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A Statistical Evaluation using Multiple Linear Regression Analysis of Factors Predicting Digital Wallet Adoption among University Students

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Abstract: Digital wallet is an electronic application that offers an easy and safe way of paying for goods and services. The application makes financial transactions without using cash or cards. This study was conducted to determine the factors influencing the digital wallet adoption among university students based on perceived usefulness and benefits, perceived ease of use, and perceived compatibility. Quantitative approach was adopted, and the data were collected through a structured questionnaire distributed to 139 respondents. Multiple linear regression analysis was employed in examining the relationship between the independent variables and the digital wallet adoption. Results showed that perceived ease of use and perceived compatibility significantly affect digital wallet adoption. These results imply the significance of user friendliness and convenience to make promotion of digital wallet use effectively, proposing that practical convenience and even integration with users' lifestyle are dominantly outstanding antecedents for adoption among young consumers.

Keywords: Digital wallet adoption, Multiple linear regression, Perceived ease of use, Perceived compatibility, Perceived usefulness and benefits.

1 Introduction

Digital wallet, also known as electronic payment systems represent one of the most transformative innovations in financial services. They offer convenience, speed and efficiency for everyday transactions via digital devices such as smartphones and computers [1]. In Malaysia, the evolution of digital wallet has been shaped by financial technology advancements, government initiatives, and shifting consumer behaviour. It began with early systems such as Touch 'n Go in 1997 for toll and public transport and online banking. Later, from the mid-2010s onward, app-based wallets such as Boost, GrabPay, and MAE by Maybank2u became increasingly popular. The government's e-Tunai Rakyat and eBelia programs further accelerated the digital wallet adoption, particularly during the COVID-19 pandemic, when digital transactions became an essential part of daily life. Today, digital wallets are widely used for shopping, transportation, and bill payments. Innovations such as DuitNow QR underscore Malaysia's ongoing transition toward a cashless society driven by technological innovation and regulatory support.

According to the Malaysia Communications and Multimedia Commission (MCMC) e-Commerce Consumers Survey 2022, 78.3% of Malaysian consumers engaged in e-Commerce reflecting a significant 27.1 percentage point increase from 2018. This growth translates to approximately 25.9 million active online consumers, with 80.8% identifying as exclusive online shoppers, 16.7% as both buyers and sellers, and 2.6% as sellers only. These findings highlight the increasing reliance on online platforms for purchasing goods and services underscoring the growing importance of digital wallet as a preferred payment method. As consumer behaviour shifts toward digital transactions, examining factors such as perceived usefulness and benefits, perceived ease of use, and perceived compatibility becomes essential to better understand and promote the digital wallet adoption in Malaysia.

The digital wallet adoption among university students is considered crucial for understanding broader e-commerce trends, because this demographic represents a significant portion of the online consumer market. University students' active engagement in online transactions placed them at the forefront of the country's shift toward a digital economy [2]. Rapid technological improvements and shifting consumer behaviour have made the digital wallet market increasingly competitive every day [3]. These insights provide a foundational understanding of the digital wallet landscape, illustrating its growing importance in the modern financial system. Consequently, people find it easier to accept new technology when they have a stronger intention to do so [4].

There are several factors that influence digital wallet adoption and mobile payment services. Nurin Jaslina et al. [5] found a low positive relationship between perceived usefulness and benefits and digital wallet adoption means that although perceived usefulness and benefits do influence digital wallets adoption, their impact is relatively weak. This suggests that other factors are also important. Supporting this finding, Tasnim et al. [6] used both Pearson Correlation and Multiple linear regression analysis on 104 responses. They showed that personal innovativeness, perceived compatibility, and facilitating conditions significantly influenced the intention to adopt digital wallets. Similarly, Mun et al. [7] found that several factors such as perceived usefulness and benefits, perceived ease of use, perceived compatibility, and social influence, impacted consumers' intention to use mobile payments. Together, these studies emphasize that although perceived usefulness and benefits are important, the adoption of digital wallets is determined by a mix of factors. These include perceived ease of use, perceived compatibility, personal innovativeness, and external conditions. This highlights the complex nature of consumer decision-making when it comes to adopting financial technologies.

