International Journal of Accounting and Economics Studies, 12 (8) (2025) 603-616

International Journal of Accounting and Economics Studies

Website: www.sciencepubco.com/index.php/IJAES
https://doi.org/10.14419/vydt0v09
Research paper



Perceived Risk and Attitude as Determinants of Mobile Payment Adoption: A Behavioral Economics Perspective

Cathleen Mia Salazar *, Blessa Camacho, Dinah Joy Montemayores, Janelle Javier, Jessa Jane Gatilogo, Kypril Aclan, Dr. Nickie Boy A. Manalo, Dr. Gemar G. Perez, Dr. Bendalyn M. Landicho

Batangas State University- The National Engineering University
**Corresponding author E-mail: 25-57267@g.batstate-u.edu.ph*

Received: November 9, 2025, Accepted: December 13, 2025, Published: December 19, 2025

Abstract

This study explores how perceived risk factors affect the attitude of public market vendors towards mobile payment adoption through performance risk, financial risk, time risk, psychological risk, and social risk. Using a survey of 325 randomly selected public market vendors in Batangas City, data were gathered through a validated questionnaire with strong reliability. Statistical analysis, including Pearson R correlation, ANOVA, and Kruskal-Wallis test, was used to examine the relationship between variables. The findings revealed that respondents had a neutral attitude when it comes to mobile payments adoption. When it comes to the correlation between attitude and perceived risks, the results showed that there is a significant relationship where performance and time risk are observed with the strongest correlation, with attitude and social risk having a weaker relationship but still significant. The study also uncovers that neither the number of years of a business, customer volume, nor the type of products sold significantly affects the openness in the adoption of mobile payments. In contrast, the average monthly sales and awareness of mobile payment tend to show a critical and significant relationship in the mobile payment adoption. The results suggest that perceived risks affect the attitude of the respondents in the adoption of mobile payments. Thus, developing training and support programs, enhancing system performance and connectivity, and expanding for future research are recommended to enhance confidence, accessibility, and trust in mobile payment usage while promoting collaboration among relevant stakeholders.

Keywords: *Attitude; Behavioral Economics; Market Vendors; Mobile Payments; Perceived Risk.*

1. Introduction

The financial services landscape is rapidly transforming as smartphones, internet access, and fintech innovations expand. Global smartphone subscriptions grew from 3.3 billion in 2015 to a projected 6.8 billion by 2022 [13], accelerating the shift from traditional cash handling to digital payment channels. Mobile payments have thus evolved from a matter of convenience to a driver of financial inclusion, faster transactions, and micro-enterprise participation. Research shows that mobile payment adoption is shaped not only by technology but also by human behavior, risk attitudes, and perceptions [1], [2], [3]. For example, risk attitudes significantly influence intentions to use smartphone-based P2P wallets [4], yet perceived risks—performance, financial, time, psychological, and social—sometimes show no direct effect on attitudes toward these wallets [5]. Overall, studies highlight that behavioral responses to financial risk play a central role in shaping mobile money use. In emerging economies, however, adapting mobile payment models remains challenging due to informal market dynamics. While structural issues such as low IT literacy, weak internet connectivity, cash dependence, and regulatory gaps affect adoption, recent research notes additional overlooked factors. In India, situational elements like vendor type, infrastructure, and market size are often missing from analyses [6]. In the Philippines, despite growing e-wallet usage, cash remains dominant, and vendor perspectives—particularly in public markets—are underexplored [7]. These gaps show the need to adapt technology acceptance models to micro-enterprise realities in informal settings. Digital payments in the Philippines continue to expand. By 2023, mobile and digital payments comprised a significant share of monthly retail transactions [8], supported by national efforts to promote a cash-lite economy and MSME inclusion [9]. Yet barriers persist: perceived risk, low digital literacy, infrastructure limitations, and trust issues still restrict adoption [10], [11]. Although studies find that perceived risk and attitude can influence user satisfaction and willingness to recommend [7], vendor-side behavior—especially in public markets—remains insufficiently studied. The interplay between multi-dimensional risk and vendor attitudes represents a clear empirical gap. Public market vendors form a vital part of the semi-formal economy in the Philippines. These markets support local products, provide livelihood opportunities, and connect communities. Vendors, however, often operate with thin margins, limited credit access, cash-based transactions, and inconsistent connectivity. A case in Batangas City illustrates how infrastructure constraints and behavioral barriers—such as risk perception and trust in fintech—intersect with practical concerns like switching costs. Yet research on city-

Copyright © Cathleen Mia Salazar et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

level vendor behavior is scarce. One study in Los Baños, Laguna, used a multi-dimensional risk lens but offered only descriptive insights, noting that only 34 of 113 vendors adopted digital payments and many cited lack of awareness, technical skills, or fear of scams [12]. This underscores the need for behavioral analyses focused on public market vendors. A review of the literature reveals five key gaps. The first is theoretical: TAM and UTAUT dominate mobile payment studies, often treating perceived risk and attitude as secondary rather than central, especially in vendor contexts. Behavioral economics, which examines decision-making under uncertainty, is rarely applied to micro-vendors. The second is empirical: most studies focus on consumers or formal SMEs in developed economies, leaving Philippine micro-vendors understudied. The third is methodological: many rely on descriptive designs or convenience samples and seldom disaggregate risk dimensions or test attitude as a mediator. The fourth is practical and policy-related: national digitalization efforts lack vendor-level behavioral evidence to support targeted interventions. The fifth is geographical: cities like Batangas remain largely unexamined. This study responds to these gaps through five contributions. First, it focuses on micro-vendors in Batangas City. Second, it adopts a Behavioral Economics framework that treats risk attitudes as core drivers. Third, it employs multi-dimensional risk constructs—performance, financial, time, psychological, and social—to examine their influence on vendor attitudes. Fourth, it applies structural modeling to quantitative vendor data. Finally, it offers actionable insights to inform local government policies, vendor decision-making, and academic research on digital finance in emerging markets. These contributions have practical value. For local governments, the findings can inform inclusive financial policies tailored to public markets. For vendors, the study clarifies the risks and benefits of mobile payments, supporting informed adoption. For the academic and future researchers, it offers a culturally grounded framework for studying trust, digital literacy, and technology use in informal economies—helping advance efforts to narrow the digital divide.

2. Review of Literature

Behavioral economics explains how people make financial decisions based on emotion, habit, and social influence [16]. Instead of assuming rationality, it emphasizes how fear, confusion, and peer pressure shape choices. For example, Prospect Theory, introduced by Kahneman and Tversky in 1979 [15], demonstrates that individuals focus more on potential losses than gains. Consequently, they avoid risk and hesitate to try new systems. This mindset directly affects mobile payment adoption: even when platforms offer speed and convenience, fear of fraud, errors, or unfamiliar steps can discourage use. Mobile payments—cashless digital transactions via mobile wallets and contactless methods between consumers and merchants [17]—have expanded as mobile phones evolved from communication tools into multifunctional digital platforms. Moreover, the COVID-19 pandemic accelerated this transformation, boosting online shopping, remote learning, and money transfers. According to Kumar et al. (2023), China, Brazil, and India lead emerging economies in mobile payment volumes, which reflects a global shift toward digital finance. In addition, crises have often catalyzed adoption: Kenya's M-PESA enabled unbanked citizens to access funds during the 2008 post-election unrest [18]; Nigeria used mobile platforms to deliver aid during floods; and India's 2016 demonetization spurred widespread mobile payment use [18]. Similarly, the pandemic normalized cashless transactions worldwide, with Poland showing strong uptake among students [19]. Despite global growth, adoption remains uneven. Taiwan lags behind government targets due to reliability concerns [20], while fewer than 20% of Indonesian MSMEs use digital tools [14]. In contrast, many Africans remain unfamiliar with mobile money and are financially excluded [21]. Meanwhile, in the Philippines, younger users are more open to mobile payments, yet security and privacy concerns persist, slowing widespread adoption. Although mobile payment usage rose from 1% in 2013 to 10% in 2018, nearly half of internet-connected account holders remain hesitant [22]. Consequently, perceived risk has emerged as a key barrier to mobile payment adoption (Bland et al., 2024). While vendor studies highlight practical barriers such as low awareness, infrastructure constraints, and fear of fraud, these realities can be more deeply understood through a behavioral economics lens. Vendors often operate with limited buffers against loss, making them highly sensitive to perceived risks which are shaped by emotion, context, and experience [28]. Loss aversion explains why even minor transaction failures or security concerns discourage adoption. Trust and social influence further shape decisions, as hesitation is reinforced by peer norms within public markets. Thus, behavioral economics reframes vendor adoption not as a purely rational calculation but as a process shaped by psychological biases and social pressures. A study on Ibabao Multi-Purpose Cooperative, guided by Hosain (2019), shows that organizational efficiency and behavioral responses to management support shape performance outcomes. Researchers employed statistical tools such as Frequency and Percentage, Mean and Standard Deviation, One-Way ANOVA, Independent Samples T-Test, Kruskal-Wallis, Mann-Whitney U-Test, and Multiple (Quantile) Regression to examine demographics and variable relationships. Employees reported high levels of performance, accounting competence, management support, and recordkeeping. However, demographic factors like age, sex, education, and tenure had no significant effect, while management support emerged as the only significant predictor of performance. Therefore, institutional backing, training, and guidance play a crucial role in shaping consistent work behavior. These findings highlight how behavioral and institutional support influence attitudes and decisions. Similarly, in mobile payment adoption, perceived risk and attitude determine willingness to adopt. Just as management support builds confidence in organizations, reduced risk and positive attitudes foster openness to financial technologies. This parallel supports the behavioral economics view that perceptions, support systems, and psychological assurance drive adoption behavior in both organizational and financial settings [24]. Malabay et al. (2025) further examined attitude, subjective norms, and perceived behavioral control in relation to GCash usage among 37 employees of Denovo Express Endeavors Corp. Employees reported positive attitudes, social influence, and confidence toward GCash [22]. Yet, the study found no significant link between these factors and actual usage, suggesting that other psychological or contextual elements may shape adoption. The present study aligns with this view. Malabay et al. (2025) emphasized that perceived risk must be considered, since positive attitudes alone did not predict usage. Thus, incorporating perceived risk provides a broader behavioral economics lens, explaining how users weigh benefits against financial or security concerns when deciding to adopt mobile payments [23]. Building upon these insights, Manalo (2025) investigated money attitudes and financial wellness among women professionals from the Batangas State University System using a descriptive research design and data from 266 respondents. Results revealed positive attitudes toward money—particularly in dimensions such as power, prestige, retention time, distrust, and anxiety—while overall financial wellness, measured through behavior, satisfaction, and perception, was generally sound. Although demographic factors like age, marital status, and income showed no significant relationship with money attitudes or financial wellness, a significant association was found between money attitudes and financial behavior, underscoring the influence of psychological and emotional factors on financial decision-making [25]. In relation to mobile payments, Manalo's findings highlight that favorable attitudes, when combined with lower perceived risk, can promote adoption and continued use. This supports the behavioral economics perspective that financial decisions are shaped not only by rational judgment but also by psychological perceptions and emotional responses to risk and benefit. Furthermore, Alingalan and Manalo (2025) examined financial attitudes and behaviors among Philippine Air Force (PAF) personnel to identify causes of persistent financial challenges. Using a descriptive correlational design, they surveyed 248 officers and enlisted members from units under the Headquarters Air Logistics Command at Clark Air Base, Pampanga. Findings revealed extremely high ratings for financial

behavior and financial attitude, indicating sound money management practices such as avoiding unnecessary loans and controlling spending. However, both actual financial knowledge and perceived financial knowledge were notably low, suggesting limited financial confidence. Further analysis showed a significant relationship between actual financial knowledge and financial behavior ($p = 0.005$), implying that greater financial literacy enhances financial practices. Conversely, perceived financial knowledge ($p = 0.688$) and financial attitude ($p = 0.156$) did not significantly mediate behavior. Supporting the current research, these results emphasize the importance of knowledge, attitude, and behavior in shaping financial decisions [26].

