Key Factors Influencing the Consumer Adoption of Mobile Wallets in Nepal

Sagar Karki[1,*], Nikesh Shrestha[2], Suresh Pokharel[3]

[1]*Nepal College of Information Technology, Balkumari, Lalitpur, Nepal, heavy_ranfall@yahoo.com*
[2]*Nepal College of Information Technology, Balkumari, Lalitpur, Nepal, nikstha11@gmail.com*
[3] *Nepal College of Information Technology, Balkumari, Lalitpur, Nepal, suresh@ncit.edu.np*

Abstract

Over recent years, mobile wallets have seen rapid development and increased demand, especially during and after the COVID-19 pandemic. Their usage has surged, with various studies examining user intentions and perspectives toward mobile wallets in countries like Malaysia, India, Ghana, and Tanzania. However, such research in Nepal is lacking, highlighting the need for this study. The research integrates the Technological Acceptance Model (TAM) and behavioral elements to create a conceptual model aimed at identifying key determinants influencing users' willingness to use mobile wallets. Using TAM and Innovation Resistance Theory, the study employs a descriptive research approach and quantitative model, gathering numerical data via a self-administered questionnaire. A non-probability sampling technique was used to collect 417 samples among the wallet users in Kathmandu. The findings indicate that UF is the most influential factor among all, based on rank analysis with a mean value (M = 3.954) and a Beta value of 0.271. The results demonstrate a significant relationship between UF, IF, and VF, with $|t(417)| = 0.000, 0.000, 0.001$ and p-values < 0.05. Conversely, RF, TF, and PCF showed no significant relationships, with $|t(417)| = 0.933, 0.178$, and 0.065, and p-values > 0.05. Additionally, TF exhibited a positive link with consumer adoption of mobile wallets among those aged 35 and above; $|t(32)| = 0.012$, $p < 0.05$. The correlation coefficient (R = 0.595) further indicates a positive correlation.The ANOVA results show a p-value of 0.000, which is below the alpha level of 0.01, confirming the model as a good predictor of the relationship between dependent and independent variables. The F-ratio value of 37.642 is significant at the 1% level, indicating that the regression model has achieved a satisfactory level of goodness-of-fit in predicting the variance in consumer adoption of mobile wallets in relation to the six independent variables, as measured by R, R-squared, and F-ratio values.These results provide a comprehensive understanding of factors influencing mobile wallet adoption in Nepal, valuable to business professionals conducting online transactions via mobile devices. The study's insights into consumer adoption intentions offer a foundation for future research to delve deeper into the factors affecting mobile wallet uptake.

Keywords: *TAM, Mobile wallets, Consumer adoption.*

1. Introduction

A digital wallet is a smartphone application provided by a service provider that enables the user to load money and make electronic transactions (Pankaj, 2017). A digital wallet is the electronic version of the traditional leather wallet. The money can be loaded into the wallet from a bank account by using any electronic payment method such as Internet banking, mobile banking, etc. Digital wallets can be used to transfer money to wallets, make payments for purchases, book tickets, mobile and television recharge, etc. In addition to banks and financial institutions, many service providers such as cellular operators, e-commerce portals, etc. now offer platforms to use digital wallets to their customers.

New technologies and digitalization of life are shaping the ways of doing business as well as the behaviors of consumers (Shankar, 2016). Finding opportunities in the dynamic business scope and benefiting from them using new technologies is a major area of focus for organizations in creating value. In this new digital era, mobile devices have become one of the most prominent consumer products ever to be launched

(Siddhartha, Rik and Sanjay, 2011). These devices and the services provided by them rapidly became necessities of daily life throughout the world. The increasing popularity of mobile devices around the globe may be attributed to their Omnipresent access to a wide range of services: communication, access to information, entertainment, or commerce. Mobile devices create value in a multitude of dimensions for their users (Davis, 1989).

Digital wallets are technically mobile applications that can be freely downloaded by all from the Play Store. Since smartphones are becoming regular and the rates of internet charges have been decreasing day by day, a mobile wallet is a good option for the public for making payments, recharges, and fund transfers, especially from the time of COVID-19 when cashless transaction helps in decreasing the rate of infection and is a safer alternative for the payment method. The use of mobile wallets has increased if it is compared to the previous years. People are finding a better way to deal with the money. People prefer cashless transactions over cash-based transactions. Most people are aware of cashless transactions (Karki and Dahal, 2024). Generally, university students are more tech-savvy and influence others to use the various mobile wallets in day-to-day life (Karki, 2023). They use different mobile wallets like E-Sewa, Khalti, I-pay, IME-pay, etc to make payments and transfer the amount to others.

In the context of Nepal, the concept of a digital/mobile wallet was started in 2009 after the launch of E-Sewa by F1 Soft International. The introduction of E-Sewa revolutionized the concept of digital payment in Nepal. Since then, Nepal has seen different digital payment service providers. Since E-Sewa, other payment systems like Khalti, IME Pay, Q-Pay, iPay, etc. have launched their services. These above payment gateways are mostly used for utility payments electricity, Water bills, mobile top-ups, airline ticketing, movie ticketing, and transactions. Online digital payment services have eased the lives of people as people don't have to queue up for hours to pay bills. One tap away from having the mobile balance recharged and a ticket for a favorite movie bought (Yang, 2005). Different offers can be obtained for using their services, including cash back when these apps are used for any purchase.

Mobile wallets are expected to gain popularity and increase the number of users in the coming years but there are challenges to overcome. There have been several research on determinants of consumer adoption of mobile wallets in other countries like Malaysia, India, Ghana, and Tanzania but the research is not done in the context of Nepal. There might be research done on the determinants of consumer adoption towards mobile banking in Nepal but there is no research as a whole for mobile wallets in Nepal. The study shows the determinants that have a close influence on consumer adoption of mobile wallets. The majority of research has used the TAM model to examine the determinants of consumer adoption of mobile wallets but this research will use the IRT model to examine (Ram and Sheth, 1989) Less of the researchers have used the IRT model variables for concluding the results. So, there is a research gap comparing models and variables that examine the determinants for consumer adoption of mobile wallets.

The main research questions of the study are:

  i.   What are the factors that influence the adoption of mobile wallets?
  ii.   What is the relationship between consumer adoption and the factors that influence mobile
        wallet adoption?

The main objectives of the research are;

  i.   To identify the most influential factors for the adoption of mobile wallets.
  ii.   To examine the relationship between consumer adoption and the factors that influence
        mobile wallet adoption.

