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TOUCH 'N GO E-WALLET: A USER EXPERIENCE QUESTIONNAIRE (UEQ) ANALYSIS FOR IMPROVEMENT

Nur Farhana Mohd Sah (a)*, Wan Edura Wan Rashid (b), Noor Syahieda Mat Shah (c), Farah Syazreena Azmi (c)
*Corresponding author

(a) Faculty of Business and Management, Universiti Teknologi MARA, Puncak Alam, Selangor, Malaysia, nurfah0237@uitm.edu.my
(b) Institute of Business Excellence, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia
(c) Faculty of Business and Management, Universiti Teknologi MARA, Puncak Alam, Selangor

Abstract

The widespread adoption of smart devices for financial transactions in today's society is largely credited to the emergence of the internet. Users widely appreciate the efficiency and user-friendly features of e-wallet services. This study seeks to deepen our understanding of the user experience (UX) when using the TnG e-wallet service on mobile devices, focusing on key dimensions such as attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. Employing the User Experience Questionnaire and a quantitative research design through survey-based data collection, 440 respondents participated in the study. Results demonstrated that the TnG e-Wallet excelled in attractiveness, surpassing benchmarks for mobile phone users, and received above-average scores for both novelty and reliability. The researchers recommend that these findings to guide mobile e-wallet developers in creating resilient, user-friendly, secure, and cost-effective services that cater to the evolving needs and expectations of today's mobile phone users, particularly in the dynamic landscape of the Klang Valley.

Keywords: E-wallet, User experience, UEQ

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1. Introduction

In contemporary society, the widespread adoption of the Internet has led the majority of individuals to prefer using smart devices for making payments. E-Wallets have emerged as a convenient means, allowing users to link their debit or credit cards to smart devices, streamlining transactions and payment operations. Research indicates that e-wallet payments offer enhanced convenience and efficiency compared to traditional bank card payments, resulting in time and cost savings (Blockchains, 2018; Kee et al., 2021).

The increasing prevalence of mobile payment systems in app transactions is marked by their ability to provide convenience, speed, comfort, and security. Consumers overwhelmingly perceive the benefits of utilizing e-wallet transactions, particularly as the mobile payment system becomes more widely adopted. The transformative impact of COVID-19 on consumer lifestyles has been particularly notable in Malaysia over the past two years. With businesses across sectors gradually recovering and Malaysians adapting to the "new normal," there is a resurgence in e-wallet usage, reaching 66% in 3Q'21, almost matching the previous high of 67% (Low, 2022).

In Malaysia, there are more than 50 electronic wallets, but only 43 of them have received official licenses from Bank Negara Malaysia. Notably popular among users are server-based e-wallets such as Touch 'n Go e-wallet, Boost, WeChat Pay MY, Grab Pay, Alipay, Big Pay, MAE, and others (Edeh et al., 2021).

Despite the expansion of electronic wallet services in Malaysia, the development of effective interactive systems aims primarily to meet users' needs (Oh, 2018). Satisfaction, a concept tied to users' subjective perceptions, stands out among various goals. It involves evaluating a user's impression of elements like effectiveness, helpfulness, and learnability, along with their overall attitude toward using the product. In the design of user experiences, which has gained prominence in recent years within interactive system development, numerous factors are considered beyond those directly associated with user satisfaction. However, despite the widespread use of the term "user experience," its theoretical foundations remain less clear (Mahlke, 2005).

While electronic wallets offer various benefits and conveniences, users' opinions about them can diverge due to multiple factors. The willingness of different users to adopt these services varies. Research highlights customer satisfaction, perceived usefulness, ease of use, hedonic quality, and visual appeal as crucial aspects influencing diverse usage intentions. Hence, the objective of this study is to enhance our understanding of the user experience (UX) when utilizing the TnG e-Wallet service on a mobile device, considering dimensions such as attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty.