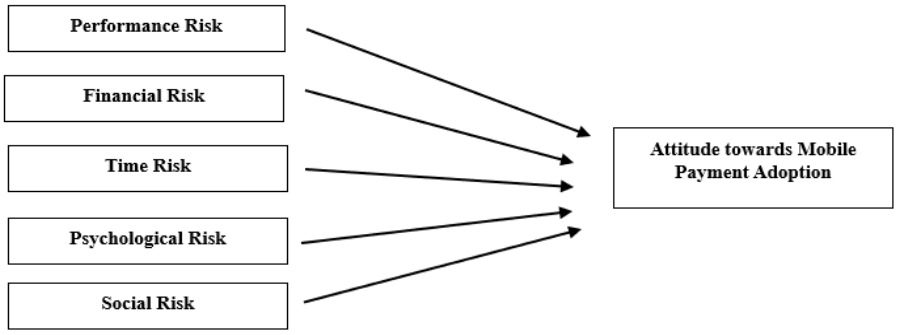


Fig. 1: Perceived Risk Theory Framework by Bland et al. 2024.

As stated by van Winsen et al. (2014), understanding risk behavior requires simultaneously considering risk perception and risk attitude [32]. Accordingly, this study examines mobile payment adoption by analyzing both perceived risks and user attitudes. Perceived risk manifests in several dimensions that directly influence how individuals evaluate mobile payment systems. First, financial risk involves fear of fraud, hidden charges, or data breaches, which lowers trust and slows adoption, particularly in the Philippines (Ragasa, 2025). Second, time risk arises from delays, failed processes, or steep learning curves, leading users to view mobile payments as inefficient; Bland et al. (2024) link this to concerns about effort and usability [5]. Third, psychological risk reflects stress, discomfort, or fear of making mistakes, especially when using unfamiliar systems [5]. Fourth, performance risk refers to the possibility that a product or service will not deliver the expected value. Finally, social risk involves fear of judgment or disapproval, particularly in communities where mobile payments are not widely accepted [5]. The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been widely applied in mobile payment research, particularly in consumer-focused contexts. TAM emphasizes perceived usefulness and perceived ease of use as primary drivers of adoption, while UTAUT extends this framework by incorporating social influence and facilitating conditions. However, both models tend to treat perceived risk and attitude as secondary variables rather than central determinants. In vendor contexts, this limitation becomes more pronounced. Public market vendors often face structural barriers such as unreliable connectivity, thin profit margins, and low digital literacy. These conditions amplify risk perceptions, making loss aversion and trust more influential than ease of use or usefulness. Behavioral economics provides a complementary lens by highlighting how psychological biases—such as fear of fraud, stress from unfamiliar systems, and social disapproval—shape vendor decisions. By foregrounding perceived risk as a multidimensional construct (performance, financial, time, psychological, and social), the present study extends TAM and UTAUT. It challenges their assumption of rational adoption behavior and demonstrates that vendor attitudes are not merely mediated by usefulness or ease of use but are directly shaped by risk perceptions and behavioral responses. Together, these risk dimensions shape user attitudes, which strongly influence adoption behavior. According to Valencia et al. (2021), attitude is the strongest predictor of mobile payment adoption among Filipino users [21]. Moreover, favorable attitudes increase intention to adopt even when risks are present, while unfavorable attitudes prevent adoption. Therefore, risk perceptions act as antecedents that influence attitudes, which in turn determine adoption outcomes. Prior research further supports this mechanism. De Luna et al. (2019) identified attitude, subjective norms, and personal innovativeness as drivers of NFC technology adoption [29], while Chakiso (2019) emphasized that user behavior depends on favorable attitudes toward the product [30]. In addition, Chen and Lai (2023) found that perceived risk is a significant predictor preventing users from adopting mobile payments, confirming its impact on adoption decisions [19]. Moreover, Mohammed et al. (2023) revealed that perceived risk affects both trust and attitude toward mobile banking services [64]. Consequently, perceived risk may either weaken or reinforce attitudes, thereby influencing the likelihood of mobile payment adoption.

2.1. Objectives of the study

The general objective of the study is to study the level of effect of the Perceived Risk factors on the attitudes of the public market vendors in the adoption of mobile payments. Specifically, the study seeks to address the following research questions:
To identify the profile of the respondents in terms of years in operation, types of goods sold, average monthly sales, average daily customers, and mobile payment system awareness.
To determine the level of attitude of the respondents towards mobile payment adoption.
To identify how many respondents perceive the level of risk in terms of performance risk, financial risk, time risk, psychological risk, and social risk.
To understand if perceived risk factors significantly correlate with attitude toward mobile adoption.
To identify the significant difference in the assessment of the respondents towards attitude on mobile payment adoption when they are grouped according to the profile (years in operation, types of goods sold, average monthly sales, average daily customers, and mobile payment system awareness).
To develop a structural equation model explaining the path to vendors' attitude towards mobile payment.
To develop risk-mitigating programs for the adoption of Mobile Payment.

2.2. Hypotheses of the study

The Perceived Risk Theory Framework provides a foundational lens for examining user attitudes toward mobile payment adoption. Within this framework, attitude is treated as the dependent variable, shaped by five key independent dimensions of risk: performance risk, financial

risk, time risk, psychological risk, and social risk. Each dimension reflects a specific concern that may influence how users feel about adopting mobile payments. However, the theory also acknowledges that these risks may or may not exert a significant influence on user attitude. This uncertainty forms the basis of the null hypotheses, which are the below:
Ho1: Perceived Risk Factors do not significantly correlate with attitude towards mobile payment adoption.
Ho2: There is no significant difference in the attitude on mobile payment adoption when respondents are grouped according to profile.
By testing this hypothesis, the study seeks to determine whether perceived risks meaningfully shape user attitudes or whether other factors may be more influential in driving adoption behavior.

3. Methodology

The study employed a descriptive research design, which served as the foundation for systematically examining the characteristics and relationships among perceived risks, attitudes, and mobile payment adoption among public market vendors in Batangas City. Specifically, this design was chosen because it allows for an accurate depiction of existing conditions and behavioral tendencies without the manipulation of variables. In line with this purpose, the research aimed to capture factual insights into the current situation and to identify prevailing perceptions and attitudes toward mobile payment usage among vendors. Thus, the selected design ensured that the study could generate objective findings directly aligned with its research objectives. Regarding the study participants, the respondents were vendors operating in the Batangas City Public Market who were either current users or potential adopters of mobile payment systems. Their participation was crucial in assessing the perceived risks and attitudes that influence mobile payment adoption. To determine the appropriate number of respondents, the Raosoft sample size calculator was utilized, and based on a total population of 2,098 vendors, a representative sample of 325 participants was obtained. These respondents were proportionally drawn from two major market locations—Cuta and Poblacion 22—using a random sampling technique to ensure unbiased representation. This sampling technique gives each member of the population an equal and independent chance of being selected, which enhances both the reliability and generalizability of the findings [39]. Consequently, the use of this method strengthened the credibility of the data collected using the structured survey questionnaire, which served as the primary research instrument. For data collection, the researchers utilized a self-constructed survey questionnaire composed of three distinct sections specifically designed to measure respondents' demographic profiles, attitudes, and perceived risks associated with mobile payment adoption. The first section gathered demographic and operational details, including years in operation, type of goods sold, average monthly sales, number of customers, and awareness of mobile payment systems. Meanwhile, the second section consisted of statements assessing vendors' attitudes toward adopting mobile payment, and the third section addressed perceived risk factors categorized into five dimensions: performance, financial, time, psychological, and social risks. By structuring the questionnaire this way, the researchers ensured comprehensive coverage of the study's variables. Since no standardized instrument existed for measuring mobile payment adoption among public market vendors, the researchers developed a self-structured bilingual questionnaire based on insights from existing theses, academic journals, and reference books. The decision to use both English and Filipino aimed to enhance clarity and inclusiveness, ensuring that all respondents—regardless of educational background—could understand and respond accurately to each statement. This bilingual approach not only improved comprehension but also strengthened the reliability of the collected responses. To establish the instrument's validity, the researchers consulted their adviser, who provided expert feedback on the questionnaire's structure, content, and clarity. After implementing revisions based on the adviser's recommendations, the instrument was approved for pilot testing, which was conducted among 30 respondents at the Public Market in Lipa City, who were excluded from the main study. The results were tabulated and analyzed with the assistance of a statistician. The computed Cronbach's Alpha coefficient was 0.903, indicating excellent internal consistency [33]. Specifically, the computed values per construct were 0.758 for attitude toward mobile payment adoption, 0.960 for performance risk, 0.941 for financial risk, 0.946 for time risk, 0.933 for psychological risk, and 0.938 for social risk. These results confirmed that the questionnaire was highly reliable and ready for full-scale distribution to the identified respondents. In addition, to measure the respondents' level of agreement with each statement, the study utilized a five-point Likert Scale that effectively measures attitudes by allowing individuals to express the extent of their agreement or disagreement [42]. The scale ranged from one to five, where five represented "Strongly Agree" interpreted as very high, four represented "Agree" interpreted as high, three represented "Moderately Agree" interpreted as average, two represented "Disagree" interpreted as low, and one represented "Strongly Disagree" interpreted as very low. The use of this standardized measurement scale facilitated the quantification and interpretation of responses with statistical precision. Furthermore, with regard to the data-gathering procedure, the researchers personally visited the Batangas City Hall to secure formal permission to survey the public market. Upon receiving approval, the questionnaires were distributed to the target respondents, each accompanied by an introductory letter explaining the purpose of the study and assuring the confidentiality of responses. Before administering the survey, the researchers courteously obtained informed consent and confirmed each vendor's availability and willingness to participate. During data collection, clear instructions were provided, and respondents were given ample time to complete the questionnaire while the researchers remained present to address any inquiries and ensure completeness of responses. In cases where selected respondents declined participation, replacements were chosen using the same randomization procedure applied during the initial sampling to maintain proportional representation across the two market locations. Specifically, a random selection process was employed to identify substitute respondents from the same sampling frame until the required sample size was achieved. Once all questionnaires were completed, the data were systematically organized, checked for completeness, and prepared for statistical analysis. Subsequently, in the data analysis phase, the researchers utilized the Jamovi statistical software to systematically classify, tabulate, and interpret the collected data. Descriptive statistics such as frequency and percentage distributions were used to describe the respondents' demographic and business profiles. The mean and standard deviation were applied to determine central tendencies and variability of responses related to attitudes and perceived risks. Furthermore, to test the relationships between perceived risks and attitudes toward mobile payment adoption, Pearson's r correlation was employed. In addition, a one-way Analysis of Variance (ANOVA) was conducted to determine whether there were significant differences in respondents' attitudes when grouped according to their profiles. These statistical techniques provided robust and objective bases for data interpretation and conclusion formulation. Finally, throughout the entire research process, the researchers observed strict ethical standards to ensure methodological soundness and participant protection. Before data collection, informed consent was obtained from all respondents, and the purpose, scope, and benefits of the study were clearly explained to them. Participation was voluntary, and respondents were assured of the confidentiality and anonymity of their responses. To maintain transparency and academic integrity, all data sources were properly cited, and the results were reported truthfully without fabrication or bias.