Consequently, the contribution of this research is to apply the innovation resistance theory to the research field of mobile wallet adoption. This way, this research contributes knowledge by providing strategies and marketing recommendations for service providers to overcome obstacles consumers face with mobile wallets.

2. Literature Review

2.1. Technology Acceptance Model

The technology Acceptance Model is used in various fields of research for the prediction of the behavior of users and Information technology usage (Todd and Taylor, 1995). According to TAM, "Individual behavior of an information system is predicted using the system and the use of behavior intention." This model states that different factors influence people's decisions regarding their usage of the system when new technology is penetrated. "Because of the persistence and importance of this problem, explaining user acceptance has been a longstanding issue in MIS research". In the initial stage of the TAM model, it is argued that user motivation can predict the system's actual usage, and different external variables affect directly the motivation of the user, i.e., features of systems, capabilities, and many other things. In the additional study, it is advised that the motivation of the user could be derived through 3 influential factors which consist of PU, PEOU, and AU, which can affect the actual system usage (Abu-dalbouh, 2013). In TAM user attitude towards using the system is directly influenced by both perceived usefulness and perceived ease of use which is the major determinant that determines whether the user accepts the system or rejects the system. Behavioral intention is a measure of the strength of one's intention to perform a specified behavior.
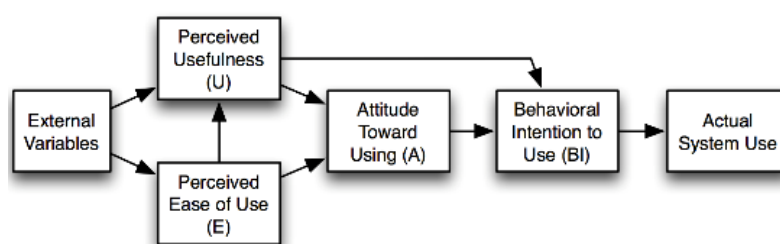

Figure 1: Technology Acceptance Model (Alsamydai, 2014)

Perceived usefulness is defined as a prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context (Davis, Bagozzi and Warshaw, 1989). Further, the TAM assumes that perceived usefulness will be influenced by perceived ease of use because other things being equal, the easier a technology to use, the more useful it can be. Perceived ease of use refers to the degree to which the prospective user expects the target system to be free of effort (Davis, Bagozzi and Warshaw, 1989). By assuming that other variables are constant, the easier a technology to use, the higher its possibility to be adopted by users.

A study in America conducted by Venkatesh and Morris found that in deciding to adopt a technology, women were mostly influenced by their perception of the technology's usefulness (Venkatesh and Morris, 2000). Hofstede also found men to be more concerned with achievement than women (Elbadrawy and Aziz, 2011). Minton and Schneider state that men may be more task-oriented than women (Venkatesh and Morris, 2000). In this context, task orientation may be defined as the accomplishment of a task that requires the use of technology.

In contrast, the impact of perceived ease of use of adoption among women is stronger than among men (Venkatesh and Morris, 2000). Low self-efficacy among women substantiates this finding. However, it should be noted that low technology adoption among women is not only caused by the level of self-efficacy. Social and cultural factors may also factor into technology adoption (Rahman, 2013). The TAM also assumes that external variables such as characteristics of system design, training, documentation, and characteristics of the decision-maker may also influence technology usage (Legris, Ingham and Collerette, 2003).

Since the E-payment system is an innovative technology, factors affecting its adoption in Nepal may be explained using TAM. In Nepal, some studies have been done on the usage of ICT in the Financial Sector. However, the issue of the adoption of an E-payment system has not been explained or tested against some established theories such as TAM. Again, the external factors in TAM vary with the environment and the level of development in society. TAM would help identify the external factors affecting the adoption of e-payment systems in Nepal among businesses and individuals.

2.2. Innovation Resistance Theory

Innovation resistance is generally a reaction resulting from a sensible choice. It is the resistance consumers face to innovation, due to the probable deviations from an adequate status quo or because it clashes with their belief structure. The need to study innovation resistance is due to a very high rate of new product failure encountered by most businesses. Thus, (Ram and Sheth, 1989) have developed this theory to explain why customers resist innovations. All five concepts from the Innovation resistance Theory would be adapted, specifically usage, value, risk, tradition, and image factors and another perceived cost factor (PCF) a negative valence factor, as independent variables to examine the influence of adopting mobile wallets (Ram and Sheth, 1989). The perceived cost factor is added since several studies suggest that perceived cost is a factor against adopting new technologies, including those related to mobile services. This result is consistent with the research done by Wei, Marthandan, Chong, Ooi, and Arumugam, which identified that the perceived cost hurts the adoption of mobile commerce among consumers (Chong, 2013). Hence, the perceived cost factor is an appropriate factor to examine the factors of the adoption of mobile wallets.

2.3. Review of related works

(Laukkanen, 2007) investigated the reasons behind consumer resistance to Internet banking, focusing on customers who, despite having valid contracts, preferred to pay bills via ATMs. The study aimed to identify characteristics that contributed to this resistance and their connection to individual values. Through in-depth interviews with 30 Finnish bank customers using the means-end approach and laddering technique, the findings revealed that both functional and psychological barriers—related to the service, channel, consumer, and communication—hindered the adoption of Internet banking. The study provided a deeper understanding of why some consumers resisted Internet banking and offered practical advice for service providers to address these challenges.

(Laukkanen, Sinkkonen and Laukkanen, 2008) aimed to explore and compare customer value perceptions in internet and mobile banking, particularly focusing on the perceived value and value creation between internet and mobile bill-paying services. A qualitative in-depth interviewing design was employed to identify the factors influencing value perceptions in fund transfer services via personal computers and mobile phones. The study utilized the means-end approach and laddering interviewing technique to uncover how different value-creating factors are hierarchically structured and interconnected. The findings revealed that customer value perceptions differ between Internet and mobile banking, with efficiency, convenience, and safety being prominent factors that distinguish these perceptions.

(Chemingui and others, 2013) aimed to identify factors that contribute to consumer resistance and motivation regarding the use of mobile financial services, as well as to assess the role of trust in their acceptance. Data were gathered from 300 Tunisians who did not use mobile financial services, using a questionnaire. The analysis, conducted through exploratory factor analysis and structural equation modeling, revealed that tradition significantly hindered the intention to use mobile financial services. In contrast, four motivational factors—compatibility, trialability, perceived enjoyment, and system quality—were found to positively affect the intention to adopt these services. Additionally, system quality was identified as having a significant and positive effect on trust in mobile financial services.