2. Literature Review

2.1. Touch n Go (TnG) e-Wallet

The Touch 'n Go (TnG) e-Wallet stands out as a favored and recommended choice among locals, gaining prominence with the widespread embrace of electronic payments. As the electronic payment era

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expands, TnG e-Wallet has emerged as the foremost preference. A growing number of individuals now rely on TnG e-Wallet for their day-to-day transactions. The e-Wallet is equipped with a smartphone application and complements it with the use of a physical TNG Card. Users can conveniently track their transactions by inputting their Physical Touch 'n Go card number into the application.

Hussain et al. (2021) highlight additional features that contribute to the application's user-friendly experience. These include the ability to transfer money to other TnG e-Wallet users, reload mobile prepaid, pay for utilities and postpaid bills, purchase movie and aircraft tickets, engage in dynamic QR code payments at participating TnG e-Wallet retailers, and pay tolls using RFID and TNG Card.

Despite the numerous advantages and conveniences offered by TnG e-Wallet, user opinions vary due to different influencing factors. Research by Hussain et al. (2021) underscores that perspicuity, efficiency, dependability, stimulation, and novelty are critical factors impacting the user experience of the e-Wallet. Consequently, this study focuses on understanding the user experience (UX) of TnG application users, considering the perspectives of end-users within the realm of e-wallet usage.

2.2. User Experience (UX): An Integrative Approach

The realm of User Experience (UX) has witnessed rapid growth in research and development. Although widely used by researchers and practitioners across various fields, a singular definition of UX remains elusive due to the diverse subjects it encompasses, reflecting its broad and multidisciplinary nature. Despite the lack of a universally agreed-upon definition, consensus exists among researchers that UX results from the interplay between the user, the system, and the context (Lallemand et al., 2015).

According to Dynamics (2022), there are numerous facets of the user experience that warrant consideration when designing interactive products. Key among these are usability, functionality, aesthetics, content, look and feel, as well as sensory and emotional appeal. Emphasizing the centrality of usability, the measurement of UX plays a pivotal role. This measurement provides valuable insights into users' perceptions of specific aspects within the system (Zarour & Alharbi, 2017). By conducting measurements, researchers can systematically articulate the requirements for system development and enhancement. This approach is instrumental in selecting optimal designs, ensuring the correct trajectory of development, and guaranteeing alignment with the targeted users' needs (Santoso et al., 2016).

2.3. User Experience Questionnaire (UEQ)

Schrepp et al. (2017) developed the User Experience Questionnaire (UEQ) with the aim of enabling a swift assessment by end users, providing a comprehensive impression of their experience with a product. The UEQ facilitates users in expressing their feelings, impressions, and attitudes toward the investigated product in a straightforward and immediate manner. The finalized questionnaire consists of 26 items organized into six scales:

i. Attractiveness: This scale gauges the overall impression of the product, delving into whether users find it likable or dislikable, attractive, enjoyable, or pleasing.
ii. Perspicuity: Focuses on the ease with which users can become familiar with the product. It assesses whether the product is easy to learn, understand, and unambiguous.

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iii. Efficiency: Examines whether users can accomplish tasks without unnecessary effort, assessing the efficiency and speed of interaction, as well as the responsiveness of the product to user input.
iv. Dependability: This scale explores whether users feel in control of the interaction, whether they can predict the system's behavior, and if they feel confident while working with the product.
v. Stimulation: Assesses whether using the product is exciting and motivating, providing an enjoyable experience for the user.
vi. Novelty: Focuses on the innovative and creative aspects of the product, considering whether it captures the user's attention through its novelty.

The UEQ's design and item arrangement aim to capture a broad and nuanced perspective of user experience, offering a valuable tool for assessing users' impressions of a product in a straightforward and efficient manner (Schrepp et al., 2017).

3. Research Methods

This study adopts a descriptive research design employing a quantitative approach through a cross-sectional study to elucidate research attributes. Non-probability sampling, specifically the convenience sampling method, is utilized for participant selection. The questionnaire instruments are derived from the User Experience Questionnaire (UEQ). The questionnaire consists of three sections, each designed to fulfill specific research objectives.

