Factors Affecting the Adoption of Digital Wallets: The Mediating Role of Brand Awareness

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ABSTRACT

This paper examines the reasons why individuals in Bangladesh prefer using digital wallets and the impact of the brand knowledge on that preference. The research was in determining how perceived usefulness, perceived ease of use, promotional offers, digital literacy, and perceived risk influence the decision to use digital wallets. The data is collected by surveys and applied a means of comprehending the reasons why individuals embrace new technology and a means of examining how the factors and adoption are interrelating. It is because the study gathered all data on one occasion and made the people discuss their own experiences. The research has discovered that individuals will tend to use a digital wallet when they believe that it is extremely handy and they are aware and trust the brand and when they believe that the chance of losing money or personal information is high, they tend not. Attitudes regarding perceived ease of use, digital literacy of consumers and promotional offers in the short-term appeared to have no big influence on the willingness to use digital wallets. The fact that the brand awareness was an influential mediating variable between the factors and the decision to use digital wallets was important since trust reduces perceived risk. By incorporating brand awareness to the traditional method of explaining why people adopt new technology, the research found new information about why people adopt digital wallets. To business, and government officials, the findings indicate that, by creating a good brand recognition and trust, more individuals may embrace digital wallets, particularly in locations such as Bangladesh. Nevertheless, since the research was a one-time survey, and individuals were expected to indicate their own emotions, the findings could have been biased and would not be relevant to a wide range of people; the research examined few factors and not all significant issues such as attachment to government regulations or peer pressure. Future studies must gather data with time, include individuals representing various regions and varied age groups, and consider other variables relating to trust, cost, regulations, and the importance of social influence.

Keywords: *Perceived Usefullness, Perceived Ease of Use, Promotional Benefits, Digital Literacy, Perceived Risk, Brand Awareness, Adoption of Digital Wallets.*

1. INTRODUCTION

1.1 Background Of The Study

Digital technology has introduced a major change in the financial sector especially through the advent of digital wallets. bditcoins Digital wallets like bKash, Nagad, and Rocket allow customers to make safe, convenient and, in most instances, contactless payments through mobile devices. In Bangladesh, the popularization of these platforms is due to the rise of smartphone rates, better internet connections, and an organic shift of the country towards a cashless economy (Rahman et al., 2021). As people have gravitated toward digital wallets, their use has now spread

outside cities and to rural communities, which can help people increase their financial inclusion (Chowdhury and Hossain, 2020). Not only do these wallets ensure a faster transaction, they also ensure a better financial ecosystem.
Although digital wallets have gained considerable momentum in Bangladesh, the continued proliferation of this usage is hampered by a number of issues. Literature has found various attributes affecting this behavior such as the usefulness and convenience of digital wallets, appeal of promotional deals, digital literacy, and perceived risks of the technology (Islam and Hasan, 2021). But there is one aspect that has not been sufficiently investigated in the context of Bangladesh, which is the place of brand awareness as a mediator in integrating digital wallets. An established and familiar brand may make a big difference regarding its perception of users, making them trustful and less like the idea of using digital wallets. Well-established brands have the benefit of being linked to credibility, and security, which can eliminate the perceived risks of adopting a new technology (Alam & Dey, 2022).
This paper aims at investigating how the relationship between the factors listed above on one hand and use of digital wallet on the other hand can be mediated by brand awareness. Families of knowledge about this mediation will offer a compelling case to learning service providers, and afford them to apply brand equity as a potent weapon to develop improving marketing tactics and promote the greater uptaking of digital financial offerings in Bangladesh and identical markets. By focusing on brand trust in consumer confidence, service providers can increase the digital wallet adoption rates (Rahman et al., 2021).

1.2 Problem Statement

Despite the extensive literature on the different individual factors influencing the adoption of digital payment systems, including perceived usefulness, ease of use, digital literacy, perceived risk, among others, the moderating effect of brand awareness in these cases has not been sufficiently studied. Consumer attitudes are known to be impacted by brand awareness through increasing trust, familiarity, and perceived reliability, although there is a lack of research that proves its mediating effect between the variables of adoption and real adoption behavior (Rahman et al., 2021). Specifically, a key element in the readiness to adopt digital payment systems is trust, which is influenced by brand recognition, yet researches have not delved deep enough into the role of brand awareness as an intermediary in this connection (Rahman et al., 2021; Akter et al., 2020).
In addition, most of the literature available mainly discusses developed economies, whose technological infrastructure and consumer behavior are completely different as compared to emerging economies such as Bangladesh (Islam et al., 2022). To illustrate, the internet penetration, digital literacy, and consumer trust are further developed in developed nations, so their findings are less relevant to countries such as Bangladesh, where these obstacles are more eminent (Rahman et al., 2021). The current literature does not cover how these variables interact within the setting of Bangladesh and how brand awareness may be used to address these obstacles and drive higher adoption levels within these environments (Akter et al., 2020).
This study will seek to address this gap by exploring the role of brand awareness in mediating the relationship between key adoption variables, which include perceived usefulness, perceived ease of use, digital literacy, and perceived risk; and actual use of digital wallet in Bangladesh. By concentrating on popular applications, bKash, Nagad, Rocket, and upay, this research will present context-based information that can be applied to influence academic knowledge and practical approaches to promote the use of digital financial services in emerging markets (Rahman et al., 2021). The results of this study will also serve service providers to design their marketing plans to enhance adoption by building brand trust and awareness (Akter et al., 2020).