(Daştan and Gürler, 2016) Recent years have seen a rapid growth in e-commerce, significantly influenced by the widespread use of mobile devices. This expansion has led to an increase in trading volume and the emergence of new products and solutions, diversifying online payment options. These developments may alter consumer attitudes and behaviors. The study aimed to investigate the factors affecting the adoption of Mobile Payment Systems (MPS) by consumers. An online survey was conducted with 225 individuals using a convenience sampling method. A research model was developed, and the proposed relationships were tested using structural equation modeling. The findings revealed that perceived trust, perceived mobility, and attitudes positively influenced the adoption of MPS, while perceived usefulness and perceived ease of use did not have an effect. Additionally, perceived reputation was positively related to perceived trust, whereas environmental risk was negatively related to perceived trust.

(Keramati *et al.*, 2012) investigated the adoption of mobile payment (M-payment) services among customers. The study developed a conceptual model incorporating both technological and behavioral factors affecting M-payment adoption. A questionnaire was administered, yielding 623 completed responses from Iranian customers. To analyze the impact of demographic and cultural characteristics on the factors studied, ANOVA and MANOVA techniques were employed. The model's overall fit was evaluated using confirmatory factor analysis and logistic regression, demonstrating its suitability. The findings indicated that factors such as ease of use, usefulness, trust, compatibility, cost, social norms, payment habits, mobile phone skills, and convenience were well-aligned and had a significant influence on the adoption of M-payment services.

(Luo *et al.*, 2010) examined the factors influencing the rejection or acceptance of new IT technologies like mobile banking have intrigued information systems researchers, particularly due to concerns over consumer trust and risk perceptions in wireless platforms. This study expands on existing research by simultaneously exploring various dimensions of trust and risk perceptions during the initial adoption phase of wireless internet technology. The findings reveal that risk perception, encompassing eight distinct aspects, plays a crucial role in determining the acceptance of innovative technologies. Additionally, the study offers empirical evidence supporting the use of personal trait factors in analyzing the acceptance of emerging IT artifacts.

(Elbadrawy and Aziz, 2012) Banks are increasingly offering diverse channels like mobile banking (MB) to enhance customer convenience, cut costs, and ensure profitability. This paper proposes an integrated framework to explore the intention to adopt mobile banking in Egypt, focusing on attitudinal and technological factors that facilitate its diffusion. The study analyzed data from 380 valid questionnaires using Spearman Correlation, T-tests, and one-way ANOVA. The results revealed that compatibility, usability, and relative advantage positively influenced attitudes toward adopting mobile banking in Egypt, whereas risk and the need for interaction had a negative impact. Additionally, the study identified the customer segments most likely to embrace mobile banking in Egypt.

(Ming and Jais, 2022) The COVID-19 pandemic reshaped Malaysians' lifestyles, leading to increased e-wallet transactions due to government incentives for contactless payments. This study investigated the factors influencing e-wallet usage, focusing on government support, perceived risk, and social influence. Data from 598 respondents were analyzed using covariance-based structural equation modeling (CB-SEM). The findings indicated that perceived usefulness, government support, perceived risk, and social influence positively affected attitudes toward e-wallets, which in turn influenced users' intentions to adopt them. The study suggested that policymakers should enhance incentives and public awareness to promote e-wallet use and support the shift toward a cashless society.

(Ling et al., 2020) In the era of rapid technological advancement, e-wallet services are expanding globally, with Malaysia advancing towards a cashless society. This conceptual paper aimed to enhance understanding and provide insights for market practitioners by exploring the determinants of perceived value and adoption intention, using the Value-based Adoption Model. The study sought to address gaps in existing research by focusing on consumers' adoption intentions toward e-wallets in Malaysia. Theoretically, the research aimed to deepen understanding of factors influencing new technology adoption from a consumer perspective. Practically, it suggested that e-wallet providers should highlight both extrinsic and intrinsic benefits to boost adoption. Regular market research was recommended to align products and services with consumer expectations.

2.4. Conceptual Framework

According to the theories analyzed above on the writing, it is inspected that certain factors influence consumer adoption of mobile wallets. These elements would be utilized to look at factors influencing the adoption of the mobile wallet. The research model is illustrated in the figure below. Based on these factors, a research framework is created related to mobile wallet adoption.
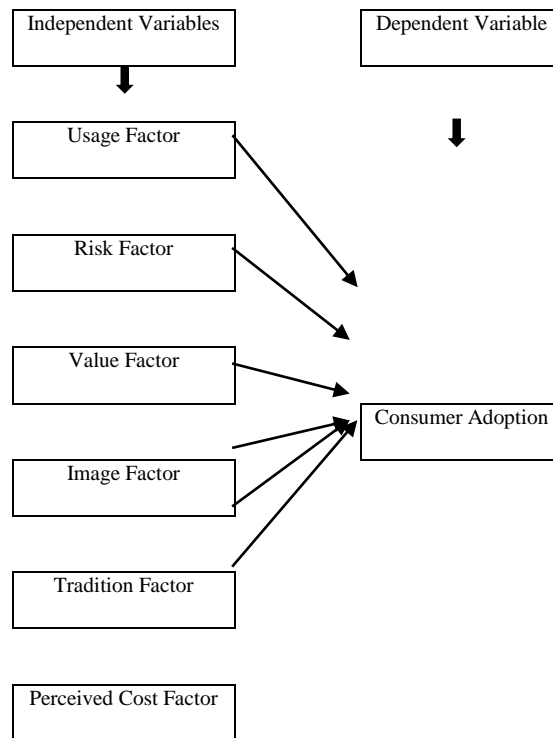
Figure 2: Conceptual Framework

2.4.1 Definitions of the Variables

Independent Variables

Independent variables are those variables which determine the value of dependent variables. Usage Factor, Risk Factor, Value Factor, Image Factor, Tradition Factor, and Perceived cost factor are independent variables that influence the adoption of mobile wallets. All the variables are measured based on a point Likert scale as 1 equal Strongly disagree and 5 equals Strongly agree.

Usage Factor: Usage Factor is resistance towards a new invention due to the inconsistency with the current routine, exercises, and plan (Shankar, 2016). Usage Factor is concerned with the usability of innovation resulting when the innovation is not the same as the current plan and practice. More effort and time are needed to familiarize and use the technology. Mobile wallets are easy to use, efficient, clear, and fast, and offer a convenient alternative to traditional payment methods.

Risk Factor: A risk Factor is an uncertainty regarding possible negative consequences of using a product or service (Marett *et al.*, 2015). Risk Factor refers to the insecurity that users experience or perceive in innovations. More risky innovation has lower acceptance. Mobile wallets provide security, privacy, and transaction verification, but they risk incorrect payments due to service failures or network issues. Compensation is typically provided for errors, mitigating potential losses. For example, some consumers might be afraid of making any mistakes when using the technology which eventually discourages them from adopting the technology.