Digital wallets, which enable users to make payments, transfer funds, and manage finances in real time through electronic devices, have become an essential tool in today's global economy [8]. The growing reliance on mobile technology and internet connectivity has fuelled demand for more convenient, secure, and accessible payment methods. In Malaysia, the digital wallets adoption accelerated rapidly during the COVID-19 pandemic, reflecting a significant behavioural shift [4], [9]. However, despite this growth, challenges remain. Many users continue to express doubts about perceived ease of use and perceived compatibility with daily routines. Meanwhile, broader issues such as security concerns, limited digital literacy, low awareness, and persistent reliance on cash continue to hinder widespread acceptance.

These challenges are particularly evident among university students, where adoption levels remain limited despite their high levels of digital exposure. Although digital wallet offer clear benefits of convenience and efficiency, scepticism and unfamiliarity persist, highlighting the importance of understanding the underlying drivers of adoption. Therefore, this study seeks to examine the role of perceived usefulness and benefits, perceived ease of use, and perceived compatibility in influencing the digital wallet adoption among students at UiTM Kota Bharu. Addressing this gap will provide valuable insights for universities and educators in promoting digital financial literacy and supporting Malaysia's transition toward a cashless society.

2 Methodology

This section outlined the research methodology employed to investigate the factors influencing digital wallet adoption among students in UiTM Kota Bharu. It including conceptual framework, target population and study design, sampling design, research instrument, data collection method and methods of analysis used to achieve the study's objectives.

A Conceptual Framework

The main objective of this study is to identify the effects of perceived usefulness and benefits, perceived ease of use and perceived compatibility on the digital wallet adoption. The conceptual framework as shown in Figure 1, illustrate that perceived usefulness and benefits, perceived ease of use and perceived compatibility have a direct effect on the digital wallet adoption. Therefore, the following hypotheses are formulated.

H_1: Perceived usefulness and benefits has a significant effect on the digital wallet adoption.

H_2: Perceived ease of use has significant effect on the digital wallet adoption.

H_3: Perceived compatibility has significant effect on the digital wallet adoption.

These hypotheses are designed to test the extent to which independent variables (perceived usefulness and benefits, perceived ease of use and perceived compatibility) contribute to the digital wallet adoption.

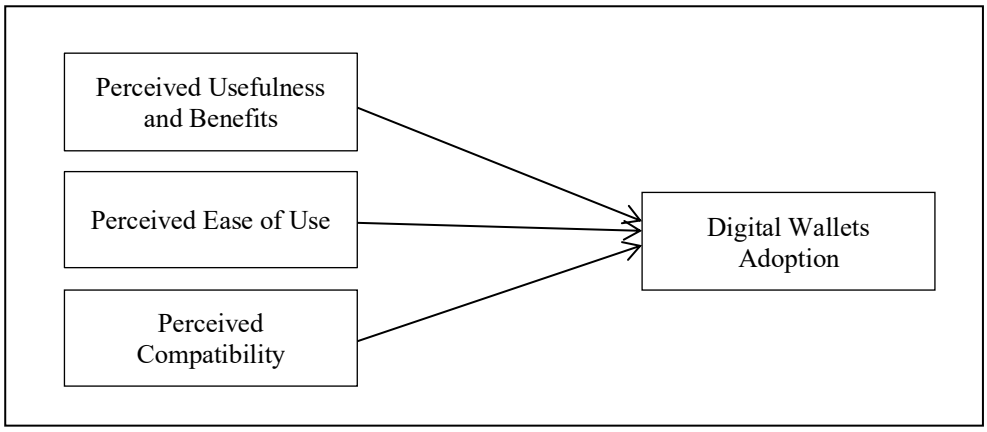


Figure 1: Conceptual Framework of the Study

B Target Population and Study Design

The cross-sectional study design was conducted among students in UiTM Kota Bharu. The target population of this study comprised of 1,038 undergraduate students across all semesters, and a proportionate stratified random sampling technique was used to ensure representation by gender. The population of students was divided into two stratums, with Strata I (men) and Strata II (women) representing 24.57% and 75.43% of the population respectively, and samples were then selected from each stratum using simple random sampling to avoid bias. The minimum sample size was determined using the Raosoft Sample Size Calculator [10] at a 95% confidence level, 8% margin of error [11], and 50% response distribution, resulting in 132 students as the selected sample. To account for potential of non-responses bias, an additional 5% was added [12], bringing the final target sample size to 139 respondents.

C Research Instrument and Data Collection Method

A self-administered questionnaire created in Google Form and distributed via WhatsApp was used as a method of data collection. To ensure clarity and accessibility, the questionnaire was bilingual (English and Malay) and divided into six sections: Section A (Demographic Profile); Section B (Perceived Usefulness and Benefits); Section C (Perceived Ease of Use); Section D (Perceived Compatibility) and Section E (Digital Wallet Adoption). All items were measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), allowing standardized responses for quantitative analysis. In the whole construct, the measurement was done based on mean score computed to represent each of the variables.