1.3 Rationale Of The Study

The mediating nature of brand awareness is important to learn about in order to increase the number of users using digital wallets when operating in a competitive and technology focused financial environment. A well-known and solid brand might be a source of trust, enhanced perceived value, and less hesitation by the consumer and thus is one of the main factors influencing the user behavior. The research will provide a good contribution to fintech firms by understanding how brand awareness affects the connection between the adoption factors like perceived usefulness, ease of use and digital literacy in order to improve their marketing and engagement techniques. Moreover, the results can be used to help policymakers and financial institutions to build more inclusive digital financial systems, especially in developing nations such as Bangladesh, where digital transformation and financial inclusion are national priorities.

1.4 Research Questions

Based on the problem statement, the following research questions are identified:

- Does perceived usefulness positively influence the adoption of digital wallets?
- Does perceived ease of use positively influence the adoption of digital wallets?

- Do promotional offers positively influence the adoption of digital wallets?
- Does digital literacy positively influence the adoption of digital wallets?
- Does perceived risk negatively influence the adoption of digital wallets?
- Does brand awareness mediate the relationship between independent variables and adoption of digital wallets?

1.5 Research Objectives

The primary objective of this paper is to analyze the mediating effect of brand awareness on the relationships between factors affecting the adoption of digital wallets and digital wallet adoption.
Secondary Objectives:

- To assess the influence of perceived usefulness, ease of use, promotional offers, digital literacy, and perceived risk on digital wallet adoption.
- To evaluate how brand awareness influences the adoption of digital wallets.
- To test the mediation role of brand awareness in the relationship between these factors and adoption behavior.

1.6 Scope Of The Study

The area of this study is well outlined in many dimensions so that the research is not broad based thereby making it focused and relative to the aim of the study. The study will be restricted geographically to Bangladesh, which exemplifies a situation of rapid growth in the digital financial services industry but still has a lot of room related to user acceptance and confidence (Rahman and Akter, 2022). Focusing on the Bangladeshi context, the work will seek to give context-specific information on consumer behavior and the particular aspects that affect the use of digital wallets in an emerging economy. Regarding the respondents, the research will be narrowed down to those who are already users of digital wallets and those that use or are aware of using them. These groups are selected as they are more likely to give valuable information about the factors influencing the intention to adopt and actual usage behavior (Singh and Arora, 2022).

The research period will be the period during which the data will be collected and that even though it is necessary to help determine whether this will be feasible research, it might not help in determining the changes in behavior that will occur over time or changes in consumer preference (Davis, 1989). The theoretical basis of this research entails consumer behavior theory and technology adoption theory. It will discuss a number of major factors leading to adoption, such as perceived usefulness, perceived ease of use, security, digital literacy, perceived risk, and promotional strategies. The uniqueness of this study is that brand awareness is included as an intervening variable; this variable is central to the development of consumer perceptions and their ultimate adoption decisions (Venkatesh et al., 2003).

Lastly, the empirical applicability of the research is the implications of its findings. The lessons learned during this study will be of keen interest to digital wallet service providers, marketers, and government stakeholders. Knowing how various variables can be interconnected, in particular, how brand awareness can moderate the interdependence between user perceptions and adoption decisions, stakeholders can design more specific measures to escalate the adoption rates, the user experience, and the overall engagement with digital wallet platforms (Alalwan et al., 2017). Finally, the study will have theoretical and practical contributions to the existing body of research on digital payment technologies in emerging markets such as Bangladesh.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Perceived Usefulness (PU)

A study of university students in Bangladesh by Shetu, Islam, and Promi (2022) resulted in a significant influence of perceived usefulness on the intention to use digital wallets to access various services, including bill payments and peer-to-peer fund transfer. The research noted that general wallets such as bKash, Nagad, and Nexus Pay were especially popular among people who found it convenient not to carry a wallet in the pockets. Perceived usefulness still had a strong influence on adoption intentions even after considering perceived ease of use and insecurity. Equally, a rural Indian study also highlighted usefulness as an important predictor of e-wallet adoption with digital literacy initiatives improving consumers' perceptions of the usefulness of the wallet and leading to consumers adapting the wallet to perform activities such as paying bills and recharging cell phones.