4. Results

4.1. Profile of the respondents

Table 1: Distribution of Respondents in Terms of their Profile

	Frequency	Percent
Years in Operation		
0-3 years	41	12.60%
4-6 years	64	19.70%
7-9 years	101	31.10%
More than 10 years	119	36.60%
Total	325	100%
Type of Goods Sold		
Fruits and Vegetables	65	20.00%
Meat and Fish	59	18.20%
Dry Goods (e.g., rice, canned goods, grocery items)	72	22.20%
Clothing and Accessories	34	10.50%
Household Items	24	7.40%
Cooked Food or Beverages (e.g., meals, snacks, street food)	33	10.20%
Others	38	11.70%
Total	325	100%
Average Monthly Sales		
Less than Php 1,000	7	2.20%
Php 1,000 – Php 4,999	16	4.90%
Php 5,000 – Php 9,999	82	25.20%
Php 10,000 – Php 14,999	100	30.80%
More than Php 15,000	120	36.90%
Total	325	100%
Average Daily Customers		
0-49 customers	29	8.90%
50-99 customers	103	31.70%
100-149 customers	105	32.30%
More than 150 customers	88	27.10%
Total	325	100%
Mobile Payment Awareness		
I do not know about it.	32	9.80%
I've heard of it but have never used it.	57	17.50%
I'm aware of it, but do not use it in business.	104	32.00%
I'm aware of it and use it minimally in business.	132	40.60%
Total	325	100%

As presented in Table 1, the majority of public market vendors have been operating for more than 10 years (36.60%), indicating a seasoned entrepreneurial base with established practices and long-term stability. This finding reflects vendors' extensive experience in managing stalls and sustaining customer relationships over time. Regarding the types of goods sold, most vendors offer essential commodities—dry goods (22.20%), fruits and vegetables (20.00%), and meat and fish (18.20%). These categories underscore the critical role of public markets in providing daily necessities, supporting household food security, and maintaining affordability. In terms of income, a substantial portion of vendors earn above ₱15,000 per month (36.90%), followed by those earning ₱10,000–₱14,999 (30.80%) and ₱5,000–₱9,999 (25.20%). This suggests that public market operations offer moderate but stable earnings, contributing to sustainable livelihoods for small-scale entrepreneurs. For customer flow, most respondents serve 100–149 customers daily (32.30%), followed by 50–99 customers (31.70%) and more than 150 customers (27.10%). These figures highlight robust and consistent consumer activity, signaling the continued relevance of traditional markets despite the rise of modern retail formats. Finally, regarding mobile payment awareness, 40.60% of vendors are aware but use it minimally, 32.00% are aware that they do not use it, 17.50% have heard of it but never tried it, and only 9.80% are completely unaware. These results reveal a clear awareness–adoption gap, where recognition of digital payment systems does not necessarily translate into actual usage.

4.2. Attitude towards mobile payment adoption

Table 2: Respondents' Attitude Towards Mobile Payment Adoption

Items	Mean	SD	Interpretation
I'm hesitant to use new tools or technology, even if I haven't used them before.	3.54	1.327	Neutral
I think mobile payment systems are not easy to learn and operate.	3.46	1.375	Neutral
I would feel ashamed to offer mobile payments in my stall.	2.81	1.462	Positive Attitude
I think mobile payments cannot help me attract more customers.	3.18	1.449	Neutral
I prefer cash because it's more reliable and familiar.	4.19	1.104	Negative Attitude
I'm not interested in using mobile payment even if I get rewards like discounts or points.	3.55	1.348	Neutral
I think of the errors or problems when using mobile payments.	4.03	1.098	Negative Attitude
I worry that mobile payments might not be safe.	3.99	1.136	Neutral
I'm unsure if mobile payments will work properly during peak hours.	3.97	1.141	Neutral
I am not planning to use mobile payments more often in my business.	3.82	1.273	Neutral
Overall	3.65	0.816	Neutral

As shown in Table 2, the overall mean for the respondents' attitude towards mobile payment is 3.65, which shows a neutral attitude towards the adoption. The highest means belongs to the preference of the public market vendors of cash because it's more reliable and familiar (4.19, negative attitude), and their constant thinking of the errors or problems when using mobile payments (4.03, negative attitude). In contrast, the feeling of embarrassment for the public market vendors to offer mobile payments in their stalls shows the lowest mean of

2.81, resulting in a positive attitude. Whereas their worry that mobile payments might not be safe (3.99), uncertainty if the mobile payment will work properly during peak hours (3.97), and no plan to use mobile payments more often in their business (3.82) show a neutral attitude.

4.3. Degree of perceived risk associated with mobile payment adoption

Table 3: Degree of Perceived Performance Risk Associated with Mobile Payment Adoption

	Mean	SD	Interpretation
I am worried that mobile payments might not work properly.	3.95	1.17	High
I am concerned that the app might freeze or stop while I'm using it.	3.99	1.104	High
I fear that payments might take too long to process.	3.98	1.188	High
I am uneasy that the system might not work on my phone or device.	3.96	1.133	High
I worry that help or support might not be available if something goes wrong.	4.02	1.11	High
I am concerned that the app might be hard to use and cause mistakes.	3.88	1.196	High
I fear that the system may not accept all types of payments I need.	3.81	1.247	High
I am nervous to use mobile payments during busy hours.	4.14	1.107	High
I am concerned that the system might not work well with other tools I use for my business.	3.79	1.281	High
I am concerned that the mobile payment system may not be compatible with the daily operations of my business.	3.81	1.268	High
Overall	3.93	0.913	High

As presented in Table 3, the overall mean of 3.93 indicates a high level of performance risk perceived by public market vendors toward mobile payments. Vendors reported the greatest concerns as feeling nervous to use mobile payments during busy hours (4.14), worrying that help or support might not be available if problems occur (4.02), and concern that the app might freeze or stop while in use (3.99). The lowest concern, although still rated high, is the compatibility of the system with other business tools (3.79). These findings suggest that vendors perceive mobile payments as potentially unreliable during peak hours or in situations requiring technical support. Overall, the results reflect a lack of confidence in system stability and dependability, particularly when transaction speed and reliability are crucial.

Table 4: Degree of Perceived Financial Risk Associated with Mobile Payment Adoption

	Mean	SD	Interpretation
Transaction fees from cashless payments might significantly reduce my business profit.	3.59	1.315	High
Hidden or unexpected charges in cashless payments may pose a financial risk to my business.	3.66	1.318	High
Delays in fund settlement from cashless payments might create cash flow problems in my business.	3.74	1.293	High
Chargebacks and payment reversals might cause significant financial losses to my business	3.76	1.295	High
Fraudulent or unauthorized transactions may be a major financial risk when accepting cashless payments.	4.10	1.117	High
When financial losses occur from failed and fraudulent cashless transactions, my business might bear the cost.	3.94	1.173	High
Relying heavily on cashless payments might increase my risk of liquidity problems compared to cash	3.78	1.296	High
System errors might expose my business to financial losses	3.93	1.211	High
Depending too much on cashless payments might increase my financial vulnerability if providers face down-time and failure.	3.92	1.233	High
Overall, I believe cashless payments may increase the financial risks for my business compared to cash.	4.10	1.208	High
Overall	3.85	0.892	High

The three financial risks identified in Table 4 reflect strong concerns among business owners about the vulnerabilities of cashless payment systems. The belief that fraudulent or unauthorized transactions may be a major financial risk when accepting cashless payments (mean = 4.10, high) highlights fears of digital fraud and the potential for direct financial loss. Equally rated is the perception that cashless payments may increase the financial risks for businesses compared to cash (mean = 4.10, high), suggesting a broader mistrust in the reliability and transparency of digital transactions. Additionally, the concern that financial losses occur from failed and fraudulent cashless transactions business might bear the cost (mean = 3.94, high), points to a perceived lack of protection or recourse when issues arise. These findings underscore the need for stronger fraud prevention, clearer liability policies, and more transparent fee structures to build trust and confidence in mobile payment adoption. On the other hand, the least perceived financial risks are centered on cost-related concerns. The lowest-rated item—transaction fees from cashless payments might significantly reduce business profit (mean = 3.59)—suggests that while fees are not viewed as a major threat. Slightly higher hidden or unexpected charges in cashless payments may pose a financial risk to business (mean = 3.66) and delays in fund settlement from cashless payments might create cash flow problems in business (mean = 3.74), indicating moderate apprehension. These risks are considered less critical compared to fraud and liability concerns, reflecting a greater emphasis on security over cost among business owners.

Table 5: Degree of Perceived Time Risk Associated with Mobile Payment Adoption

	Mean	SD	Interpretation
I feel that using mobile payment requires too much time to learn.	3.57	1.41	High
I am concerned that mobile payment transactions may take longer than cash payments.	4.02	1.142	High
I believe using mobile payment may cause delays or interruptions during transactions.	4.01	1.124	High
I feel that mobile payment transactions might cause unnecessary waiting for customers.	4	1.13	High
I am concerned that during busy market days, mobile payment systems may be too slow to process transac-tions quickly.	4.02	1.168	High
I expect to spend a lot of time fixing problems when using mobile payment services.	3.95	1.17	High
I worry that the time spent waiting for mobile payment confirmations affects my ability to serve customers efficiently.	4.06	1.085	High
I am worried that I will need frequent help or support to learn how to use mobile payments properly.	3.72	1.271	High
I believe using mobile payment requires too much time to operate.	3.99	1.122	High
I may find it difficult to master the steps involved in using mobile payment systems.	3.6	1.386	High
Overall	3.89	0.862	High

Table 5 shows that the respondents have a high level of perceived time risk in adopting mobile payments, with an overall mean of 3.89. Moreover, worrying about delays in payment confirmations affecting customer service ranked first with a mean of 4.06. Followed by concern that transactions may take longer than cash payments, and fear that systems may slow down during busy market days, having both

(4.02) means. Meanwhile, the three lowest indicators were required to learn mobile payment with a mean of (3.57), followed by difficulty mastering steps with a mean of (3.60), and lastly need for frequent help in learning gained (3.72).