The questionnaire items were adapted from previous research to ensure validity and reliability. Prior to final distribution, the instrument was pretested with 50 students, and necessary modifications were made based on their feedback. The finalized questionnaire, accompanied by an information letter, was then administered to the 139 randomly selected students. Table 1 summarized the number of items for each section.

Table 1: Summary of the Questionnaire by Section

Section	Construct	Number of Items
A	Demographic Profile	4
B	Perceived Usefulness and Benefits	3
C	Perceive Ease of Use	3
D	Perceived Compatibility	3
E	Digital Wallets Adoption	3

D Statistical Analyses

The reliability of the questionnaire was assessed using Cronbach's alpha to ensure internal consistency, with higher coefficient values indicating stronger reliability [13]. Descriptive statistics, including frequency distributions, means and percentages were employed to summarize and interpret the data providing insights into overall trends in digital wallet adoption.

Pearson correlation analysis was conducted to examine the strength and direction of the linear relationship between the independent variables (perceived usefulness and benefits, perceive ease of use and perceived compatibility) and the dependent variable (digital wallet adoption). The correlation coefficient ranging from -1.0 to 1.0 was used to indicate the degree of association with values closer to ±1.0 reflecting stronger relationships. Prior to analysis, key assumptions were verified. The assumption of linearity was tested using a linearity test between the dependent and independent variables where a p-value below 0.05 indicated a significant linear relationship.

Multiple linear regressions were employed to evaluate the relationship between digital wallet adoption, and the independent variables (perceived usefulness and benefits, perceived ease of use and perceived compatibility). This method was appropriate as it allowed the simultaneous assessment of multiple predictors and their contribution to explaining variation in adoption among respondents. Several assumptions were tested to ensure the validity of the model. The assumption of normality of the residuals required variables to be approximately normally distributed and was examined using normal Q-Q plot residuals. The assumption of independence of residuals which ensures residuals are not auto correlated was assessed through scatter plots of residuals against observation order where randomness indicated compliance. Homoscedasticity was verified by scatterplots showing constant variance of error terms where patterns such as a megaphone shape suggested heteroscedasticity. Finally, multicollinearity was checked using Variance Inflation Factor (VIF) and tolerance values

with VIF values above 10 or tolerance below 0.1 indicating problematic correlations among independent variables.

The model for the multiple linear regression analysis used in this study was shown in Eq. (1) as follows:

$$\hat{Y} = \hat{ß}_0 + \hat{ß}_1 X_1 + \hat{ß}_2 X_2 + \hat{ß}_3 X_3 \quad (1)$$

where:

$\hat{Y}$: Digital Wallets Adoption
$\hat{ß}_0, \hat{ß}_1, \hat{ß}_2, \hat{ß}_3$: Regression Coefficients
X_1: Perceived Usefulness and Benefits
X_2: Perceived Ease of Use
X_3: Perceived Compatibility

An F-test was conducted to assess the validity of the regression model. When the p-value below the significance threshold of 0.05 indicated that the independent variables (perceived usefulness and benefits, perceived ease of use, and perceived compatibility) significantly influence the digital wallets adoption. Since the model is significance, the significance of independent variables can be identified.

3 Results and Discussion

The result was analysing using descriptive and inferential statistical methods to address the research objective.

A Reliability Analysis

Table 2 shows the result of reliability analysis for pilot study and actual study. Overall, the cronbach's alpha values for all construct between pilot study and actual study are ranged from 0.740 to 1.00 which is greater than the minimum acceptable threshold of 0.70 [13]. Thus the result indicates that the internal consistency for all construct were good and excellent.

Table 2: Reliability Analysis for Pilot Study and Actual Study

Variable	Cronbach's Alpha	
	Pilot Test	Actual Study
Perceived Usefulness and Benefits	0.775	0.764
Perceived Ease of Use	0.846	0.808
Perceived Compatibility	0.888	0.849
Digital Wallet Adoption	0.784	0.897

B Descriptive Statistics

The demographic profile of the respondents comprises categories such as gender, age, academic program, and digital wallet usage. Out of 139 distributed survey questionnaires, only 137 were deemed suitable for analysis. The remaining 2 responses were excluded due to issues such as incomplete data entries.

