

User Experience (UX) Components of Mobile Wallets Influencing the Post-adoption Behavior of Millennials in the National Capital Region (NCR) of the Philippines

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Date received: April 23, 2024

Date revised: May 2, 2024

Date accepted: May 4, 2024

Originality: 93%

Grammarly Score: 99%

Similarity: 7%

Recommended citation:

Alejandrino, A., Baldivas, A., Etrata, A., Hipolito, N.G., Mercado, C.A. (2024). User Experience (UX) components of mobile wallets Influencing the post-adoption behavior of millennials in the National Capital Region (NCR) of the Philippines. *Journal of Interdisciplinary Perspectives*, Vol. 2, Number 6, pp. 181-187.
<https://doi.org/10.69569/jip.2024.0095>

Abstract. The rapid growth and development of the Internet have changed how people use technology and commerce. Although mobile wallets have become increasingly popular, there is still a lack of research regarding the future viability of the market's adoption of mobile wallets in light of potential risks and emerging alternative concepts. With this, this research investigated how millennials' post-adoption behavior is influenced by the user experience (UX) components in mobile wallet applications, focusing on Filipino millennials. This quantitative study used a descriptive correlational research design to survey 200 regional-based millennials from a population of 1,383,672 mobile wallet users. This study addressed this gap by identifying six vital UX components: aesthetic appeal, security and reliability, ease of use, convenience, information accuracy, and speed and efficiency. Data collection involved an online questionnaire on digital platforms, ensuring data reliability through rigorous testing. Advanced statistical tools, including regression analysis and Partial Least Squares Structural Equation Modeling (PLS-SEM), were utilized for analysis. Despite recognizing the positive contribution of the other components in influencing post-adoption, results have shown that only two, security and reliability and ease of use, of the six identified UX components significantly influence Millennial users' post-adoption behavior towards mobile wallet applications. This result may align with the subject's primary purpose, usage, and motivation, as well as the direct influence of the components on trust, daily utility, risk reduction, competitiveness, regulatory adherence, and user preference adaptation.

Keywords: Mobile wallet; Millennials; User Experience; Post-adoption behavior.

1.0 Introduction

The growth of e-commerce and cashless payments necessitated businesses to adapt to market changes by enhancing their business and marketing strategies through offering mobile wallet solutions (Al-Alawi et al., 2021; Walker, 2019). Millennials, identified as the most significant consumer group (Mcgrath & Rodgers, 2023), had significantly adopted mobile payment solutions (Mun et al., 2017). Mobile wallet adoption had been thoroughly studied in various fields; however, millennials' user experience and post-adoption of mobile wallets were understudied (Gupta et al., 2020). Therefore, this study gathered significant information on the UX components of local mobile wallets that greatly influenced the selected target audience's post-adoption of mobile wallet applications.

Millennials, as the "Digital Generation," had been increasing their use and number of transactions with mobile wallet applications (Parveen & Vanaja, 2019; Jain et al., 2021). This made User Experience (UX) in mobile

applications vital in assessing user behavior and satisfaction (Deng et al., 2010; Lee et al., 2015), thus making it a competitive advantage for businesses. Mobile wallets were comprised of various UX components, and prior research highlighted the importance of aesthetics, security, ease of use, convenience, information accuracy, and speed & efficiency in influencing the UX in mobile wallets (Abbasi et al., 2022; Mukhtisar et al., 2021; Aydin & Burnaz, 2016; Mew and Milan, 2021; Roozbahani et al., 2015).

This study endeavored to determine the influence of the identified UX components on millennials' post-adoption behavior. It sought to contribute to the body of knowledge surrounding mobile wallets, UX, and post-adoption behavior of millennials. The findings held significant implications for various industries, informing the optimization of mobile wallet offerings and user experiences.

2.0 Methodology

2.1 Research Design

This study used a quantitative descriptive-correlational design to examine the connection between six user experience (UX) components (independent variables) and millennial mobile wallet users' post-adoption behavior (dependent variable). This non-experimental design, as described by Salkind (2010), measures and explains relationships without manipulating variables. The quantitative approach allows for objective statistical analysis to identify potential correlations and patterns between the UX components and post-adoption behavior.

2.2 Research Locale

The study focused on millennials (born 1981-1996) living in the National Capital Region (NCR) who actively use mobile wallets. Millennials' preference for technology makes them a relevant demographic for understanding user experience (UX) in mobile wallets. Their perspective is valuable in determining the key UX component that influences continued usage and expansion of mobile wallets.

2.3 Research Participants

The study was conducted online using an online survey instrument to reach a broader audience and ensure accessibility for both researchers and participants. Purposive sampling, a non-probability technique, was used to select participants based on the study's criteria. This included Filipino millennials who currently have a verified mobile wallet account. Considering that a significant portion of Filipino millennials use mobile payments (Nielsen, 2016), the target population was estimated at 1,383,672 users of top local mobile wallet applications (PSA, 2020). Using a sample size calculator, the minimum sample size was determined to be 187 respondents. However, to ensure higher accuracy, the researchers collected data from 200 participants.