Value Factor: Value Factor is Resistance towards usage of products or services when they do not fulfill the user's perception of performance-to-price value in contrast with other substitutes (Rammile, 2012). Mobile wallets are economical, enhance financial control, and offer extra benefits over cash. They eliminate time constraints in transactions and serve as an excellent substitute for traditional cash payments. Value Factor refers to performance–to–price value perceived by the innovation against other alternative solutions. This simply states that if the innovation does not offer greater value than the existing products, then consumers may not feel motivated to adopt the innovation.

Tradition Factor: Obstacles originate when a technological innovation poses a change in a customer's established tradition (Mohtar and Abbas, 2015). Tradition Factor exists when users prefer to have direct interaction with the respective person instead of using arm-length technologies. Users may feel patient with mobile wallets but prefer face-to-face communication, physical payments, and purchasing through computers over using mobile phones or tablets for transactions. High tradition factor will exist when the technologies have a huge effect on one's social norms, societal and family values.

Image Factor: Negative thoughts of individuals toward technology tools and perceived complications of use. Image Factor comes into place when one has a negative perception of the technology or a bad image of the respective company that introduced the technology. Mobile wallets have a positive image, are perceived as easy to use, and enjoy a good reputation, though some may find new technologies too complicated to adopt.

Perceived Cost Factor: Additional expenses incurred in transferring from wired internet payment services to ubiquitous mobile payment options perceived cost factor comes into play when additional charges need to be paid by the users to use the new technological innovation (Lu *et al.*, 2011). Cost consists of smartphone purchase price, communication fees, etc. Mobile wallets charge for services, but overall transaction costs are cheaper than other payment methods. Mobile service providers and network connection fees are generally affordable.

Dependent Variable

Dependent variables are those variables whose value is derived with the help of independent variables. Consumer Adoption is the dependent variable.

Consumer Adoption: Consequences of the sum of the variables that culminate into an intention that demonstrates that the consumer is willing to perform certain actions (Shankar, 2016).

2.5. Research Hypotheses

A literature review identified key factors influencing mobile wallet adoption: perceived usage, risk, value, cost, image, and traditional factors (Ram and Sheth, 1989; Wu and Wang, 2005; Kaur *et al.*, 2020). Demographic variables like gender, age, income, education, and occupation also impact adoption. The study's major hypotheses revolve around these identified factors and demographics.

Hypothesis 1 (H1):   There is a significant relationship between usage factors and the adoption of mobile wallets.
Hypothesis 2 (H2):   There is a significant relationship between risk factors and the adoption of mobile wallets.
Hypothesis 3 (H3):   There is a significant relationship between value factors and the adoption of mobile wallets.
Hypothesis 4 (H4):   There is a significant relationship between image factors and the adoption of mobile wallets.
Hypothesis 5 (H5):   There is a significant relationship between tradition factors and the adoption of mobile wallets.
Hypothesis 6 (H6):   There is a significant relationship between perceived cost factors and the adoption of mobile wallets.

3. Methodology

*3.1. Study Area***:** The research was carried out within the Kathmandu district among the diverse population of the district. The survey was carried out among the mobile wallet users in the study area, where the population is assumed to be undefined.

3.2. Sample size: The research used W.W Daniel's (1999) non-probability sampling technique to calculate the sample size as follows;

$$n = \frac{Z^2 . p . (1-p)}{e^2}$$ (Equation 1)

$$n = \frac{1.96^2 . 0.5 . (1-0.5)}{0.05^2} = 385$$

Where,

  n = require sample size

  z = Z-score based on the desired confidence level

  p = estimated proportion

  e = margin of error

A total of 417 samples were taken after the data pre-processing process. A convenience sampling technique followed by the snowball sampling method was used to collect the sample from the population.

3.3. Design/Approach/Method: The study utilized a qualitative research design as quantitative data was collected through a survey questionnaire. Both the dependent and independent variables were assessed using statements rated on a 5-point Likert scale. To ensure the reliability of these scales, the researcher employed Cronbach's alpha analysis.

3.4 Data Collection: The research collected primary data for the study which was gathered using a close-ended self-administered questionnaire, distributed in the form of google forms. Respondents were provided with a QR code through which they were able to access the Google form. The questionnaire was designed to explore the key factors influencing consumer adoption of mobile wallet services. The collected data was tabulated and analyzed using suitable statistical tools.

3.5 Data Analysis: The researcher utilized a combination of descriptive methods and inferential statistics for data analysis. Descriptive methods summarized the data, while inferential statistics like correlation and ANOVA (Analysis of Variance) were used to explore relationships between variables and differences among groups. Multiple regression analysis helped determine the impact of various independent variables on the dependent variable, offering insights into factors affecting consumer adoption of mobile wallets.

Hypothesis testing involved T-tests and F-tests to evaluate the statistical significance of observed relationships and group differences. T-tests compared the means of two groups, while F-tests, within the ANOVA framework, assessed the variance among multiple groups. To ensure the questionnaire's reliability, Cronbach's alpha was used, confirming that the survey items consistently measured the intended constructs. This comprehensive analytical approach provided a thorough understanding of the factors influencing consumer behavior toward mobile wallet adoption.

4. Result and Analysis

4.1. Respondent's Profile

Table 1: Profile of Respondents

Variables	Classifications	Frequency	Valid Percent
Gender	Male	243	58.3
	Female	174	41.7
Age	Below 20	46	11.0
	20-25	141	33.8
	25-30	138	33.1
	30-35	60	14.4
	35 & above	32	7.7
Education	Secondary Level	7	1.7
	High School	59	14.1
	Bachelor's Level	184	44.1
	Master's Level	159	38.2
	Pd.D/Post-Doctorate	8	1.9

Employment Status	Part-Time	35	8.4
	Full Time	196	47.0
	Unemployed	102	24.5
	Self-Employed	50	12.0
	Student	26	6.2
	Retired	8	1.9
Monthly Income	Less than Rs. 10,000	115	27.6
	Rs.10,001 to 20,000	57	13.7
	Rs.20,001 to 30,000	61	14.6
	Rs.30,001 to 40,000	53	12.7
	Rs.40,001 to 50,000	38	9.1
	Rs. 50,001 & above	71	17.0
	Undisclosed	22	5.3
Wallet Usage	Daily	79	18.9
	Weekly	72	17.3
	Monthly	49	11.8
	On the need basis	217	52.0

Source: Survey, 2024

The study surveyed 417 respondents to understand the demographics and usage patterns of mobile wallet users. Among the respondents, 243 were male (58.3%) and 174 were female (41.7%), indicating a higher usage among males. Age-wise, the dominant group was 20-25 years (33.8%), followed closely by the 25-30 age group (33.1%), with smaller proportions in other age ranges. In terms of academic qualifications, 44.1% of respondents had a bachelor's degree, 38.2% had a master's degree, and 14.1% had a high school education, showing a higher representation of individuals with higher education. Employment status revealed that 47.0% were fully employed, 24.5% were unemployed, 12.0% were self-employed, and 8.4% were part-time employed. Income-wise, the majority (27.6%) earned less than Rs 10,000 per month. Finally, the usage frequency of mobile wallets showed that 52.0% used them on a need basis, 18.9% daily, 17.3% weekly, and 11.8% monthly. This data indicates that mobile wallet usage is more prevalent among younger, educated males with varying employment and income levels, predominantly used as needed.