Table 6: Degree of Perceived Psychological Risk Associated with Mobile Payment Adoption

	Mean	SD	Interpretation
I am not used to using mobile payment schemes.	3.37	1.487	Average
I am wary of using digital payment due to possible failed transactions.	3.66	1.364	High
I fear utilizing digital payment methods because important data might be stolen without my knowledge.	4.11	1.125	High
I don't prefer using mobile payment because there are many scams associated with it.	4.09	1.188	High
I feel anxious if I fail to receive the payment, even though they have already sent it.	4.14	1.092	High
I feel uncomfortable relying on technology for financial transactions.	3.72	1.302	High
I'm not confident because I rarely use smartphones.	2.97	1.526	Average
I avoid mobile payments because they feel unfamiliar and complicated.	3.41	1.452	Average
I worry that not all customers use mobile payments.	3.73	1.354	High
I don't trust the security of my income stored in online banking.	4.04	1.19	High
Overall	3.73	0.831	High

Table 6 indicates a high level of perceived psychological risk among respondents with an overall mean of 3.73. The leading concern was anxiety about not receiving payment, despite confirmation, with a mean of 4.14, followed by fear of data theft with a mean of 4.11, and apprehension over scams, with a mean of 4.09. These findings demonstrate that emotional insecurity and fear of potential loss shape users' reluctance toward adopting mobile payment systems. Meanwhile, the respondents indicated low confidence in using mobile payments because they rarely use smartphones, obtaining the lowest means of 2.97. This was followed by the statement "they are not used to mobile payment schemes" with a mean of 3.77, and "mobile payment feels unfamiliar and complicated to use" with a mean of 3.41. These results suggest that limited smartphone experience and unfamiliarity with digital payment systems contribute to their hesitation in adopting mobile payments.

Table 7: Degree of Perceived Social Risk Associated with Mobile Payment Adoption

	Mean	SD	Interpretation
I worry that if something goes wrong with a mobile payment, it could damage my reputation in the market.	3.86	1.343	High
I feel uneasy that mobile payments reduce personal interaction with my customers.	3.61	1.378	High
Because mobile phones are now part of everyday life, I feel more pressure to follow what others do and use mobile payments.	3.41	1.447	Average
I feel that my family might not support me if I start using mobile payment technology in my business	3.04	1.438	Average
My decision to use mobile payments is influenced by what other vendors and customers expect or commonly do.	3.2	1.468	Average
I worry that using mobile payment might make me look less professional if something goes wrong.	3.18	1.469	Average
I avoid mobile payments because they're not commonly used in my market.	3.29	1.453	Average
I feel embarrassed asking customers to pay using mobile payment.	2.91	1.463	Average
I feel uncomfortable using mobile payment when others around me prefer cash.	3.73	1.331	High
I am concerned that my peers may judge me negatively for adopting mobile payment	3.13	1.484	Average
Overall	3.34	0.952	Average

Table 7 indicates that respondents have an average level of perceived social risk in the adoption of mobile payment, as reflected by an overall mean score of 3.34, which implies that for most users, social concerns are present, but they are not a dominant factor in adopting mobile payment. The greatest concern for them is the damage to their reputation when mobile payment went wrong with a mean of 3.86. It is closely followed by discomfort when others prefer to use cash, with a mean of 3.73. Whereas the three lowest concerns for them were feeling uncomfortable in asking their customers to pay using mobile payment, with a mean of 2.91, followed by concern about family support, having a mean of 3.04, and worrying about looking unprofessional, with a mean score of 3.18.

Table 8: Correlation Matrix of Perceived Risk Factors Towards Mobile Adoption

	Mean	Attitude toward mobile adoption	Performance Risk	Financial Risk	Time Risk	Psychological Risk	Social Risk	Decision to H_0	Interpretation
Attitude toward mobile adoption	Pearson's r	—						Reject	Significant
	df	—							
	p-value								
Performance Risk	Pearson's r	0.748	—					Reject	Significant
	df	323	—						
	p-value	<.001							
Financial Risk	Pearson's r	0.607	0.717	—				Reject	Significant
	df	323	323	—					
	p-value	<.001	<.001						
Time Risk	Pearson's r	0.701	0.779	0.657	—			Reject	Significant
	df	323	323	323	—				
	p-value	<.001	<.001	<.001					
Psychological Risk	Pearson's r	0.704	0.76	0.71	0.762	—		Reject	Significant
	df	323	323	323	323	—			
	p-value	<.001	<.001	<.001	<.001				
Social Risk	Pearson's r	0.51	0.518	0.498	0.539	0.59	—	Reject	Significant
	df	323	323	323	323	323	—		
	p-value	<.001	<.001	<.001	<.001	<.001			

Legend: *Significant difference at p <0.05.

Table 8 presents the summary of the computed value of the perceived risk factors on using mobile payment schemes towards mobile adoption. Using Pearson's R correlation, the data underwent statistical analysis. In a condition, if the p-value is greater than 0.05 significance level, it must fail to reject the null hypothesis, and if the p-value is less than 0.05 significance level, it must reject the null hypothesis. The findings revealed that there is a significant correlation between perceived risks (performance risk, financial risk, time risk, psychological risk, and social risk) towards the attitude towards mobile adoption of the respondents, with less than 0.001 level significance. Therefore, for all pairs of variables, the null hypothesis was rejected for every null hypothesis, which claimed that there were significant connections between perceived risk and attitude. This implies that attitudes toward mobile adoption and all forms of perceived risk, as well as the perceived risks, have significant correlations. The analysis of attitudes toward mobile adoption and perceived risks reveals that all correlations are statistically significant, with p-values less than 0.001. The strongest correlations were observed between performance risk and time risk (r = 0.779), followed by performance risk and psychological risk (r = 0.76) and time risk and psychological risk (r = 0.762). Attitude showed its highest correlation with performance risk (r = 0.748), followed by performance risk and financial risk (r = 0.717) and attitude and psychological risk (r = 0.704). Financial risk was also strongly associated with psychological risk (r = 0.71). Moderate correlations were found between attitude and both financial risk and time risk (r = 0.607). Positive but relatively weaker correlations were observed among psychological risk and social risk (r = 0.59), time risk and social risk (r = 0.539), attitude and social risk (r = 0.51), performance risk and social risk (r = 0.518), and financial risk and social risk (r = 0.498). The findings indicate that individuals' attitudes toward mobile adoption are shaped by multiple, interrelated risk factors, reflecting the strong interconnection among different depths of perceived risk. The most significant positive relationship was observed between performance risk and time risk.

Table 9: Respondents' Profile on Attitude toward Mobile Payment Adoption

	Homogeneity of Variances Tests				Normality test		Kruskal-Wallis			Fisher's				
	Levene's				Kolmogorov-Smirnov									
Attitude on Mobile Payment Adoption	Statistic	df	df2	p	Statistic	p	χ^2	df	p	f	df1	df2	p	Decision to Ho
Years in Operation	1.21	3	321	0.307	0.0903	0.01	1.28	3	0.735	0.467	3	321	0.705	Failed to Reject
Type of Good Sold	2.7	6	318	0.014	0.0691	0.09	-	-	-	1.75	6	318	0.108	Failed to Reject
Average Monthly Sales	1.8	4	320	0.128	0.0624	0.159	-	-	-	5.65	4	320	<0.01*	Reject
Average Daily Customers	1.66	3	321	0.176	0.1	0.003	6.63	3	0.085	-	-	-	-	Failed to Reject
Mobile Payment System Awareness	0.702	3	321	0.551	0.0483	0.434	-	-	-	16.7	3	321	<.001*	Reject

Legend: * Significant; if $p < 0.05$, reject the hypothesis.

The data presented in Table 9 offer valuable insights into how demographic groups influence attitudes toward mobile payment adoption. Using a combination of statistical tests—Levene's for homogeneity of variances, Kolmogorov-Smirnov for normality, Kruskal-Wallis for non-parametric group comparisons, and Fisher's for categorical variables. The study identifies which factors significantly affect user attitudes. The statistical analysis showed that there was no significant correlation between the respondents' views on the adoption of mobile payments and their years of operation ($F(3, 321) = 0.467$, $p = 0.705$). Similarly, there was no significant correlation between the type of items sold and the adoption of mobile payments ($F(6, 318) = 1.75$, $p = 0.108$), while the average monthly sales and the attitude toward mobile payment acceptance, however, were shown to be significantly correlated ($F(4, 320) = 5.65$, $p < 0.01$). Although the Kruskal-Wallis test for average monthly customers yielded a moderately high chi-square value ($\chi^2 = 6.63$), the p-value of 0.085 indicates that the result is not statistically significant, leading to a failure to reject the null hypothesis. This means that differences in customer volume do not appear to meaningfully influence business attitudes toward mobile payment adoption. Whether a business serves a few customers or hundreds each month, its openness to digital payment systems remains relatively stable. Although the Kruskal-Wallis test for average monthly customers yielded a moderately high chi-square value ($\chi^2 = 6.63$), the p-value of 0.085 indicates that the result is not statistically significant, leading to a failure to reject the null hypothesis. This means that differences in customer volume do not appear to meaningfully influence business attitudes toward mobile payment adoption. Whether a business serves a few customers or hundreds each month, its openness to digital payment systems remains relatively stable. On the other hand, the mobile payment system awareness variable was tested using Fisher's exact test ($p = <0.001$), which resulted in a rejection of H_0. This indicates that the awareness of the respondents, whether they know mobile payment systems, have heard about them, and are aware of but using them minimally, significantly affects their attitude toward adoption.

4.4. Structural equation model explaining mobile payment adoption among market vendors

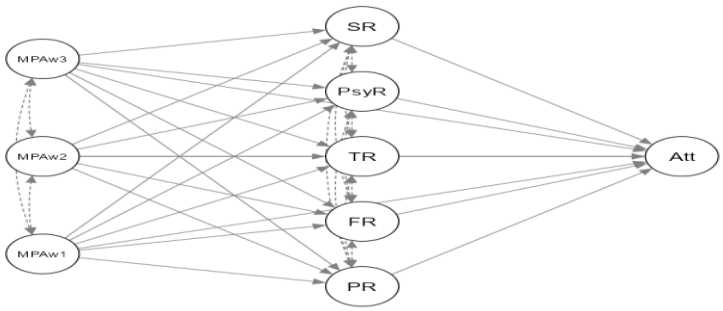


Fig. 2: Structural Equation Model of Mobile Payment Adoption among Market Vendors.

Table 10: Structural Equation Table of Mobile Payment Adoption among Market Vendors