In Section A, demographic information such as gender, age, and types of e-wallet is gathered. Section B retains the structure of the Standard User Experience Questionnaire (UEQ), comprising all six scales and twenty-six items to measure attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty concerning the e-Wallet. Section C focuses on the user's intention of e-wallet usage, employing a modified Likert scale with seven points.

A total of 350 questionnaires were distributed to mobile users in the Faculty of Business and Management, UiTM Selangor Branch, Puncak Alam through Google Form Links. Out of the distributed questionnaires, 320 responses were received, and 300 were deemed usable for analysis. The collected data underwent processing and analysis using the Statistical Package for the Social Sciences (SPSS) software.

Norms for the six scales were computed as part of the analysis of the User Experience Questionnaire (UEQ). Notably, the UEQ doesn't yield an overall user experience score. Schrepp et al. (2017) explain that the UEQ is structured through factor analysis, utilizing primary components and varimax rotation. Constructing an overall score, such as calculating the mean across all scales, is deemed inappropriate because it lacks a meaningful interpretation.

As per conventional interpretation guidelines, values falling between -0.8 and 0.8 signify a neutral evaluation of the corresponding dimension. Values exceeding 0.8 suggest a positive evaluation, while values below -0.8 indicate a negative evaluation (Rahayu & Aransyah, 2023). The scale ranges from +3 (extremely positive) to -3 (extremely negative), with values between 1.5 and 2 already indicating a very high quality. This considers the inherent tendency of respondents to avoid extreme answer categories in such questionnaires, ensuring a nuanced and reliable assessment of user experience dimensions.

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4. Findings

4.1. Reliability analysis

Table 1 displays Cronbach's alpha for the variables of attractiveness, perspicuity, efficiency, dependability, stimulation and novelty. Attractiveness shows the highest value of Cronbach's Alpha at 0.93, followed by perspicuity and simulation have the same Cronbach's Alpha at 0.87, efficiency at 0.85 while novelty at 0.80 and dependability at 0.78 respectively. Therefore, all the variables indicated good inter-item consistency in the measures with coefficients varying between 0.78 and 0.93.

Table 1. Reliability analysis

VARIABLES	N OF ITEMS	CRONBACH'S ALPHA
Attractiveness (ATT)	6	0.93
Perspicuity (P)	4	0.87
Efficiency (EF)	4	0.85
Dependability (DP)	4	0.78
Stimulation (ST)	4	0.87
Novelty (NO)	4	0.80

4.2. Demographic Profiles

The descriptive statistics tabulated the key demographic profiles of the respondents. Table 2 of this section reports the frequencies of gender, age, and how often the respondents using the e-Wallet. As can be seen, the proportion of females in the sample exceeded that of males by 67.0 percent to 33.3 percent. Regarding age distribution, 21-25 (63.0 percent) was the most dominant group, followed by 26-30 (17.0 percent) and 31-35 (12.0 percent). The reason that the majority of the respondents were between 21 to 25 was because 201 (67.0 percent) respondents were students. While, 89 (29.7 percent) respondents were full time employment, and only 10 (3.3 percent) were part time employment. Besides, 64.3 percent of the respondents use the e-Wallet for their daily transactions followed by 26.0 percent of the respondents use the e-wallet weekly.

Table 2. Respondents' demographic profile

Variable	Frequency	%
Gender		
Male	99	33.0
Female	201	67.0
Age		
Below 20 years	4	1.3
21 – 25	189	63.0
26 – 30	51	17.0
31 – 35	36	12.0
36 – 40	13	4.4
Above 41 years	7	2.3
Occupation		
Students	201	67.0

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Full Time Employment	89	29.7
Part Time Employment	10	3.3
How often you do you use TnG e-Wallet?		
Daily	193	64.3
Weekly	78	26.0
Monthly	23	7.7
Once within several month	6	2.0

Note: N=300

4.3. Measurement of UEQ for TnG e-Wallet

To calculate the average score for all variable items, each variable will be assigned a category based on the value index outlined in Table 3 below.