Mobile Wallet Preferences

Table 2: Classification of Mobile Wallets

Variables	Classifications	Frequency	Valid Percent
Mobile Wallets	E-Sewa	221	53.00
	Khalti	81	19.42
	IME Pay	50	11.99
	I-Pay	6	1.44
	Prabhu Pay	7	1.68
	Others	52	12.47
Total		417	100

Source: Survey, 2024

Table 2 reveals that E-Sewa is the most preferred mobile wallet, used by 53.0% of respondents. Khalti is next, with 19.4% usage, followed by IME Pay at 12.0%. Prabhu Pay and I-Pay have lower usage rates at 1.7% and 1.4%, respectively, while 12.5% use other bank-provided wallets.

4.2. Reliability Test

Reliability analysis ensures a scale consistently measures its construct. Cronbach's alpha is used to assess internal consistency, especially with Likert scales. A value above 0.70 indicates high reliability, above 0.60 is acceptable, and 0.60 or lower indicates unreliable data.

Table 3: Reliability Test

Variables	No. of Items	Cronbach's Alpha
Consumer Adoption (CA)	5	0.858
Usage Factors (UF)	5	0.809
Value Factors (VF)	5	0.747
Perceived Cost Factors (PCF)	4	0.668
Tradition Factors (TF)	4	0.661

Risk Factors (RF)	6	0.624
Image Factors (IF)	4	0.615

Source: Survey, 2024
(Scale: 5=Strongly Agree and 1=Strongly Disagree

The questionnaire is deemed reliable, with all Cronbach's alpha values above 0.6: usage factor (0.809), risk factor (0.624), value factor (0.747), image factor (0.615), traditional factor (0.661), perceived cost factor (0.668), and consumer adoption (0.858).

4.3. Descriptive Analysis

In this study, primary data were collected using a structured questionnaire aimed at meeting the main objective. A Five-Point Likert Scale was used, with the following scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree.

Rank Analysis of items

The rank analysis is carried out with the help of the mean value. The below shows the rank of each item of each independent variable as per the mean value.

Table 4: Rank Analysis

Factors	Items	Mean	Std. Dev	Rank
Usage Factors (UF)	UF5	4.14	0.884	1
	UF4	4.00	0.907	2
	UF1	3.98	0.833	3
	UF2	3.91	0.960	4
	UF3	3.74	0.880	5
Risk Factors (RF)	RK5	3.90	0.965	1
	RK4	3.72	0.827	2
	RK2	3.61	0.860	3
	RK3	3.38	0.952	4
	RK1	3.28	1.048	5
	RK6	3.06	1.067	6
Value Factors (VF)	VF5	4.00	0.957	1
	VF4	3.93	0.887	2
	VF3	3.79	0.928	3
	VF1	3.61	0.840	4
	VF2	3.53	1.038	5
Image Factors (IF)	IF2	3.80	0.889	1
	IF1	3.70	0.809	2
	IF4	3.68	0.794	3
	IF3	3.17	1.021	4
Tradition Factors (TF)	TF1	3.48	0.844	1
	TF2	3.20	1.021	2
	TF3	2.90	0.999	3
	TF4	2.66	1.044	4
Perceived Cost Factors (PCF)	PCT3	3.53	0.956	1
	PCT2	3.47	0.973	2
	PCT1	3.27	1.025	3
	PCT4	3.09	0.994	4
Consumer Adoption (CA)	CA3	4.06	0.879	1
	CA5	4.02	0.839	2
	CA4	3.97	0.891	3
	CA2	3.90	0.844	4
	CA1	3.76	0.869	5

Source: *Survey, 2024*

In this study, mean values for various aspects of mobile wallet usage were analyzed. The highest mean (4.14) was for "mobile wallet can be choice of payment mode," indicating strong agreement among respondents. Statements about efficiency and quick task accomplishment also had high means (3.91 and 4.0, respectively). However, "Instructions provided on the mobile wallet are clear" had the lowest mean (3.74). Respondents found mobile wallets secure and validating but were concerned about compensation after errors, reflected in

a high-risk standard deviation (1.067). Value factors showed moderate risk, with the highest mean (4.0) for "mobile wallet as a substitute for cash." The ease of use had a mean of 3.80. Traditional payment methods were less favored. Cost-related factors had moderate agreement, with means around 3.53, indicating mobile wallets are seen as cost-effective but network costs remain high.

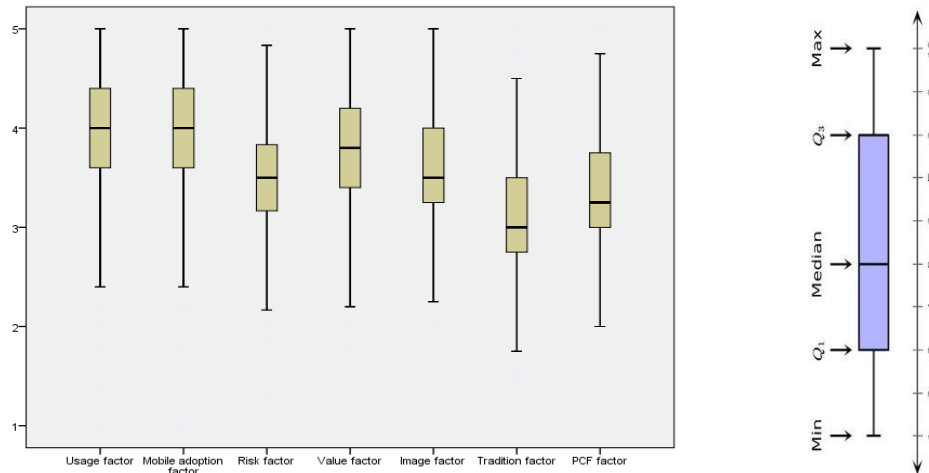### *Box-plot of Dependent and Independent Variables*

Figure 3: Box plot of Dependent and Independent Variables

A box plot can be used to illustrate the distribution of a data set. A box plot has three parts:

i. A rectangular box that extends from the first to the third quartiles (Q1 and Q3) with a line in the middle indicating the position of the median.
ii. A segment attached to the bottom of the box that extends from the first quartile to the minimum of the data set.
iii. A segment attached to the top of the box that extends from the third quartile to the maximum of the data set.