2.4 Research Instrument

The study used a closed-ended, structured online survey instrument developed based on a literature review. The survey included multi-scale items measured on a 4-point Likert scale and captured demographic data, user experience (UX) component satisfaction, customer satisfaction (CSAT), Net Promoter Score (NPS), and behavioral patterns. To ensure validity and reliability, evaluators assessed the constructs and a pilot test was conducted before distribution. Screener questions ensured participant eligibility for the target population of millennial mobile wallet users in the NCR.

2.5 Data Gathering Procedure

First, a survey was developed to target millennials in the NCR who actively use mobile wallets. The survey screened participants to ensure eligibility. Second, the survey collected relevant respondent information and data on their current mobile wallet usage behavior. Third, it used a 4-point Likert scale to evaluate UX factors influencing their post-adoption behavior. Finally, user satisfaction was measured using CSAT and NPS for additional information on millennials' post-adoption behavior.

2.6 Ethical Considerations

The study ensured ethical conduct by adhering to confidentiality and anonymity standards, addressing participant concerns, and obtaining informed consent through a non-disclosure agreement compliant with the Data Privacy Act (R.A. 10173). The survey clearly explained the study and participant rights, protecting their privacy throughout the research process.

3.0 Results and Discussion

The research results offer nuanced insights into the post-adoption behavior of employed females aged 27 to 29 within the Millennial generation, as outlined in the respondent profile. Despite the diverse academic and occupational backgrounds of these users, majority of the respondents determined that only two out of the six studied UX components, aesthetic appeal, security and reliability, ease of use, convenience, information accuracy, and speed and efficiency, of a mobile wallet to be influential in their post-adoption behaviors.

Table 1. Demographic profile of respondents

CATEGORY	FREQUENCY	PERCENTAGE
Gender		
Female	141	70.4
Male	51	25.5
Prefer not to say	8	4
Age		
27-29	144	72
30 - 32	21	10.5
33 - 35	0	0
36 - 39	19	9.5
40 - 42	16	8
Area of Residence		
Caloocan	14	7
Las Piñas	7	3.5
Makati	34	17
Malabon	5	2.5
Mandaluyong	9	4.5
Manila	0	0
Marikina	8	4
Muntinlupa	2	1
Navotas	1	0.5
Parañaque	6	3
Pasay	12	6
Pasig	17	8.5
Quezon City	51	25.2
San Juan	7	3.5
Taguig	12	6
Valenzuela	15	7.5
Occupation		
Employed	128	64
Homemaker	3	1.5
Self-employed	46	23
Unable to work	3	1.5
Underemployed	2	1
Unemployed	18	9
Field of Study/Profession		
Arts, Entertainment, Fashion, Media, Sports, & Recreation	12	6
Aviation	3	1.5
Business, Finance, and Economics	47	23.5
Civil Service, Government, & Law Enforcement	9	4.5
Construction	4	2
Education	25	12.5

Engineering & Architecture	18	9
Food and Beverage	14	7
Leisure & Hospitality	4	2
Manufacturing	4	2
Medical & Pharmaceutical	21	10.5
Not Applicable	23	11.5
Technology & Telecommunications	15	7.5
Trade, Transportation, & Utilities	1	0.5
Source of Funds		
Allowance	28	14
Bills Payment	1	0.5
Commissions	1	0.5
Income from self-employment	24	12
Investments	7	3.5
Passive Income	9	4.5
Salary of live in partner	1	0.5
Salary/Wages	91	45.5
Savings	38	19
Monthly Income		
Below Php 18, 200	83	41.5
Php 18,201 - Php 36,400	70	35
Php 36,401 - Php 63,700	31	15.5
Php 63,701 - Php 109,200	8	4
Php 109, 201 - Above	8	4

Table 2 presents the parameter estimates and outcomes for the proposed relationships SEM results revealed that only two components of User Experience (UX) of mobile wallets have significant influence to post adoption behavior. Specifically, security and reliability ($\beta = 0.207$, $p < 0.001$) with small effect size ($f^2 = 0.071$) as well as ease of use ($\beta = 0.124$, $p = 0.037$) with small effect size ($f^2 = 0.260$) also have significant influence to post adoption behavior. Other components of UX such as aesthetic, convenience, information accuracy, and speed and efficiency have no significant influence on post adoption behavior.

Components, such as security and reliability, and ease of use, resulted in being the one with a significant component that influences post-adoption behavior and, consequently, shapes a positive user experience. Results agrees with the findings by Kahar et al. (2019), Li et al. (2014). Ease of use is shown to be the component that strongly influences one's post-adoption behavior, suggesting the importance of having a simple and intuitive user interface (Abdul-Halim et al., 2021). It is essential to ensure that the mobile wallet application is intuitive, simple to navigate, and requires minimal effort to foster a positive user experience and continued use (Abdul-Halim et al., (2021); Shang & Wu, 2017); Leong, 2020). The components' security and reliability significantly impact one's user perception and post-adoption behavior. Users emphasize the importance of robust safety precautions, thoroughly discussing security procedures, and consistently operating to provide users with a sense of security. In addition, users place exceptional value on reliable and trustworthy systems that safeguard their transactions and financial data. The findings highlight the impact of a safe and dependable platform in building user confidence and how much it influences their whole mobile wallet experience. Furthermore, mobile wallet users' continued usage and expansion are significantly influenced by components like user-friendliness, as it enhances their overall experience.