Most of the respondents were female, with 83 (60.58%) individuals meanwhile, 54 (39.42%) respondents were male. This indicates a higher participation rate among female students in the study.

On the average, the respondent's age is 22 years old with the standard deviation of 1.591. For academic program, the highest number of respondents were from CS241 with 22 students (16.06%) followed by BA242 and BA270 by each with 19 students (13.87%). Other notable programs included BA280 (10.22%), BA279 (9.49%), BA240 and BA249 (both at 8.76%) and CS291 (8.03%). The least represented programs were BA250 (5.84%) and BA272 (5.11%). This indicates that students from both business and statistics programs participated in the study with slightly higher representation from the statistics stream.

The most commonly used platform among respondents was Touch 'n Go with 44 (32.12%) users. This was followed by ShopeePay and QR bank transfers where each used by 23 (16.79%) respondents. Other digital wallets included Boost (14.6%), GrabPay (11.68%) and Setel (8.03%) which had the fewest users. These results suggest that Touch 'n Go is the most preferred e-wallet service among students likely due to its widespread availability and integration with public transport and retail services.

C Pearson Correlation Coefficient

Pearson correlation analysis was conducted to assess the relationships between digital wallet adoption and the independent variables in this study. The result from Table 3 indicated that all the p-values for linearity test are less than 0.05. It can be concluded that the relationship between dependent variable (digital wallet adoption) and each of independent variable are statistically significant and linear. Therefore, the linearity assumption is met. The correlation analyses for all independent variables were significantly correlated with digital wallet adoption since the p-value is less than the significance value (0.05). Among them, perceived compatibility showed the strongest positive correlation with digital wallet adoption ($r = 0.737$) suggesting that greater alignment of digital wallets with users' lifestyles substantially increases the adoption. Perceived ease of use demonstrated a moderate correlation ($r = 0.644$) indicating that simpler systems are associated with higher adoption rates. Similarly, perceived usefulness and benefits showed a moderate positive correlation with digital wallet adoption ($r = 0.579$) implying that users who view digital wallets as beneficial are more inclined to adopt them.

Table 3: Linearity and Pearson Correlation Coefficient

Digital Wallets Adoption		**Perceived Usefulness and Benefits**	**Perceived Ease of Use**	**Perceived Compatibility**
Linearity	p-value	< 0.001	< 0.001	< 0.001
Correlation Analysis	Pearson Correlation Coefficient, r	0.579	0.644	0.737
	p-value	< 0.001	< 0.001	< 0.001

D Multiple Linear Regression

The model was adequate since all the assumptions in multiple linear regressions are met as shown in Figure 2. Based on Normal Q-Q Plot, the point's lies approximately to the diagonal line indicate that the residuals were approximately normally distributed. Meanwhile for the plots of residual versus observation indicate that there is no obvious pattern exists and the plots are randomly scattered. It can be concluded that the residuals are independent to each other. The residual plot versus predicted values also shows the plots are randomly scattered and no pattern appear. This suggests that the variance of residuals are constant and supporting the assumption of homoscedasticity.

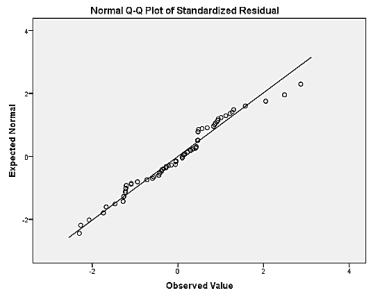
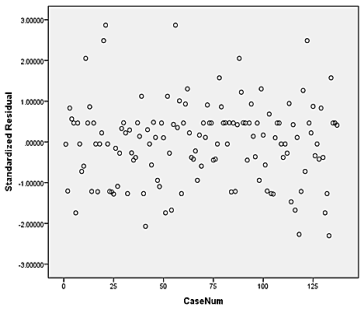
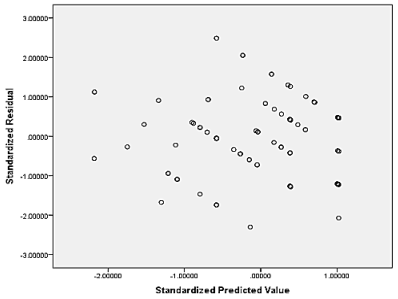
Normality of Residuals	Independence of Residuals	Homoscedasticity of Residuals
		

Figure 2: The Assumptions of Normality, Independence and Homoscedasticity of Residuals