Table 3. Average Rating Index on UEQ

Average Score	Description
< -0.8	Negative value
-0.8 and 0.8	Normal Value
> 0.8	Positive Value

Table 4 presents the mean values for each variable, indicating that attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty all exceed 0.8. As a result, the findings imply that users hold a positive perception of their experience while using the e-Wallet for their daily transactions.

Table 4. Mean and Variance of UEQ

UEQ Scales (Mean and Variance)		
Attractiveness	1.858	1.12
Perspicuity	1.839	1.22
Efficiency	1.839	0.86
Dependability	1.448	0.79
Stimulation	1.498	1.01
Novelty	1.018	0.95

4.4. UEQ TnG e-Wallet Benchmark

Table 5 illustrates the computed mean values for the variables associated with the TnG e-Wallet: 1.858 for attractiveness, 1.839 for both perspicuity and efficiency, 1.448 for dependability, 1.498 for stimulation, and 1.018 for novelty. These results indicate that the TnG e-Wallet excelled notably in the attractiveness category. Furthermore, perspicuity, efficiency, and stimulation garnered a "Good" rating, signifying performance within the top 10% of products in the dataset.

However, in the case of dependability and novelty, the TnG e-Wallet secured positions within the top 25% of product results, indicating an "Above Average" ranking. This suggests that, overall, the TnG e-Wallet performed exceptionally well across various dimensions, particularly in attractiveness, and can be considered above average when compared to other products in the dataset.

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Table 5. UEQ TnG e-Wallet Benchmark Result

Scale	Mean	Comparison to benchmark	Interpretation
Attractiveness	1.858	**Excellent**	In the range of the 10% best results
Perspicuity	1.839	**Good**	10% of results better, 75% of results worse
Efficiency	1.839	**Good**	10% of results better, 75% of results worse
Dependability	1.448	**Above Average**	25% of results better, 50% of results worse
Stimulation	1.498	**Good**	10% of results better, 75% of results worse
Novelty	1.018	**Above Average**	25% of results better, 50% of results worse

5. Discussion

According to the assessment of the application's quality, the average values across the six dimensions fall within the range of -0.8 to 0.8 (Rahayu & Aransyah, 2023). This indicates that, on average, respondents provide neutral responses to each question in the UEQ questionnaire, as detailed in Table 5 and visualized in Figure 1. If the average value of the responses surpasses 0.8, it suggests a positive inclination in the respondents' answers. Conversely, if the average response falls below -0.8, it signifies a negative sentiment among the average respondents.Upon comparing the TnG e-Wallet application with other benchmarked applications, the results are favorable, showcasing good performance, as depicted in Table 5.

From Figure 1 above, TnG e-Wallet has an excellent benchmark in terms of attractiveness. Drouillat (2021) stated that design is not limited to utilitarian issues such as functions, usability, interface performance, or user experience. It also combines questions of aesthetics, symbolism, and perceptions. Users concurred that the most important details are that the attractiveness and desirability of interfaces are important in the initial phases of interaction with a product, and that trust is built from visible signs in the interface. Perspicuity, efficiency and stimulation has met the users' expectation as the result showed a good benchmark. Perspicuity indicates how easily individuals can comprehend the system. This scale's mean score is 1.839. This indicates that the perspicuity of this system is above average, as the system is not difficult to learn and does not confuse users. Raman (2019) discovered that the convenience of transactions is a significant factor in consumers' positive perceptions and their desire to purchase online. As there are no cash transactions, the TnG e-Wallet payment method allows its users to concentrate on other matters without having to worry about where to place their credit or debit card, calculate change or wait in the queue. It enables its users to make super-quick, straightforward, and secure payments without difficulty.