Table 2. Relationship of Variables

INDEPENDENT →	DEPENDENT VARIABLES	PATH COEFFICIENT	P-VALUE	SE	EFFECT SIZE
H1	Aesthetic → Post Adoption Behavior	0.055	0.218	0.070	0.013
H2	Security & Reliability → Post Adoption Behavior	0.207	<0.001	0.068	0.071
H3	Ease of Use → Post Adoption Behavior	0.124	0.037	0.069	0.041
H4	Convenience → Post Adoption Behavior	0.048	0.248	0.070	0.015
H5	Information Accuracy → Post Adoption Behavior	0.024	0.369	0.070	0.007
H6	Speed & Efficiency → Post Adoption Behavior	0.072	0.152	0.070	0.022

Note: Cohen's effect size: 0.02 = small, 0.15 = moderate, 0.35 = large; β = path-coefficient

However, components such as aesthetics, convenience, accuracy of the information, speed, and efficiency showed a non-significant relationship with users' post-adoption behavior, suggesting that these may not be the primary component that influences the users but still contribute to the user's overall experience (Bhandari et al., 2017; Wahyudi and Pambudi, 2022; Koghut & Ai-Tabbaa, 2021; Alam et al., 2021)

4.0 Conclusion

This study significantly advances the field of mobile wallet research by shifting the focus from initial adoption to understanding user behavior after adoption. By examining how user experience (UX) components influence Filipino millennials' continued use of mobile wallets, it offers valuable insights previously lacking. The identification of six key UX components (security, ease of use, aesthetics, convenience, information accuracy, and speed) and their varying impact on post-adoption behavior provides a crucial foundation for understanding user preferences. This knowledge is particularly important for FinTech companies, developers, and investors who can leverage these findings to develop and refine mobile wallet applications that prioritize user satisfaction and retention.

The study also highlights the importance of security, reliability, and ease of use as primary drivers for millennials. This suggests that prioritizing functionality, robust security measures, and user-friendly interfaces are essential for long-term success. Additionally, the high user satisfaction observed may indicate heightened expectations, prompting the need for continuous innovation and proactive strategies to address potential concerns. This focus on user experience will be crucial for ensuring continued adoption and user engagement within the thriving FinTech ecosystem.

This research establishes a strong foundation for future studies. The identified UX components serve as a springboard for further exploration. Future research could compare user preferences across demographics or geographic regions to gain a more nuanced understanding of user behavior. Furthermore, investigating the influence of emerging technologies like blockchain on mobile wallet UX could provide valuable insights for the future of FinTech. By understanding how millennials interact with mobile wallets and how their preferences evolve, stakeholders can develop and implement effective strategies to ensure continued user satisfaction and a thriving FinTech ecosystem.

5.0 Contributions of Authors

The successful completion of this research is attributed to the distinct contributions of each author. Arielle Alejandrino demonstrably enriched the manuscript through meticulous data analysis, crafting the Results and Discussion sections, and offering insightful revisions. Alfierie L. Baldivas played a pivotal role in establishing the research framework by outlining the Methodology and crafting the Conclusion. Mr. Antonio E. Etrata Jr. Ph.S., as the thesis advisor, provided invaluable guidance and oversight throughout the research process, ensuring its successful execution. Naomi Hipolito laid the foundation for the research by establishing the context within a well-researched Introduction. Finally, Chelsea Mercado's contribution involved a comprehensive and critical review of the existing literature relevant to the chosen field of study.

6.0 Funding

This work received no specific grant from any funding agency. This work stands as a testament to the dedication of the student researchers involved. It was conducted entirely on their own initiative, receiving no specific grant from any funding agency. Despite the lack of external financial support, the student researchers persevered. They leveraged their own resources and sought out creative solutions to overcome funding limitations. This project exemplifies the passion and resourcefulness of the student researchers, who were determined to contribute to the field of knowledge in their chosen area.

7.0 Conflict of Interests

While this research gathers information on the UX components in mobile wallets, a potential conflict of interest is not readily apparent. The research design focuses on general UX factors influencing millennial behavior, rather than advocating for a particular mobile wallet application. Additionally, there is no disclosure of financial ties between the researchers and the mobile wallet industry. Nevertheless, for enhanced transparency, a declaration outlining any potential biases would be a valuable addition to the study.

8.0 Acknowledgment

The researchers express their gratitude to their thesis adviser, course facilitator, and statistician: Mr. Antonio E. Etrata Jr., Ph.D., Assistant Professor Rosalyn G. Perkins, Ph.D., and Associate Professor Virginia R. Arceo, LPT, Ph.D., for their consistent support, guidance, and specialized knowledge throughout the research process. Their insightful feedback and encouraging words helped shape this research paper.

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