As the Expectation Confirmation Model (ECM), Daragmeh et al. (2022) expanded and analyzed the continued use of e-wallets in Palestine. They discovered that not only perceived usefulness affected initial adoption, but also greatly contributed to continued use, and that satisfied users remained users of e-wallets as long as they still perceived that they were useful. Hasan et al. (2024) also found that perceived usefulness was important in the adoption of mobile wallets among Indian students, with those students who perceived greater utility in digital payments more inclined to adopt them. In the same way, Mahboob et al. (2022) discovered that perceived usefulness had a direct impact on the adoption of mobile wallets in Pakistan, and users, who perceived them as time-saving and convenient to use, were more likely to adopt them, mediated by satisfaction.

H1: There is a positive impact of perceived usefulness on the adoption of digital wallets.

2.2 Perceived Ease of Use (PEOU)

Chawla and Joshi (2024) surveyed 720 rural citizens in Uttar Pradesh, India, extending the Technology Acceptance Model (TAM) with such variables as digital financial literacy and perceived financial risk. Their result showed that perceived ease of use (PEOU) was more influential on adoption intention (0.740) compared to perceived usefulness (0.643). This implies that ease of use has a higher priority than usefulness to rural users and simplified interfaces are a requirement to adoption. Equally, Hidayat-ur-Rehman et al. (2025) studied the acceptance level of using m-wallets in Bangladesh and noted that the intention to use digital wallets was chiefly influenced by ease of use and perceived level of security. They stressed in their study that simple and user-friendly apps with minimal technical complexity are essential to boost adoption.

A study by Baig and Yaqub (2022) examined the adaptation of m-wallet in Pakistan and discovered that PEOU significantly influenced the intention to use and usage behavior with ease of onboarding and transparent transaction processes being the key factors in adoption. Using the TAM and Innovation Diffusion Theory to Indian customers, Banerji and Singh (2022) estimated that PEOU was a strong predictor of attitude and intention to adopt. In Bangladesh, Shetu, Islam and Promi (2022) discovered that the PEOU was a significant predictor of adoption intention, particularly among the youth (18-35 years old) where the interface was not complicated and the learning curve was low, hence positivity influenced perceived usefulness and adoption intention.

H2: There is a positive impact of perceived ease of use on the adoption of digital wallets.

2.3 Promotional Offers (PO)

The research by Nguyen and Nguyen on the use of mobile-wallets by Vietnamese people adopted the PLS-SEM research method, which focused on evaluating the influence of promotional coupons (cashback, vouchers, free transactions, referral bonuses) on the behavior of users. They have decided that promotional benefits made a huge impact on intention and actual usage, an improved desire of a user to use the service and encouraging favorable experiences. In a competitive market such as Vietnam though, the promotions are a promotion to make an acquisition, which is a short term promotion, and backed up with reliability in the services so that it can be used long term. Kapoor and colleagues also discovered that promotion incentives, such as contactless payment during COVID-19, enhanced the intention to use, as it gave a sense of safety (2025). Perceived usefulness and trust were, however, vital to further use after promotions.

Prasad et al. (2023) analyzed the reward and referral programs in the UPI/wallet ecosystem in India and found that the promotion increased the number of transactions and new-user acquisition, although these programs were not always effective, and not all users were impressed by the promotion. According to them, adoption should be jumpstarted with promotions, but to keep users, wallets should offer frictionless experiences and strong customer service. Vedala (2025) found success in India where promotional incentives (cashback, loyalty points, discounts) promoted adoption by reducing the perceived risk and switching costs, especially among younger and lower-income populations. This research by Bhagat, even though not conducted in South Asia, resonated with these findings by reporting that monetary incentives can be more appealing when trying a new payment option, particularly among younger users, but brand presence and service quality are paramount to long-term usage.

H3: There is a positive impact of promotional offers on the adoption of digital wallets.

2.4 Digital Literacy (DL)

Research by Ullah et al. (2022) investigated Pakistani consumers and discovered that digital literacy, which refers to the skills of using smartphones, navigating applications, and assessing the information on security, played a significant role in intention to adopt m-payment and m-banking services. This study found that more digitally literate users were more confident in their ability to transact, felt less risk and were more able to interpret security cues that led to greater adoption intention. The authors also highlighted that improvement of basic digital abilities is more important than publicity to foster uptake in Pakistan. In a similar manner, Shetu, Islam, and Promi (2022) identified digital experience and digital literacy as determinants of digital wallet adoption among young

Bangladeshis. Individuals used to mobile applications and e-commerce feel that less effort and risk were involved, which in turn enhanced usefulness and intention to adopt, implying that with educative initiatives and in-app demos, trial users can become regular adopters.