Effect	Estimate	SE	B	z	p	Decision to Ho	Interpretation
Indirect							
Low Awareness ⇒ PR ⇒ Att	0.02461	0.06514	0.01149	0.3777	0.706	Failed to Reject	Not Significant
Low Awareness ⇒ FR ⇒ Att	-0.00148	0.00593	-6.89e−4	-0.2487	0.804	Failed to Reject	Not Significant
Low Awareness ⇒ TR ⇒ Att	-0.01223	0.02603	-0.00571	-0.4698	0.638	Failed to Reject	Not Significant
Low Awareness ⇒ PsyR ⇒ Att	-0.00131	0.03549	-6.10e−4	-0.0368	0.971	Failed to Reject	Not Significant
Low Awareness ⇒ SR ⇒ Att	0.00142	0.01385	6.61E-04	0.1023	0.919	Failed to Reject	Not Significant
Average Awareness ⇒ PR ⇒ Att	0.03254	0.05973	0.01863	0.5448	0.586	Failed to Reject	Not Significant
Average Awareness ⇒ FR ⇒ Att	0.00814	0.01171	0.00466	0.6952	0.487	Failed to Reject	Not Significant
Average Awareness ⇒ TR ⇒ Att	-0.01466	0.02412	-0.0084	-0.6079	0.543	Failed to Reject	Not Significant
Average Awareness ⇒ PsyR ⇒ Att	-0.03973	0.03459	-0.02275	-1.1485	0.251	Failed to Reject	Not Significant
Average Awareness ⇒ SR ⇒ Att	-0.0011	0.01267	-6.30e−4	-0.0868	0.931	Failed to Reject	Not Significant
High Awareness ⇒ PR ⇒ Att	-0.16747	0.06372	-0.10096	-2.6283	0.009	Reject	Significant
High Awareness ⇒ FR ⇒ Att	-2.62e−4	0.00502	-1.58e−4	-0.0521	0.958	Failed to Reject	Not Significant
High Awareness ⇒ TR ⇒ Att	-0.0976	0.04514	-0.05884	-2.1624	0.031	Reject	Significant
High Awareness ⇒ PsyR ⇒ Att	-0.11386	0.04657	-0.06864	-2.4449	0.014	Reject	Significant
High Awareness ⇒ SR ⇒ Att	-0.02671	0.01903	-0.0161	-1.4036	0.16	Failed to Reject	Not Significant
Component							
Low Awareness ⇒ PR	0.07253	0.19168	0.03026	0.3784	0.705	Failed to Reject	Not Significant
PR ⇒ Att	0.33924	0.05342	0.37967	6.3502	<.001	Reject	Significant
Low Awareness ⇒ FR	-0.03111	0.11845	-0.02179	-0.2627	0.793	Failed to Reject	Not Significant
FR ⇒ Att	0.04745	0.06131	0.03163	0.7739	0.439	Failed to Reject	Not Significant
Low Awareness ⇒ TR	-0.08542	0.17858	-0.03772	-0.4783	0.632	Failed to Reject	Not Significant
TR ⇒ Att	0.14319	0.05714	0.15136	2.5059	0.012	Reject	Significant
Low Awareness ⇒ PsyR	-0.00647	0.17562	-0.00297	-0.0368	0.971	Failed to Reject	Not Significant
PsyR ⇒ Att	0.20207	0.06062	0.2057	3.3336	<.001	Reject	Significant
Low Awareness ⇒ SR	0.02105	0.20552	0.00842	0.1024	0.918	Failed to Reject	Not Significant
SR ⇒ Att	0.06728	0.0365	0.0785	1.8433	0.065	Failed to Reject	Not Significant
Average Awareness ⇒ PR	0.09591	0.17542	0.04908	0.5468	0.585	Failed to Reject	Not Significant
Average Awareness ⇒ FR	0.17151	0.1084	0.14733	1.5822	0.114	Failed to Reject	Not Significant
Average Awareness ⇒ TR	-0.1024	0.16343	-0.05547	-0.6266	0.531	Failed to Reject	Not Significant
Average Awareness ⇒ PsyR	-0.19663	0.16072	-0.11061	-1.2234	0.221	Failed to Reject	Not Significant
Average Awareness ⇒ SR	-0.01635	0.18808	-0.00802	-0.0869	0.931	Failed to Reject	Not Significant
High Awareness ⇒ PR	-0.49366	0.17098	-0.26593	-2.8872	0.004	Reject	Significant
High Awareness ⇒ FR	-0.00552	0.10566	-0.00499	-0.0523	0.958	Failed to Reject	Not Significant
High Awareness ⇒ TR	-0.68163	0.15929	-0.38874	-4.279	<.001	Reject	Significant
High Awareness ⇒ PsyR	-0.56345	0.15666	-0.3337	-3.5966	<.001	Reject	Significant
High Awareness ⇒ SR	-0.39697	0.18333	-0.20512	-2.1653	0.03	Reject	Significant
Direct							
Low Awareness ⇒ Att	0.18532	0.10894	0.08651	1.7011	0.089	Failed to Reject	Not Significant
Average Awareness ⇒ Att	0.11987	0.10138	0.06864	1.1823	0.237	Failed to Reject	Not Significant
High Awareness ⇒ Att	-0.08075	0.10069	-0.04868	-0.802	0.423	Failed to Reject	Not Significant
Total							
Low Awareness ⇒ Att	0.19633	0.1676	0.09165	1.1714	0.241	Failed to Reject	Not Significant
Average Awareness ⇒ Att	0.10505	0.15338	0.06015	0.6849	0.493	Failed to Reject	Not Significant
High Awareness ⇒ Att	-0.48665	0.1495	-0.29339	-3.2551	0.001	Reject	Significant

Legend: Significant: p-value < 0.05, reject the hypothesis.

The table illustrates the effects of different awareness levels (low, average, high) on attitudes toward adoption of mobile payment, analyzed across various risk dimensions, including Performance Risk (PR), Time Risk (TR), Financial Risk (FR), Social Risk (SR), and Psychological Risk (PsyR). Component-level effects show significant results for PR ($p < 0.001$), TR ($p = 0.012$), PsyR ($p < 0.001$), high awareness PR ($p = 0.004$), high awareness TR ($p < 0.001$), high awareness PsyR ($p < 0.001$), and high awareness SR ($p = 0.03$), while non-significant component effects were found for FR and SR across all awareness levels, as well as for low-awareness PR ($p = 0.705$), TR ($p = 0.632$), PsyR ($p = 0.971$), SR ($p = 0.918$), and average-awareness FR ($p = 0.114$) and SR ($p = 0.931$). Indirect effects were non-significant for low- and average-awareness components across all risk dimensions, with p-values ranging from 0.114 to 0.971. Direct effects of awareness alone were $p = 0.089$ for low awareness, 0.237 for average awareness, and 0.423 for high awareness. For the overall outcome variable,

only high awareness was significant (p = 0.001), whereas low (p = 0.241) and average awareness (p = 0.493) were not significant. In the discussion on the indirect effects of awareness levels on the attitude toward mobile payment through the five risk dimensions, three paths show statistically significant negative effects. Under high awareness conditions, the perceived risk (PR), time risk (TR), and psychological risk (PsyR) exhibited statistically significant negative effects on attitude. The path from high awareness through perceived risk to attitude had an estimate of -0.16747 and a p-value of 0.009, indicating that individuals who are highly aware tend to perceive lower risks, which in turn results in attitude favorability. Similarly, the time risk pathway showed a negative estimate of -0.0976 with a p-value of 0.031, suggesting the same intention. Lastly, psychological risk had a negative estimate of -0.11386 and a p-value of 0.014. These three (3) significant results show statistically significant negative estimates, indicating that as awareness increases, the risks decrease, leading to a more favorable attitude. In addition, in the discussion on component effects, the analysis shows that higher perceived risks are associated with less favorable attitudes, especially under high awareness situations. High awareness significantly reduces four types of risk: perceived risk (PR), time risk (TR), psychological risk (PsyR), and social risk (SR). The path from high awareness to PR shows a negative estimate of -0.49366 with a p-value of 0.004, indicating that informed individuals perceive less risk. Similarly, high awareness reduces time risk (-0.68163, p < .001), psychological risk (- -0.56345, p < .001), and social risk (-0.39697, p = 0.03), suggesting that awareness lowers concern about time, emotional discomfort (psychological), and social judgment. These reductions in risk perception contribute to more favorable attitudes. On the other hand, the paths from perceived risk variables to attitude show that when risks are high, attitudes become more negative. For example, PR has a coefficient of 0.33924 (p < .001), time risk is 0.14319 (p = 0.012), and psychological risk is 0.22007 (p < .001), all indicating significant effects. These positive estimates reflect that lower risk levels—resulting from high awareness—lead to more positive attitudes, while higher risk levels diminish attitude favorability. The Total analysis shows that high awareness has a statistically significant and positive effect on attitude. The path from high awareness to attitude yields a coefficient of -0.48665, a standard error of 0.1495, a t-value of -3.2551, and a p-value of 0.001, leading to the rejection of the null hypothesis and confirming significance. Although the coefficient is negative, this reflects the coding direction in the table; it indicates that individuals with high awareness tend to form more favorable attitudes. This strongly supports the idea that risk perceptions are inversely related to attitude: the higher the perceived risk, the more negative the attitude. Conversely, high awareness reduces these risks, which in turn enhances attitude. This reinforces the importance of educating and informing users, especially in contexts like mobile payment adoption, so they feel less vulnerable and more confident in their choices.

5. Discussion

In a comparative context, the dominance of long-term entrepreneurs in public markets reflects a global pattern observed in traditional trade ecosystems across Asia, Africa, and Latin America. Like small-scale traders in Thailand and India, Filipino market vendors display resilience derived from accumulated experience and deep social capital (Sharma & Venkatesh, 2019; Nguyen & Simkin, 2020). Their longevity signals operational adaptability, a factor crucial to survival amid competitive modernization. From an international policy perspective, such findings support the argument that innovation in traditional markets must be evolutionary rather than disruptive, integrating digital tools without displacing cultural and relational foundations of trade. Consistent with global observations, the concentration of vendors in essential goods underscores the continuing centrality of public markets in securing local food systems. Studies from Indonesia, Kenya, and Vietnam indicate that fresh-food and staple-product vendors form the backbone of urban food security and informal employment (FAO, 2022; Mungai et al., 2020). This mirrors the Philippine experience, where the sale of affordable essentials sustains both household consumption and community welfare. For policymakers, the implication extends beyond national boundaries: modernizing traditional markets can serve as a strategic mechanism to achieve inclusive economic growth and food sustainability in emerging economies. The income distribution observed among vendors also aligns with international research on micro-enterprise economics. Across developing nations, micro-vendors often maintain modest but stable earnings through loyalty-based customer relationships and informal credit systems (Cruz & Fillis, 2020; Chen et al., 2021). This parallels global microfinance findings suggesting that strengthening vendor competencies—such as pricing, record-keeping, and financial literacy—yields greater long-term resilience. Integrating financial inclusion programs with mobile credit platforms, as practiced in countries like Bangladesh and Kenya, could further empower market vendors and bridge income disparities. From a global marketing perspective, the steady daily customer volume reflects the enduring social embeddedness of traditional markets. Delgado et al. (2021) and Soriano et al. (2020) note that physical markets in Europe and Asia remain competitive precisely because they offer relational value—trust, familiarity, and personalized service—that digital retail cannot fully replicate. This insight positions public markets not as outdated systems, but as hybrid spaces where digital innovation and human connection can coexist. Strategic international examples—such as digital loyalty systems in Singapore's wet markets or mobile advertising in Vietnam—illustrate how simple technological integration can elevate competitiveness without eroding social authenticity. The observed awareness–adoption gap in mobile payments reflects a global phenomenon among micro and small entrepreneurs. Despite growing fintech awareness, actual adoption lags due to perceived security risks, limited technical knowledge, and insufficient consumer demand (World Bank, 2021; Auer et al., 2022) [44]. In regions such as sub-Saharan Africa and South Asia, similar barriers have been overcome through targeted training, peer influence, and vendor–customer trust campaigns. Applying these lessons globally, inclusive digitalization in public markets should emphasize hands-on education, user-friendly platforms, and policy frameworks that ensure accessibility for low-income traders. Overall, these findings situate public market vendors within a broader global discourse on sustainable entrepreneurship, digital inclusion, and cultural preservation. The challenge lies not in replacing traditional systems, but in integrating innovation that respects local dynamics while enabling small vendors to thrive in an increasingly digital global economy. For objective no. 2, the neutral result in the respondents' attitude towards mobile payment is backed up by the study of (Irianto & Chanvarasuth, 2025), where a neutral attitude may likely exist in the adoption of mobile payment due to the benefits of adopting technology that are balanced by certain challenges or risks [14]. An initiative to strengthen the digital strategy may be stopped by infrastructure limitations and digital literacy gaps. In the study, the results suggest that most of the respondents may have been weighing first the benefits and challenges when using mobile payment in their business, most of them are in neutral position that mobile payments may not be safe, some of them are not ashamed to offer mobile payments but at the same time they will still prefer cash since its more convenient for them. For objective no. 3, from a global perspective, performance risk is widely recognized as a major barrier to mobile payment adoption among small-scale entrepreneurs. Studies in China, India, and Southeast Asia (Yang et al., 2021; Alam et al., 2022; Pal et al., 2020) similarly report that concerns about transaction failures, app downtime, and limited technical support discourage full adoption. Vendors' nervousness during busy hours aligns with international observations in micro-retail contexts, where peak-time technical issues can disrupt cash flow and reduce customer trust. Compatibility with existing business systems is also a common concern worldwide, as integrating digital payments into established workflows often requires training and technical support, especially in contexts with lower digital literacy. Globally, best practices suggest that interventions such as user-friendly interfaces, reliable