Table 4 indicates that the VIF values for all variables are less than 10 and the Tolerance values are greater than 0.1 indicating that there is no presence of multicollinearity among the independent variables in the model. The regression model obtained from this study was statistically significant since the F-statistic is 65.137 and the p-value is less than 0.05. The result also shows that the regression model was good fit since the goodness of fit value (R-squared) is 0.620 indicates that 62% of the total variation in digital wallets adoption was explained by perceived usefulness and benefits, perceived ease of use and perceived compatibility while another 38% influence by other factors. The result also shows that the digital wallet adoption was significantly predicted by perceived ease of use ($\hat{\beta} = 0.322$, p-value < 0.05) and perceived compatibility ($\hat{\beta} = 0.469$, p-value < 0.05) are significant influence the digital wallet adoption. For this study, perceived usefulness and benefits will be excluded from the model since this variable is not significant ($\hat{\beta} = 0.007$, p-value > 0.05).

Table 4: Regression Coefficients and Collinearity Statistics

Variable	Parameter Estimate ($\hat{\beta}$)	t-value	p-value	Collinearity Statistics	
				VIF	Tolerance
Constant	0.831	3.378	0.001	-	-
Perceived Usefulness and Benefits	0.007	0.079	0.937	2.702	0.370
Perceived Ease of Use	0.322	4.139	< 0.001	2.401	0.417
Perceived Compatibility	0.469	6.740	< 0.001	2.055	0.487
R-squared = 0.620 F-statistics = 65.137 (p-value < 0.001)					

In order to identify the most significant predictor of digital wallets adoption, the final model for digital wallets adoption was conducted and the result as shown in Table 5.

Table 5: Regression Coefficient for Final Model

Independent Variables	Parameter Estimate($\hat{\beta}$)	t-value	p-value
Constant	0.835	3.472	0.001
Perceived Ease of Use	0.325	4.991	< 0.001
Perceived Compatibility	0.471	7.478	< 0.001

Hence, the final model for this study showed in Eq. (2).

$$\hat{Y} = 0.835 + 0.325X_1 + 0.471X_2 \quad (2)$$

where:

$\widehat{Y}$: Adoption of Digital Wallet
X_1: Perceived Ease of Use
X_2: Perceived Compatibility

Compared to perceived ease of use, perceived compatibility is the strongest indicator of digital wallet adoption. The larger parameter estimate for perceived compatibility indicates that it has a more substantial impact on users' intention to adopt the digital wallet. Users are more likely to embrace and incorporate a digital wallet into their everyday activities when it aligns with their existing values, routines, and lifestyle needs. Perceived ease of use also has a positive and statistically significant effect on digital wallet adoption. This means users are more likely to adopt and utilize a digital wallet when they believe it is easy to operate, simple to learn, and requires minimal effort. In other words, the simpler the digital wallet is to use, the more likely individuals are to adopt it.

4 Conclusion and Recommendation

The findings of this study were drawn based on the stated objectives even though it is important to acknowledge certain limitations. The sample consisted of 139 respondents from UiTM Kota Bharu which may not fully represent the wider population due to the relatively small size and response rate. As such, while the results provide useful insights, they should be interpreted with caution when generalizing to a broader context.

Pearson correlation analysis and multiple linear regressions were conducted to examine the influence of perceived usefulness and benefits, perceived ease of use, and perceived compatibility on digital wallet adoption. The findings revealed that perceived compatibility showed the strongest association with digital wallet adoption, suggesting that students are more inclined to adopt the technology when it aligns with their lifestyle. The multiple linear regression results further confirmed that perceived compatibility is the most influential predictor, followed by perceived ease of use [14][15]. These findings are consistent with those of Schierz et al. [14] and Akib et al. [15], emphasizing that although all three factors significantly contribute to digital wallet adoption, perceived ease of use and perceived compatibility are the key determinants among UiTM Kota Bharu students.

One way to enhance the adoption of digital wallets is by strengthening security features. Providers should implement advanced measures such as biometric authentication, multi-factor login and transaction notifications. These features can increase user confidence by ensuring safer transactions and reducing abandonment caused by security concerns.

In addition, providers should ensure that digital wallet platforms align with the lifestyle of university students. This can be achieved through optimized applications with intuitive UI/UX design, fast loading times and a simplified onboarding process [7]. Collaborating with universities to integrate campus services like cafeteria, printing and bookstore payments while also offering student-focused promotions such as cashback or loyalty points can further encourage adoption and acceptance among students.

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