A box plot is a scaled figure, usually presented above a number line. The set of numbers used to draw the box plot is called the five-number summary of the data set. Each of the five numbers is labeled accordingly. A box plot provides a visual illustration of the distribution of a data set. Each segment of the chart contains one quarter or 25% of the data, and the center 50% of the data lies inside the box. The further apart the segments are, the greater the spread is for that quarter of the data.

Descriptive Summary of the Variables

Table 5: Descriptive Analysis of the Variables with Min-Max Values

	Minimum	Maximum	Mean	Std. Deviation
Usage Factor (UF)	1.00	5.00	3.9544	0.67321
Value Factor (VF)	1.00	5.00	3.7717	0.65740
Risk Factor (RF)	1.33	5.00	3.4912	0.53751
Image Factor (IF)	1.25	5.00	3.5857	0.59140
Tradition Factor (TF)	1.50	5.00	3.0624	0.64302
Perceived Cost Factor (PCF)	1.25	5.00	3.3357	0.62955
Consumer Adoption (CA)	1.00	5.00	3.9429	0.68997

The above table shows the mean and standard deviation for various factors influencing consumer adoption of mobile wallets. The means for usage, risk, value, image, traditional, perceived cost factors, and consumer adoption are all above 3.0, indicating agreement among respondents. Standard deviations are below 1.0, suggesting data accuracy and consistent responses. The highest mean (3.954) is for the usage factor, highlighting its significant influence on consumer adoption. This overall trend suggests that respondents are generally positive about the factors affecting mobile wallet adoption**.**

4.4. Correlation Analysis

In correlation analysis, the sample correlation coefficient, denoted as 'r', measures the direction and strength of the linear relationship between two variables, ranging from -1 to +1. A positive 'r' indicates that higher levels of one variable are associated with higher levels of the other, while a negative 'r' indicates that higher levels of one variable are associated with lower levels of the other. The magnitude of 'r' reflects the strength of the association, with values close to +1 or -1 indicating a strong relationship and values near 0 indicating no linear association. For example, r = 0.9, suggests a strong, positive association, while r = -0.2 suggests a weak, negative association.

Table 6: Correlation Co-efficient

		UF	RF	VF	IF	TF	PCF	CA
UF	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	417						
RF	Pearson Correlation	.471**	1					
	Sig. (2-tailed)	.000						
	N	417	417					
VF	Pearson Correlation	.591**	.400**	1				
	Sig. (2-tailed)	.000	.000					
	N	417	417	417				
IF	Pearson Correlation	.492**	.369**	.465**	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	417	417	417	417			
TF	Pearson Correlation	.009	.261**	.060	.244**	1		
	Sig. (2-tailed)	.849	.000	.218	.000			
	N	417	417	417	417	417		
PCF	Pearson Correlation	.313**	.243**	.330**	.444**	.274**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000		
	N	417	417	417	417	417	417	
CA	Pearson Correlation	.514**	.285**	.496**	.436**	.025	.315**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.617	.000	
	N	417	417	417	417	417	417	417

Note: Correlation is significant at the level 0.01 (2-tailed)

The above table reveals the correlation of each independent variable with the dependent variable, Consumer Adoption. All independent variables are positively correlated with Consumer Adoption, with significance levels of 0 ($p < 0.01$). The correlation coefficients are as follows: Usage Factor (r=0.514), Risk Factor (r=0.285), Value Factor (r=0.496), Image Factor (r=0.436), and Perceived Cost Factor (r=0.315). This indicates that an increase in Consumer Adoption is associated with increases in these factors, demonstrating a positive relationship between all independent variables and Consumer Adoption.

4.5. Regression Analysis

Multiple regression analysis is used to analyze the impact of multiple independent variables on single dependent variable. The equation for the Impact of independent variables is expressed in the following equation:

$$\hat{Y} = \propto + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e_i \qquad \text{(Equation 2)}$$

Where,

$\hat{Y} = CA$
$X_1 = UF$
$X_2 = RF$
$X_3 = VF$
$X_4 = IF$
$X_5 = TF$
$X_6 = PCF$
$\propto = Constant$
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 = Regression\ co-efficients\ of\ X_1, X_2, X_3, X_4, X_5, X_6$
$e_i = error\ term$

The results of the model summary, analysis of variance (ANOVA), and beta coefficients of the impact of independent variables of 'Consumer Adoption' are presented in the following tables:

Table 7: Result Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.595ª	0.354	0.345	0.55856

Note: a. Predictors: (Constant), PCF, RF, TF, VF, IF, UF

Table 7 shows the analysis for multiple regression tests. R-value represents the correlation coefficient between dependent variables and independent variables. Based on the results, the value of the correlation coefficient (R) is 0.595. Hence, there is a positive correlation between all the independent variables and the dependent variable.

R-square shows the total variation for the dependent variable that could be explained by the independent variables. Adjusted R-square shows the generalization of the results i.e., the variation of the sample results from the population in multiple regression. Besides that, the coefficient of determination (R-square) facilitates the explanation of variance. The adjusted R square of this research is 0.345, which indicates that 34.5% of the variation of dependent variable i.e., consumer adoption can be explained by the six independent variables Usage Factor, Risk Factor, Value Factor, Image Factor, Tradition Factor, and Perceived Cost Factor. However, it still leaves 65.5% uncovered variables that are important in explaining Consumer Adoption.

ANOVA

Table 8: ANOVAª

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	70.126	6	11.688	37.462	.000ᵇ
Residual	127.915	410	.312		
Total	198.042	416			

a.   Dependent Variable: Consumer Adoption
b.   Predictors: (Constant), PCF, RF, TF, VF, IF, UF

Based on above table 8, the p-value is 0.000 which is lesser than the alpha value of 0.01. Therefore, the model is a good predictor of the relationship between the dependent and independent variables. As a result, the independent variables i.e., usage, risk, value, tradition, image, and perceived cost factors are significant in explaining the variance in Consumer Adoption of Mobile wallets. Again, the F-ratio explains whether the results of the regression model have occurred by chance. The value of the F-ratio is 37.642 and is considered significant at a 1% significance level. The regression model has achieved a satisfactory level of goodness-of-fit in predicting the variance of consumer adoption of mobile wallets about six independent variables, as measured by the above-mentioned R, R square, and F-ratio.