support services, and hands-on training can mitigate perceived performance risk while preserving the operational strengths of traditional market businesses. Recent global literature supports the financial risk perceptions identified in Table 4, confirming that fraud, liability, and trust issues are more critical to mobile payment adoption than cost-related concerns. Furthermore, Aschi et al. (2022) emphasize that cybercrime in financial services is rapidly growing, and even small improvements in fraud detection can yield substantial savings. Their study highlights the need for advanced fraud detection systems to protect mobile transactions [58]. Moreover, studies of Alvarez et al. (2022) found that users often associate cashless transactions with technological and financial uncertainties, especially in developing economies. These concerns include system reliability and transparency [59]. Lefouili & Madio (2022) discuss platform liability economics, showing that unclear liability frameworks can discourage adoption and increase perceived risk among users and merchants [60]. Also, in the studies of Raju et al. (2025) found that Generation Z users prioritize convenience and security over cost when adopting digital wallets, suggesting that fees are a secondary concern [61]. On top of that, Anderson (2024) investigated hidden fees in digital payments and found that while users are aware of them, they are less likely to deter adoption unless paired with trust issues [62]. In addition, Ong & Chong (2022) showed that delays in fund settlement can affect user satisfaction but are often tolerated if systems are secure and reliable [63]. The results for time risk imply that public market vendors' key concerns are the efficiency and speed of mobile payment transactions during actual market transactions, rather than the learning process. Ramtiyal et al. (2022) also cited that when users think mobile payments take longer than conventional ones, they experience a time loss [6]. Moreover, the lower means for learning related indicators are backed up by the study of Shetu and Islam (2022), who have noted that when users are already familiar with technology and view mobile wallets as manageable, their main challenges shift from learning the system to evaluating how effectively and reliably the system processes transactions [36]. Moreover, the results revealed in psychological risk align with the study of Bland et al. (2024), Aji et al. (2020), and Molina-Castillo et al. (2020), wherein they highlight the negative impact of perceived risk and learning costs on adoption [5], [26], [27]. Further, social risk results indicate that respondents' primary social concerns during transactions are their social status and avoiding conflict, which aligns with Biucky and Harandi (2017) found that the less social group trusts mobile payment apps, the more individuals shun away from using the apps, especially if it results in one losing their social standing in the group [43]. This supports the data indicating that deviation from the cash environment causes discomfort. Whereas known social risks like lack of family support and fear of lowered status are relevant according to Nguyen et al. (2020), they were not of great concern for these respondents [35]. Their main social concern was more closely related to public, market transactions, and potential social conflict. For objective no. 4, the results indicate that all perceived risk dimensions have significant correlations with attitudes toward mobile payment adoption. These findings align with Kamboj et al. (2024), who define performance risk as factors that may impact the perceived effectiveness of mobile payment services [40]. Such risks can undermine user confidence and willingness to adopt these solutions, as individuals may hesitate to rely on systems they consider potentially unreliable or inefficient [38]. Performance risk may be particularly discouraging for older adults, as it can lower their willingness to learn new technologies and reduce their trust in digital payment systems. In addition, the relationships observed between attitude and both financial and time risks are consistent with Widyanto et al. (2022), who identified financial risk as consumers' concerns about potential monetary losses when using mobile payment services [41]. Similarly, Kamboj et al. (2024) highlighted time risk as one of the key factors influencing consumer behavior, reflecting users' apprehensions about the time required to complete transactions on mobile payment platforms [40]. A similar pattern was observed in the study of Widyanto et al. (2022), financial risk involves potential losses from fraud or transaction errors, which can undermine user trust and reduce the likelihood of adoption [41]. Meanwhile, Nguyen et al. (2020) highlighted that social risk pertains to concerns about damage to social reputation or reduced personal interaction when using digital payment services [34]. Despite their relatively lower correlations with attitude, both financial and social risks influence consumer perceptions and behavior. Mitigating these risks through enhanced financial security, robust fraud prevention, and user education can help build trust and encourage broader adoption of mobile payment technologies. Both financial and time risks have a significant impact on user attitudes, as worries about possible monetary loss or time inefficiency can negatively shape perceptions and reduce adoption intentions. Finally, although financial and social risks exhibit the weakest impacts on the vendors' attitude in adopting mobile payments, they nonetheless play an important role. According to Widyanto et al. (2022), financial risk involves potential losses from fraud or transaction errors, which can undermine user trust and reduce the likelihood of adoption [41]. Meanwhile, Nguyen et al. (2020) highlighted that social risk pertains to concerns about damage to social reputation or reduced personal interaction when using digital payment services [34]. Despite their relatively lower correlations with attitude, both financial and social risks influence consumer perceptions and behavior. Mitigating these risks through enhanced financial security, robust fraud prevention, and user education can help build trust and encourage broader adoption of mobile payment technologies. For objective no. 5, the findings are relatively new, as only limited studies have examined the influence of years of operation and type of goods sold on digital payment adoption. However, the study aligns with Otieno (2021), who concluded that Kenyan SMEs' tendency to use mobile payments remained stable regardless of business age or sector [37]. Therefore, the current result provides additional empirical evidence, which is supported by Alhassan and Butler (2023), who found that larger or higher-revenue SMEs in Oman were more likely to adopt mobile payments [38]. Moreover, the differences in customer volume that do not meaningfully influence business attitudes are in alignment with Pal et al. (2020), who found that in Thailand, business size and transaction volume had limited influence on mobile payment adoption compared to factors like trust and perceived usefulness [17]. Knowledgeable respondents, who had heard of mobile payments or were minimally using them, showed more favorable attitudes. This supports the findings of Alalwan et al. (2017), who emphasized that awareness and perceived ease of use were among the strongest predictors of mobile payment adoption in Jordan [56]. Similarly, Khan et al. (2021) reported that in South Asia, awareness—often driven by social media and peer influence—played a critical role in shaping small business owners' willingness to adopt mobile payments [58]. Awareness plays a critical role in shaping perceptions, and targeted information campaigns can be a powerful tool in increasing adoption rates. For the SEM Indirect Table, prior research has consistently shown that individuals' awareness level positively influences their evaluations of technology adoption. Nguyen (2020) emphasized that as perceived risks decrease, customers tend to form more positive attitudes toward a system, indicating that reducing uncertainties and potential threats can strengthen user confidence and promote greater adoption of the technology [49]. Moreover, if a customer who is new to mobile payments believes that setting up and learning to use a new application will consume too much time, this is referred to as perceived time risk (Featherman & Hajli, 2015) [50]. The transaction duration in mobile payments depends on factors such as network speed and the processing capacity of both the terminal and network systems, which can heighten perceptions of time-related risk (Yang et al., 2016) [53]. Additionally, time risk may involve the extra time required to resolve issues such as incorrect transactions or payment errors after a transaction has been made (Featherman & Hajli, 2015) [50]. Such concerns over time efficiency can negatively influence a user's attitude toward adopting mobile payment systems, potentially reducing their willingness to use the technology. In summary, improving user awareness while reducing perceived risks plays a vital role in fostering positive attitudes and driving the adoption of mobile payment systems. Furthermore, awareness has been shown to lessen psychological and social risks by fostering greater familiarity with and trust in the use of technology. In the study of Khatimah & Halim (2016), Cabanillas, Leiva, et al. (2020), Widiyati & Hasanah (2025), and Mentari et al. (2019), it was highlighted in the results that there is a strong impact of attitude on the intention to use such systems [45]. Individuals who

hold a positive attitude toward mobile payments are more likely to intend to use them. This suggests that fostering a favorable approach through increased awareness and reduced perceived risks can play a crucial role in encouraging users to adopt and continuously use mobile payments. In the study of Bland et. al (2024), it was found that performance risk, which refers to concerns about the efficiency, reliability, and effectiveness of mobile payment systems, was found to have a significant negative relationship with adoption attitudes [5]. Conversely, Piarna et al. (2020) and Elasaria (2024) suggested that performance risk could positively influence intentions when mediated by perceived risk. These studies indicate that higher perceived performance risks tend to reduce favorable attitudes toward mobile payment adoption, highlighting the importance of ensuring reliable and effective systems to encourage user acceptance. Despite variations in individual perceptions, researchers generally agree that time risk negatively affects attitudes toward mobile payment adoption. In contexts such as South Africa, network failures caused by load shedding can lead to delays in completing transactions, increasing users' concerns about the efficiency and reliability of mobile payment systems (Humbani, 2021) [55]. These delays not only create frustration but can also reduce confidence in technology, ultimately discouraging continued use. Therefore, minimizing time-related risks is crucial for enhancing user satisfaction and fostering positive attitudes toward the adoption of mobile payment. On the other hand, Abdul-Hamid et al. (2019) and Yang et al. (2016) and Ariffin et al. (2018) it reveals the consumer attitudes towards mobile payments are negatively influenced by perceived risks, including psychological, time, and social dimensions, as higher risk or past purchase regrets reduce favorability of the customers [51], [52], [53]. Furthermore, Yang et. al (2016) highlighted that social risk, such as fear of negative judgment from others, can discourage users from adopting mobile payments, highlighting the importance of addressing societal perceptions to improve adoption rates [53]. This reveals that perceived risks, whether performance, time, or psychological, negatively influence consumer attitudes toward adoption of mobile payment, emphasizing the need to reduce these risks to foster user confidence and acceptance. Research continuously indicates that increased knowledge of mobile payment systems reduces perceived risks and improves user attitudes toward adoption on a global scale. For instance, Aji, Berakon, and Md. Husin (2020) identified that users' perceptions of performance, time, and psychological hazards were considerably lower in Indonesia and Malaysia when they were aware of and familiar with e-wallets, which strengthened their motivation to use such systems [26]. In a comparable study, Molina-Castillo, López-Nicolás, and de Reuver (2020) concluded that higher user knowledge and learning reduced social and performance risks related to mobile payment usage, resulting in more positive adoption attitudes [27]. Furthermore, in the Philippines context, Lacap (2022) cited that higher awareness of mobile payment among local small retailers directly decreases perceived risk and increases towards adaptation [7]. This demonstrates the way market vendors can feel more secure and confident when utilizing mobile payment technologies by way of educational efforts and digital literacy campaigns.