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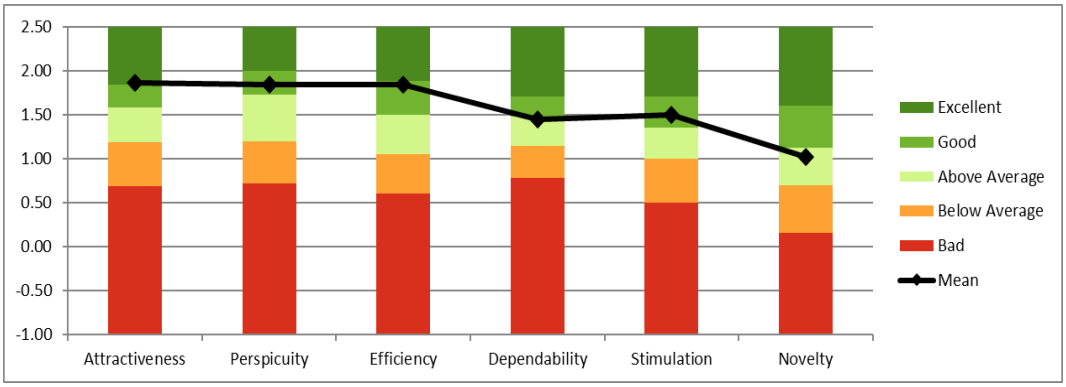

Figure 1. UEQ Benchmark for TnG e-Wallet

The TnG e-Wallet's mean score on efficiency scales is 1.839, indicating that it is highly efficient. This demonstrates that by utilising this e-wallet, users can complete their duties with minimal effort, and the system responds quickly to user input. Efficiency is a crucial aspect of usability, measuring the rate at which users can complete duties. Consequently, the most important thing to remember is to establish an efficient user flow that will bring them back to the product and increase their engagement. According to Boon et al. (2022), e-Wallet users find it simple to use, user-friendly, clear, and understandable, which are indicators of their satisfaction with it.

For a more seamless experience, TnG e-Wallet has recently added the 'DuitNow Transfer' feature to its e-Wallet. The dependability indicates the evident dependability of the e-Wallet. With a mean score of 1.448 on the UEQ, the dependability of the e-Wallet is above average. This demonstrates the system's dependability, user-friendliness, and security, as well as its ability to meet user expectations. The personal and financial information of Touch 'n Go e-Wallet consumers should be monitored. Touch 'n Go e-Wallet is protected by a PIN while accessing the app and making a payment (PIN). The stimulation scale measures the pleasure of use, with a mean score of 1.498. This demonstrates that this system is beneficial, engaging, and motivating. Designers should investigate their users' everyday language to create readily digestible content rather than alienating language that overwhelms customer service, according to Verbran (2021). Sound and symbols are also languages, so designers should adhere to the conventions of their users when creating them. This is necessary for e-Wallet users to interact with the application. The UEQ novelty scale measures how innovative an instrument is perceived to be. The results indicate that the e-Wallet is above average in terms of novelty, with an average score of 1.018%. This indicates that the users view this system as essential, but that their needs are not presently being met.

6. Conclusion

This study aims to enhance the understanding of the user experience (UX) associated with utilizing the TnG e-Wallet service on mobile devices, focusing on attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. The TnG e-Wallet demonstrates notable strengths in terms of attractiveness, perspicuity, effectiveness, and stimulation. However, attention from the e-Wallet's designer and mobile app developer should be directed towards improving its dependability and originality.

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Given the abundance of e-Wallet applications available in app stores, it becomes imperative for owners to identify distinctive features that encourage users to maximize their app utilization. Striking a balance between engaging and functional attributes is crucial, as an excessive number of features in an implementation can sometimes lead to a less-than-optimal user experience. There is a growing demand from users to transition from traditional TnG cards to TnG e-Wallet apps, emphasizing the well-conceived and timely nature of the TnG e-Wallet concept in Malaysia, where its widespread implementation is evident.

There are few recommendations and suggestions that can be implemented in future research to improve this study. The TnG e-Wallet should encourage and entice users to use the application, and its design should be uncluttered, uncomplicated, and feature-light. This is the most important issue that must be addressed in order for the app to function for users with no previous e-wallet experience. Further research can investigate and compare the UX benchmark with other e-Wallet apps available in Malaysia to provide the app developers with additional opinions and perspectives that can be used to enhance the system's efficacy.

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