Regression Co-efficient

Table 9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1.	(Constant)	1.091	.239		4.566	0.000
	Usage factor	0.271	.056	0.265	4.838	0.000
	Risk factor	-0.005	.061	-0.004	-0.084	0.933
	Value factor	0.246	.054	0.234	4.540	0.000
	Image factor	0.197	.059	0.169	3.329	0.001
	Tradition factor	-0.063	.047	-0.059	-1.348	0.178
	Perceived cost factor	0.107	.050	0.097	2.114	0.065

Note. Dependent Variable: CA

The above table shows the beta for all independent variables undertaken in the study to determine their influence on Consumer Adoption of mobile wallets. It shows that the usage factor has a Beta of 0.271, the risk factor has a Beta of -0.005, the value factor has a Beta of 0.246, the image factor has a Beta of 0.197, the tradition factor has a Beta of -0.063 and perceived cost factor has Beta of 0.107.

Based on the coefficients, the regression equation for the consumer adoption of mobile wallets can be written as:

$$\hat{Y} = 1.091 + 0.271X_1 - 0.005X_2 + 0.246X_3 + 0.197X_4 - 0.063X_5 + 0.107X_6$$ (Equation 3)

According to the findings, all the variables have a positive relationship with the dependent variable except the risk and tradition factors. The result shows that by increasing one unit of usage factor, consumer adoption of mobile wallet will increase by 0.271 maintaining other independent variables the same but by increasing one unit of risk factor or tradition factor, consumer adoption of mobile wallet will decrease by 0.005 or 0.063 respectively. Since the Beta of the usage factor is the highest at 0.271 and even a p-value of 0.000 which is less than the alpha value 0.01. It can be said to have the most dominant influence on Consumer Adoption of mobile wallets.

Hypotheses Testing

Table 10: Result of Hypotheses testing

	Hypotheses	β	t-value	Sig.	Result
H1	There is a significant relationship between usage factors and the adoption of mobile wallets.	0.265	4.838	0.000	Accepted
H2	There is a significant relationship between risk factors and the adoption of mobile wallets.	-0.004	-0.84	0.933	Rejected
H3	There is a significant relationship between value factors and the adoption of mobile wallets.	0.234	4.540	0.000	Accepted
H4	There is a significant relationship between image factors and the adoption of mobile wallets.	0.169	3.329	0.001	Accepted
H5	There is a significant relationship between tradition factors and the adoption of mobile wallets.	-0.059	-1.348	0.178	Rejected
H6	There is a significant relationship between perceived cost factors and the adoption of mobile wallets.	0.097	2.114	0.065	Rejected

The summary of hypothesis testing shows that three independent variables—Usage Factor, Value Factor, and Image Factor—are significantly related to Consumer Adoption of mobile wallets, with p-values less than 0.05 (0.00, 0.00, and 0.001, respectively). Thus, hypotheses *H1*, *H3*, and *H4* rejected their null hypotheses. Conversely, the Risk Factor, Tradition Factor, and Perceived Cost Factor are not significantly related to Consumer Adoption, as their p-values are greater than 0.05 (0.933, 0.178, and 0.065, respectively). Therefore, hypotheses *H2*, *H5*, and *H6* fail to reject their null hypotheses.

Traditional Factor and Consumer Adoption

The majority of the respondents in this study were between the ages of 20 and 25. The respondents must have disagreed with the tradition factor statement because the majority of them were in the 20–25 age range, for whom the comments must have been unsuitable. Only comments from respondents aged 35 and older were included for the analysis in order to determine whether or not the higher age group agreed with the tradition factor claims. Thirty-two respondents were in the 35+ age range. A separate hypothesis was established as follows;

Hypothesis 7(H7): There is a significant relationship between Age group (above 35 years) and Traditional Factors in adoption of mobile wallets.

Table 11: Correlation between TF and CA

		CA
	Pearson Correlation	.437*
TF	Sig. (2-tailed)	.012
	N	32

Note**. Correlation is significant at the 0.01 level (2-tailed)

Table shows that the Pearson Correlation Coefficient between Consumer Adoption and Tradition Factor is r = 0.437, which implies that the two variables are positively correlated. Further, this value indicates that there

is a weak correlation between Consumer Adoption and Tradition Factor as their significance level is 0.012 (p>0.01).

Table 12: Coefficient[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.770	.643		2.752	.010
Tradition Factor	.462	.174	.437	2.659	.012

a. Dependent Variable: Consumer Adoption

The results show that, when examining data from only the age group of 35 and older, the tradition component has a positive link with consumer adoption. The findings indicate that there will be a 0.462 unit rise in consumer acceptance of mobile wallets for every unit increase in the tradition factor. In this instance, it rejected the null hypothesis and hence the alternative hypothesis is accepted since the tradition factor's p-value is 0.012, which is less than 0.05.

Therefore, we can say that, there is a significant effect of tradition factors in consumer adoption towards mobile wallet in this research when taken the age group of 35 & above for whom the tradition factors statement is proved to be appropriate. This analysis concludes that age plays an important role in determining the effect of tradition factor towards consumer adoption of mobile wallet.

5. Conclusions

The research examined factors influencing consumer adoption of mobile wallets in Nepal, using the innovation resistance theory model by (Ram and Sheth, 1989) as a framework. Six key factors were considered: usage, risk, value, image, tradition, and perceived cost. The study found that the value factor is the most significant determinant of adoption. Consumers are drawn to mobile wallets that offer tangible benefits, such as cashback, free transfers, and discounts, enhancing the wallet's utility and making daily transactions more convenient. These features, coupled with fast and efficient transactions, make mobile wallets a compelling choice for consumers.

The image factor also plays a crucial role, with a positive brand reputation and favorable user reviews significantly impacting consumer decisions. Effective advertising and marketing strategies can help build this positive image, reassuring potential users about the wallet's ease of use, safety, and cost-effectiveness.

Interestingly, the risk factor did not deter adoption in Nepal. This might be due to the stringent regulatory oversight by the Nepal Rastra Bank and robust security measures like PINs and OTPs, which have built consumer trust. Additionally, the relatively low transaction limits reduce the perceived risk.

The study also found that the perceived cost and tradition factors had little influence on adoption. The minimal costs associated with mobile wallets and the high smartphone penetration rate make these services accessible. Additionally, younger consumers, who are more tech-savvy, showed little concern for traditional cash-handling methods.