6. Conclusion

1) Most public market vendors are experienced, having operated for over 10 years, and primarily sell essential goods like dry goods, fruits, vegetables, and meat and fish. Many earn stable monthly incomes above ₱15,000 and serve 100–149 customers daily. While awareness of mobile payment systems is relatively high, actual usage remains limited, highlighting a gap between recognition and adoption.
2) Respondents generally hold a neutral attitude toward mobile payment adoption. Cash remains preferred for reliability, and concerns about transaction errors reduce confidence. However, vendors do not feel embarrassed about offering mobile payments, reflecting selective positive attitudes toward adoption.
3) Vendors perceive high levels of performance, financial, time, and psychological risks, while social risk is moderate. Key concerns include system reliability during peak hours, potential financial loss from fraud or failed transactions, transaction delays, and emotional stress associated with unfamiliar technology. These risks collectively contribute to hesitation in adopting mobile payments.
4) All perceived risk factors, such as performance, financial, time, psychological, and social, are significantly positively correlated with attitudes toward mobile payment adoption. Performance and psychological risks show the strongest relationships, indicating that perceived inefficiency and fear of loss are major determinants of vendors' reluctance.
5) Years in operation, type of goods sold, and customer volume do not significantly influence attitudes toward mobile payments. In contrast, average monthly sales and mobile payment system awareness significantly affect attitudes, with higher awareness leading to more favorable perceptions. This emphasizes the role of information and exposure in promoting adoption.
6) The findings suggest that perceived risks act as mediators in shaping vendors' attitudes toward mobile payments. Reducing these risks can improve adoption rates, while demographic and business characteristics moderate responses to awareness and usage interventions.
7) Vendors would benefit from programs that enhance system reliability, provide clear fraud protection, streamline transaction speed, offer financial safeguards, and conduct targeted awareness campaigns to build confidence and trust in mobile payment systems.

7. Recommendations

Based on the findings of this study, the following recommendations are proposed to address the factors influencing the adoption of mobile payment systems among public market vendors. These recommendations aim to enhance confidence, accessibility, and trust in mobile payment usage while promoting collaboration among relevant stakeholders.

1) LGUs should organize regular training workshops in public markets, establish help desks for real-time troubleshooting, and partner with cooperatives to provide peer-led mentoring. These initiatives will help vendors overcome perceived risks and build trust in mobile payment systems.
2) LGUs must allocate funds for free public Wi-Fi zones in market areas and collaborate with telecom providers to ensure stable broadband coverage during peak hours. Fintech providers should optimize apps for low-bandwidth environments and affordable devices to reduce connectivity barriers.
3) Fintech providers must implement real-time fraud alerts, two-factor authentication, and clear settlement timelines. LGUs should require providers to disclose transparent fee structures and establish local dispute resolution offices where vendors can report fraudulent or failed transactions.
4) LGUs can offer tax breaks, reduced stall rental fees, or permit discounts for vendors adopting mobile payments. Fintech providers should introduce loyalty programs, discounts, and tiered transaction fee models to motivate participation among small-scale merchants.
5) Stronger partnerships between cooperatives, financial institutions, and fintech providers should be scaled globally. Joint initiatives such as vendor feedback platforms, training programs, and reduced fees will encourage adoption and ensure systems remain responsive to vendor needs.

6) International stakeholders, LGUs, and fintech providers must design campaigns that reflect local values, languages, and business practices. Storytelling, gamified learning, and community role models can normalize mobile payment usage and reduce perceived risks.
7) Governments should establish clear legal frameworks that protect vendors and consumers from fraud, disputes, and unfair charges. Accessible dispute resolution channels must be provided to boost confidence in mobile payments.
8) Researchers should include active users in future studies to compare adopters and non-adopters across regions. Studies must examine how trust, digital literacy, app design, customer support, and transaction reliability influence adoption attitudes.
9) For regions with high tourism or cross-border trade, mobile payments should be interoperable across platforms and countries. Standardization and cross-network compatibility will simplify transactions and broaden the utility of digital payments for small-scale vendors.

References

[1] Meyta Dewi, G. M., Joshua, L., Ikhsan, R. B., Yuniarty, Y., Sari, R. K., & Susilo, A. (2021, August 1). *Perceived Risk and Trust in Adoption of E-Wallet: The Role of Perceived Usefulness and Ease of Use*. IEEE Xplore. https://doi.org/10.1109/ICIMTech53080.2021.9535033.

[2] Oktrivina, A., Nelyumna, N., & Salwa, A. K. (2023). Determinants of interest in using e-wallets during the COVID-19 pandemic. *Indonesian Journal of Business, Accounting and Management*, *6*(2), 99–110. https://doi.org/10.36406/ijbam.v6i02.1429.154.

[3] Talwar, S., Dhir, A., Kaur, P., & Mäntymäki, M. (2020). Barriers toward purchasing from online travel agencies. *International Journal of Hospitality Management*, *89*(102593). Sciencedirect. https://doi.org/10.1016/j.ijhm.2020.102593.

[4] Belanche, D., Guinalíu, M., & Albás, P. (2022). Customer adoption of p2p mobile payment systems: The role of perceived risk. *Telematics and Informatics*, *72*(ISSN 0736-5853), 101851. https://doi.org/10.1016/j.tele.2022.101851

[5] Bland, E., Changchit, C., Changchit, C., Cutshall, R., & Pham, L. (2024). Investigating the Components of Perceived Risk Factors Affecting Mobile Payment Adoption. *Journal of Risk and Financial Management*, *17*(6), 216. https://doi.org/10.3390/jrfm17060216.

[6] Ramtiyal, B., Verma, D., & Rathore, A. S. (2022). Role of risk perception and situational factors in mobile payment adoption among small vendors in unorganised retail. *Electronic Commerce Research*, *24*(2693–2731 (2024)). https://doi.org/10.1007/s10660-022-09657-2.

[7] Lacap, J. P. G. (2022). Exploring mobile Wallet Adoption in the Philippines: A Partial Least Squares Path Modelling Approach. *Proceedings of the International Halal Science and Technology Conference*, *15*(1), 14–23. https://doi.org/10.31098/ihsatec.v15i1.590.

[8] Mesina-Romero, B. R., Masangkay, M. C., Franco, M., De Larrazabal, M. L., Bueno, P. N., Lingat, P. J., Mores, E. M., Lapus, A. R., Manuel, R. M., & Yñigo, K. T. (2023). Traversing new heights: The future is digital. In *Bangko Sentral Ng Pilipinas*. https://www.bsp.gov.ph/PaymentAndSettlement/2023_Report_on_E-payments_Measurement.pdf.

[9] Banko Sentral ng Pilipinas. (2020). BSP digital payments transformation roadmap 2020-2023 . In *Bangko Sentral Ng Pilipinas*. Bangko Sentral ng Pilipinas. https://www.bsp.gov.ph/Media_And_Research/Primers%20Faqs/Digital%20Payments%20Transformation%20Roadmap%20Report.pdf.

[10] Hernandez, A. A., Juanatas, R. A., Escolano, V. J. C., & Elvambuena, Ma. D. E. (2022, May 1). *Mobile Payments Adoption in Small and Medium Retail Enterprises: An Exploratory Study in Manila, Philippines*. IEEE Xplore. https://doi.org/10.1109/ICBIR54589.2022.9786389.

[11] Pleno, A. B. (2024). E-Payment System Readiness of Micro Business Owners. *Journal of Social Entrepreneurship Theory and Practice*, *3*(2), 59–73. https://doi.org/10.31098/jsetp.v3i2.2800.

[12] Grace, M. (2024). *The Economics of Digital Payment Adoption of Public Market Vendors in Los Baños, Laguna, 2024*. University Knowledge Digital Repository. https://www.ukdr.uplb.edu.ph/etd-undergrad/11493/.

[13] Gillenwater, T. (2017, February 14). Evolution of the Smartphone | 2017-02-15 | Microwave Journal. Www.microwavejournal.com. https://www.microwavejournal.com/articles/27780-evolution-of-the-smartphone

[14] Irianto, A. B. P., & Chanvarasuth, P. (2025). Drivers and Barriers of Mobile Payment Adoption Among MSMEs: Insights from Indonesia. *Journal of Risk and Financial Management*, *18*(5), 251. https://doi.org/10.3390/jrfm18050251.

[15] Friedman, H. S. (2016). Encyclopedia of mental health. Academic Press. https://www.scien cedirect.com/referencework/9780123977533/encyclopedia-of-mental-health?prefix=d.

[16] Agur, I., Martinez Peria, S., & Rochon, C. (2020, July 20). *Digital Financial Services and the Pandemic Opportunities and Risks for Emerging and Developing Economies*. International Monetary Fund (IMF) Research. https://www.scirp.org/reference/referencespapers?referenceid=3211092.

[17] Pal, A., De', R., & Herath, T. (2020). The Role of Mobile Payment Technology in Sustainable and Human-Centric Development: Evidence from the Post-Demonetization Period in India. *Information Systems Frontiers*, *22*(3), 607–631. https://doi.org/10.1007/s10796-020-09982-7

[18] zumski, O. (2022). Comparative analyses of digital payment methods from the pre and post COVID-19 perspective. *Procedia Computer Science*, *207*, 4660–4669. https://doi.org/10.1016/j.procs.2022.09.530.

[19] Chen, C.-L., & Lai, W.-H. (2022). Exploring the impact of perceived risk on user's mobile payment adoption. *Semantic Scholar*. https://api.semanticscholar.org/CorpusID:260889877.

[20] Mogaji, E., & Nguyen, N. P. (2022). The dark side of mobile money: Perspectives from an emerging economy. *Technological Forecasting and Social Change*, *185*, 122045. https://doi.org/10.1016/j.techfore.2022.122045.

[21] Valencia, S., Bautista, R., & Jeong, L. (2021). *Know Your Customers: How Generations X and Y Perceive Mobile Payment*. https://www.dlsu.edu.ph/wp-content/uploads/2021/08/DLSUBER.2021.July_.2valencia-0728.pdf.

[22] Malabay, J. K., Manalo, N. B., Sedano, L., Talagtag, R., Panaligan, L. J., Grantoza, S., De Villa, M. J. M., Torres, M. G., Sayas, A. M., Polistico, A. L., & Crisolo, A. H. (2025). The Influence of Attitude, Subjective Norms, and Perceived Behavioral Control on The Actual Usage of Gcash Payments. *International Journal of Accounting and Economics Studies*, *12*(2), 261–269. https://doi.org/10.14419/djt7p047.

[23] Talagtag, R. S., Manalo, N. B. A., Malabay, J. K. D., Sedano, L. M., Panaligan, L. J. H., & Grantoza, S. A. (2025). Influence of Accounting Information System (Ais), Management Support (Ms) And Record Keeping Performance (Rkp) On Organizational Performance of Ibabao Multi-Purpose Cooperative. *International Journal of Accounting and Economics Studies*, *12*(2), 242–251. https://doi.org/10.14419/njsaky44.

[24] Manalo, A. (2025). Money attitude and financial wellness of women professionals. *International Journal of Basic and Applied Sciences*, *14*(1), 203–207. https://doi.org/10.14419/835ea432

[25] Alingalan, D. S., & Boy, N. (2025). Double-edge sword analysis on the effects of financial attitude and financial behavior among Philippine air force military personnel. *International Journal of Basic and Applied Sciences*, *14*(1), 148–155. https://doi.org/10.14419/w966ve23.

[26] Aji, H. M., Berakon, I., & Md Husin, M. (2020). COVID-19 and e-wallet usage intention: A multigroup analysis between Indonesia and Malaysia. *Cogent Business & Management*, *7*(1). https://doi.org/10.1080/23311975.2020.1804181.

