment systems are widely accepted and increasingly adopted among vendors, buyers, and local suppliers. Operational risks associated with physical cash, particularly counterfeit currency, theft, and inefficient manual recording, serve as motivating factors for digital transition.

The positive relationship between acceptance and adoption confirms that perception drives behavior. Social influence, especially buyer preference for cashless transactions, plays a crucial role in accelerating vendor adoption. Market-driven demand significantly shapes technological transition within traditional trade environments. The growth in adopting electronic payment methods at Teodoro Arcenas Trade Center positively impacts efficient local development. They also streamline transactions, reduce errors from cash handling, and provide reliable records that support better monitoring and decision-making. The integration of electronic payments also strengthens financial inclusion by bringing small vendors into formal digital financial systems. Moreover, digital transaction records may improve local government revenue monitoring and fiscal planning. The transition toward a hybrid and increasingly digital payment ecosystem contributes to modernization, economic resilience, and improved governance within Roxas City.

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Conflict of Interest

The author confirms no conflict of interest.

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