In conclusion, to increase consumer adoption of mobile wallets in Nepal, service providers should focus on enhancing the value proposition and maintaining a strong brand image, while risk and cost considerations appear less critical in this context

References

Abu-dalbouh, H.M. and J. Comput (2013) 'A QUESTIONNAIRE APPROACH BASED ON THE TECHNOLOGY ACCEPTANCE MODEL FOR MOBILE', 9(6), p. 763 770.

Alsamydai, M.J. (2014) 'Adaptation of the Technology Acceptance Model (TAM) to the Use of Mobile Banking Services', *Int. Rev. Manag. Bus. Res., vol. 3, no*, 3(4), p. 2016 2028.

Chemingui, H. and others (2013) 'Resistance, motivations, trust and intention to use mobile financial services', *International Journal of Bank Marketing*, 31(7), pp. 574–592.

Chong, A. (2013) *Understanding Mobile Commerce Continuance Intentions: an Empirical Analysis of Chinese Consumers*. J. Comput. Inf. Available at: http://iacis.org/jcis/articles/JCIS534-3.pdf.

Daştan, İ. and Gürler, C. (2016) 'Factors affecting the adoption of mobile payment systems: An empirical analysis', *EMAJ: Emerging Markets Journal*, 6(1), pp. 17–24.

Davis, F.D. (1989) 'Perceived usefulness,perceived ease of use, and user acceptance of information technolog', *MIS Q. Manag. Inf. Syst.*, 13(3), p. 319 339.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989) 'User Acceptance of Computer Technology: A Comparison of Two Theoretical Models', *Manage. Sci., vol. 35, no*, 35(8), p. 982 1003.

Elbadrawy, R. and Aziz, R.A. (2011) 'Resistance to Mobile Banking Adoption in Egypt: A Cultural Perspective', *Int. J. Manag. Inf. Technol., vol. 3, no*, 3(4), p. 9 21.

Elbadrawy, R. and Aziz, R.A. (2012) 'Mobile banking contexts and prospects in Egypt: A framework', in *2012 International Conference for Internet Technology and Secured Transactions*. IEEE, pp. 766–771.

Karki, S. (2023) *Cashless economy: Awareness and adoption among university students in Kathmandu Valley*. Master's Thesis. Department of Economics.

Karki, S. and Dahal, A.R. (2024) '"Awareness and Adoption of the Cashless Economy in Nepal"', *International Journal of Management and Organization*, 2(2), pp. 1–16. Available at: https://doi.org/10.30209/IJMO.202402.002.

Kaur, P. *et al.* (2020) 'An innovation resistance theory perspective on mobile payment solutions', *J. Retail. Consum*, 55, p. 102059.

Keramati, A. *et al.* (2012) 'A combinative model of behavioural and technical factors affecting 'Mobile'-payment services adoption: an empirical study', *The Service Industries Journal*, 32(9), pp. 1489–1504.

Laukkanen, P., Sinkkonen, S. and Laukkanen, T. (2008) 'Consumer resistance to internet banking: postponers, opponents and rejectors', *International journal of bank marketing*, 26(6), pp. 440–455.

Laukkanen, T. (2007) 'Internet vs mobile banking: comparing customer value perceptions', *Business process management journal*, 13(6), pp. 788–797.

Legris, P., Ingham, J. and Collerette, P. (2003) 'Why do people use information technology? A critical review of the technology acceptance model', *Inf. Manag., vol. 40, no*, 40(3), p. 191 204.

Ling, C.H. *et al.* (2020) 'Value-Based Adoption Model on E-Wallet in Malaysia: A Conceptual Paper', in *2020 International Conference on Decision Aid Sciences and Application (DASA)*. IEEE, pp. 501–503.

Lu, Y. *et al.* (2011) 'Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective', *Inf. Manag., vol. 48, no*, 48(8), p. 393 403.

Luo, X. *et al.* (2010) 'Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services', *Decision support systems*, 49(2), pp. 222–234.

Marett, K. *et al.* (2015) 'Using mobile devices in a high risk context: The role of risk and trust in an exploratory study in Afghanistan', *Technol*, 41, p. 54 64.

Ming, K.L.Y. and Jais, M. (2022) 'Factors affecting the intention to use e-wallets during the COVID-19 pandemic', *Gadjah Mada International Journal of Business*, 24(1), pp. 82–100.

Mohtar, S.B. and Abbas, M. (2015) 'A Conceptual Investigation of Consumer Resistance to Innovations', *Middle-East J. Sci. Res., vol. 23, no*, 23(2), p. 339 346.

Pankaj, Y. (2017) 'Active Determinants for Adoption of Mobile Wallet', *i-manager s J. Manag., vol. 12, no*, 12(1), p. 7.

Rahman, M.M. (2013) 'Barriers to M-commerce Adoption in Developing Countries A Qualitative Study among the Stakeholders of Bangladesh', *Int. Technol. Manag. Rev., vol. 3, no*, 3(2), p. 80.

Ram, S. and Sheth, J.N. (1989) 'Consumer resistance to innovations: The marketing problem and its solutions', *J. Consum. Mark., vol. 6, no*, 6(2), p. 5.

Rammile, N. (2012) 'Understanding resistance to cell phone banking adoption through the application of the technology acceptance model (TAM)', *AFRICAN J. Bus. Manag., vol. 6, no*, 6(1).

Shankar, A. (2016) 'Factors affecting mobile banking adoption behavior in India', *J. Internet Bank. Commer., vol. 21, no*, 21(1).

Siddhartha, D., Rik, P. and Sanjay, F. (2011) 'Factors Affecting Behavioral Intentions towards Mobile Banking Usage: Empirical Evidence from India', *Rom. J. Mark., vol. 6, no*, 6(1).

Todd, P.A. and Taylor, S. (1995) 'Understanding Information Technology Usage : A Test of Competing Models', *Inf. Syst. Res., vol. 6, no*, 6(2), p. 144 176.

Venkatesh, V. and Morris, M.G. (2000) 'Why don t men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior', *MIS Q. Manag. Inf. Syst., vol. 24, no*, 24(1), p. 115 136.

Wu, J.H. and Wang, S.C. (2005) 'What drives mobile commerce? An empirical evaluation of the revised technology acceptance model', *Inf. Manag., vol. 42, no*, 42(5), p. 719.

Yang, K.C.C. (2005) 'Exploring factors affecting the adoption of mobile commerce in Singapore', *Telemat. Informatics, vol. 22, no*, 22(3), p. 257 277.