[27] Molina-Castillo, F.-J., Lopez-Nicolas, C., & de Reuver, M. (2020). Mobile Payment: The Hiding Impact of Learning Costs on User Intentions. *Journal of Theoretical and Applied Electronic Commerce Research*, *15*(1). https://doi.org/10.4067/S0718-18762020000100102.

[28] Gian, D. (2025). Factors Affecting Mobile Money Adoption and the Moderating Effect of Trust: Basis Towards the Creation of a Model in the Philippines' Fintech Industry. *Journal of Information Systems Engineering & Management*, *10*(27s), 516–527. https://doi.org/10.52783/jisem.v10i27s.4440

[29] de Luna, I. R., Liébana-Cabanillas, F., Sánchez-Fernández, J., & Muñoz-Leiva, F. (2019). Mobile payment is not all the same: The adoption of mobile payment systems depending on the technology applied. *Technological Forecasting and Social Change*, *146*, 931–944. https://doi.org/10.1016/j.techfore.2018.09.018.

[30] Chakiso, C. B. (2019). Factors affecting Attitudes towards Adoption of Mobile Banking: Users and Non-Users Perspectives. *EMAJ: Emerging Markets Journal*, *9*(1), 54–62. https://doi.org/10.5195/emaj.2019.167.

[31] van Winsen, F., de Mey, Y., Lauwers, L., Van Passel, S., Vancauteren, M., & Wauters, E. (2014). Determinants of risk behaviour: effects of perceived risks and risk attitude on farmer's adoption of risk management strategies. *Journal of Risk Research*, *19*(1), 56–78. https://doi.org/10.1080/13669877.2014.940597

[32] Yang, C.-C., Yang, S.-Y., & Chang, Y.-C. (2023). Predicting Older Adults' Mobile Payment Adoption: An Extended TAM Model. *International Journal of Environmental Research and Public Health*, *20*(2), 1391. https://doi.org/10.3390/ijerph20021391.

[33] George, D., & Mallery, P. (2019). *IBM SPSS Statistics 26 Step by Step*. Routledge. https://doi.org/10.4324/9780429056765.

[34] Nguyen, L.-T., Dwivedi, Y. K., Tan, G. W.-H., Aw, E. C.-X., Lo, P.-S., & Ooi, K.-B. (2022). Unlocking Pathways to Mobile Payment Satisfaction and Commitment. Journal of Computer Information Systems, 1–18. https://doi.org/10.1080/08874417.2022.2119444.

[35] Nguyen, H., Pham, L., Williamson, S., & Hung, N. D. (2020). Individual investors' satisfaction and loyalty in online securities trading using the technology acceptance model. *International Journal of Management and Decision Making*, *19*(2), 239. https://doi.org/10.1504/IJMDM.2020.108233.

[36] Shetu, S. N., Islam, Md. M., & Promi, S. I. (2022). An Empirical Investigation of the Continued Usage Intention of Digital Wallets: The Moderating Role of Perceived Technological Innovativeness. *Future Business Journal*, *8*(1). https://doi.org/10.1186/s43093-022-00158-0.

[37] Otieno, E. O. (2015). Adoption of mobile payments in Kenyan businesses: A case study of small and medium enterprises (SME) in Kenya. *Uonbi.ac.ke*.

[38] Al Ghunaimi, H., Almaqtari, F. A., Wesonga, R., & Elmashtawy, A. (2025). The Rise of FinTech and the Journey Toward a Cashless Society: Investigating the Use of Mobile Payments by SMEs in Oman in the Context of Vision 2040. *Administrative Sciences*, *15*(5), 178. https://doi.org/10.3390/admsci15050178

[39] Team FME. (2013). Strategy Skills PESTLE Analysis. https://dl.icdst.org/pdfs/files3/30970b3e91cb4ab7175dd807e39c5134.pdf.

[40] Kamboj, S., Matharu, M., & Shukla, Y. (2024). Examining the effect of perceived risk, self-efficacy and individual differences on consumer intention to use contactless mobile payment services. *Journal of Science and Technology Policy Management*. https://doi.org/10.1108/JSTPM-05-2023-0073.

[41] Widyanto, H. A., Kusumawardani, K. A., & Yohanes, H. (2021). Safety first: extending UTAUT to better predict mobile payment adoption by incorporating perceived security, perceived risk and trust. *Journal of Science and Technology Policy Management*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/JSTPM-03-2020-0058.

[42] McLeod, S. (2023, July 31). *Likert Scale Questionnaire: Examples & Analysis*. Simply Psychology. https://www.simplypsychology.org/likert-scale.html.

[43] Biucky, S. T., Abdolvand, N., & Harandi, S. R. (2017, December 31). The effects of perceived risk on social commerce adoption based on the tam model. ResearchGate. https://www.researchgate.net/publication/325689491_The_effects_of_perceived_risk_on_social_commerce_adoption_based_on_the_tam_model.

[44] Feyen, E., Natarajan, H., Saal, M., Pesme, J., Uttamchandani, M., Caputo Silva, A., de Bolle, P., Holtmann, M., & Garcia Mora, A. (2022a). Finance, Competitiveness, and Innovation Global Practice Fintech and the Digital Transformation of Financial Services: Implications for Market Structure and Public Policy. https://documents1.worldbank.org/curated/en/099735304212236910/pdf/P17300608cded602c0a6190f4b8caaa97a1.pdf.

[45] Husnil Khatimah, & Halim, F. (2016). *The effect of attitude and its decomposed, perceived behavioral control and its decomposed and awareness on intention to use e-money mobile in Indonesia*. Semantic Scholar. https://www.semanticscholar.org/paper/The-effect-of-attitude-and-its-decomposed%2C-control-Khatimah-Halim/dce5e52fb4b97ac5b7e4dca4f94c0137243b508e.

[46] Liébana-Cabanillas, F., Japutra, A., Molinillo, S., Singh, N., & Sinha, N. (2020). Assessment of mobile technology use in the emerging market: Analyzing intention to use m-payment services in India. *Telecommunications Policy*, *44*(9), 102009. https://doi.org/10.1016/j.telpol.2020.102009.

[47] Widiyati, D., & Hasanah, N. (2025). FACTORS AFFECTING THE USE OF E-MONEY (STUDY ON E-MONEY USER IN CITY OF SOUTH TANGERANG). Unsrat.ac.id. https://ejournal.unsrat.ac.id/index.php/accountability/article/view/28881.

[48] Mentari, N. W., Setiawina, I. N. D., Budhi, I. M. K. S., & Sudirman, I. W. (2019). Influence factor of consumers interest on using E-money. *International Journal of Social Sciences and Humanities*, *3*(2), 176–186. https://doi.org/10.29332/ijssh.v3n2.311.

[49] de Kerviler, G., Demoulin, N. T. M., & Zidda, P. (2016). Adoption of in-store mobile payment: Are perceived risk and convenience the only drivers? *Journal of Retailing and Consumer Services*, *31*(Volume 31), 334–344. https://doi.org/10.1016/j.jretconser.2016.04.011.

[50] Nguyen, O. T. (2020). Factors Affecting the Intention to Use Digital Banking in Vietnam. *The Journal of Asian Finance, Economics and Business*, *7*(3), 303–310. https://doi.org/10.13106/jafeb.2020.vol7.no3.303.

[51] Featherman, M. S., & Hajli, N. (2015). Self-Service Technologies and e-Services Risks in Social Commerce Era. *Journal of Business Ethics*, *139*(2), 251–269. https://doi.org/10.1007/s10551-015-2614-4.

[52] Abdul-Hamid, I. K., Shaikh, A. A., Boateng, H., & Hinson, R. E. (2019). Customers' Perceived Risk and Trust in Using Mobile Money Services—an Empirical Study of Ghana. *International Journal of E-Business Research*, *15*(1), 1–19. https://doi.org/10.4018/IJEBR.2019010101

[53] Yang, J., Sarathy, R., & Lee, J. (2016). The effect of product review balance and volume on online Shoppers' risk perception and purchase intention. *Decision Support Systems*, *89*, 66–76. https://doi.org/10.1016/j.dss.2016.06.009.

[54] Ariffin, S. K., Mohan, T., & Goh, Y.-N. (2018). Influence of consumers' perceived risk on consumers' online purchase intention. Journal of Research in Interactive Marketing, 12(3), 309–327. https://www.emerald.com/jrim/article-abstract/12/3/309/255174/Influence-of-consumers-perceived-risk-on-consumers?redirectedFrom=fulltext. https://doi.org/10.1108/JRIM-11-2017-0100.

[55] Humbani, M. (2021). UNDERSTANDING PERCEIVED RISKS IN PROXIMITY MOBILE PAYMENT ADOPTION IN SOUTH AFRICA AND THE MEDIATING EFFECT OF PERCEIVED VALUE. *International Review of Management and Marketing*, *11*(6), 10–20. https://doi.org/10.32479/irmm.11814.

[56] Sultana, N., Alam, S. M. S., & Bokhari, R. P. (2025). Exploring cashless technology continuance among SME entrepreneurs: an integrated approach with sustainability mediation and demographic moderation. *Journal of Innovation and Entrepreneurship*, *14*(1). https://doi.org/10.1186/s13731-025-00522-8.

[57] Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management*, *37*(3), 99–110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002.

[58] Abdullah, & Naved Khan, M. (2021). Determining mobile payment adoption: A systematic literature search and bibliometric analysis. *Cogent Business & Management*, *8*(1), 1893245. https://doi.org/10.1080/23311975.2021.1893245.

[59] Aschi, M., Bonura, S., Masi, N., Messina, D., & Profeta, D. (2022). Springer Nature . In D. Kyriazis (Ed.), *Cybersecurity and Fraud Detection in Financial Transactions* (pp. 269–278). Springer International Publishing. https://doi.org/10.1007/978-3-030-94590-9_15.

[60] Lefouili, Y., & Madio, L. (2022). The economics of platform liability. *European Journal of Law and Economics*, *53*(3), 319–351. https://doi.org/10.1007/s10657-022-09728-7.

[61] Raju, C. S., S. Nimisha, & Arathi, A. N. (2025). Factors Influencing Generation Z's Adoption of Digital Wallets as a Payment Method. *Lecture Notes in Networks and Systems*, *1653*, 269–277. Springer, Cham. https://doi.org/10.1007/978-3-032-06694-7_25.

[62] Anderson, L., & Mahadevan, I. (2023, November 14). *IDENTIFYING AND PREVENTING FINANCIAL TRANSACTION PITFALLS: UNVEILING HIDDEN COSTS*. Research Gate. https://www.researchgate.net/publication/386550354_IDENTIFYING_AND_PREVENTING_FINANCIAL_TRANSACTION_PITFALLS_UNVEILING_HIDDEN_COSTS.

[63] Ong, H.-B., & Chong, L.-L. (2022). The effect of cashless payments on the internet and mobile banking. *Journal of Financial Services Marketing*, *28*(1). https://doi.org/10.1057/s41264-022-00145-0.

[64] Mohammed Amin Almaiah, Shaha Al-Otaibi, Shishakly, R., Hassan, L., Lutfi, A., Mahmaod Alrawad, Qatawneh, M., & Orieb Abu Alghanam. (2023). Investigating the Role of Perceived Risk, Perceived Security and Perceived Trust on Smart m-Banking Application Using SEM. *Investigating the Role of Perceived Risk, Perceived Security and Perceived Trust on Smart M-Banking Application Using SEM*, *15*(13), 9908–9908. https://doi.org/10.3390/su15139908.