Ranjit (2025) studied the e-wallet adoption in Nepal, with a focus on the role of digital literacy (financial literacy) and the authors found that it positively influenced both perceived ease of use and perceived usefulness. The research found that literacy initiatives, particularly agent-support initiatives, were critical in semi-urban and rural settings, as they help overcome the adoption disparity between urban and rural settings. These results indicate that digital literacy initiatives are essential to enhancing acceptance in areas that have different access to technology. An analogous analysis of Digital Financial Inclusion in Bangladesh (SSRN, 2025) has found digital literacy as the primary facilitator of adopting e-wallets among the disadvantaged groups. The study established how mobile training, agent help desks, and simplified user interfaces increased adoption and frequency of transactions, highlighting the need to promote fintech onboarding at a national level through literacy campaigns.

Putri (2025) has reviewed the contribution of digital literacy in end users at Padang University, Indonesia, and identified that digital literacy positively contributed to the adoption of e-wallets by enhancing perceived usefulness. Students who were digitally literate were the fastest to adopt, since they could work with higher functions such as bill splitting and budgeting. The research pointed out that the student population as early adopters could act as influencers in the dissemination of the electronic wallet usage among the social network, which is emerging in regional patterns and overall adoption trends.

H4: There is a positive impact of digital literacy on the adoption of digital wallets.

2.5 Perceived Risk (PR)

The researchers investigated the use of digital wallet in Pakistan, and concluded that the relationship between the behavioral intention and actual usage behavior is highly mediated by perceived risk (Khan and Abideen 2023). They also found that concerns relating to financial loss and data security adversely affected user intentions to use digital wallets. Nevertheless, the links between perceived risk and usage behavior were moderated by perceived trust and service quality, indicating that decreasing perceived risks and enhancing perceived trust can raise adoption. On the same note, Bland (2024) examined the risks perceived regarding mobile payment adoption in the United States and found psychological risk to have the most significant impact on consumer attitudes toward the adoption of mobile payments. The research concluded that the risks may be mitigated through educational campaigns, which would also help to increase consumer confidence with mobile payment technologies.

Kapoor et al. (2022) targeted the adoption of mobile wallets in India at the time of the COVID-19 pandemic and emphasized the role of health-related risk factors in discouraging consumers against adopting mobile wallets. Nevertheless, contactless payment and safety measures during the pandemic mitigated these concerns and resulted in an explosion of use. Shafi and Misman (2021) identified in Malaysia that the various risks encountered by users included financial risk, legal risk, security risk, and operational risk as barriers to the adoption of e-wallets, and suggested that enhancing security policies, legal frameworks, and user friendliness could address these issues. Similarly, Wei et al. (2025) in China found that although perceived value was a positive influence, perceived risk did not impact it negatively, and thus, balancing the benefits with risk mitigation measures could positively influence the adoption of mobile fintechs.

H5: There is a negative impact of perceived risk on the adoption of digital wallets.

2.6 Brand Awareness (BA)

To determine the factors affecting the adoption of e-wallets, Bagale and Srivastava (2023) conducted a survey among 387 Indian consumers and revealed that brand awareness is one of the important factors. When other factors such as perceived risk are controlled, consumers who know about the e-wallet brand names tend to trust and embrace them. On the same note, a study done in Bangladesh regarding adoption of digital payment apps (2025) also found brand recognition to be a major determinant of adoption, alongside other factors such as perception, security, age, and income. The researchers proposed awareness-creating components in form of advertising, publicity and merchant signage should be implemented before adoption undertaking aims at making users more familiar with wallet brands in Bangladesh.

A research on QR-code e-wallets in Malaysia has identified that brand awareness had a positive impact on usage intention and mediated the effects of perceived quality and brand image. It means that brand awareness is very important, particularly at the initial stages of the wallet implementation, when it gives users hints concerning the reliability and reputation of the service. A study conducted by Pratiwi and Kusnawan (2024) also demonstrated that brand awareness directly influenced the purchase intention and brand loyalty in Indonesia, indicating that the awareness not only promotes the first trials but also contributes to the development of longevity. In line with this,

Bagale and Srivastava (2023) discovered that brand awareness in India positively correlates with compatibility and perceived risk lowering, and thus is an important antecedent in the e-wallet adoption process.
H6: There is a positive impact of brand awareness on the adoption of digital wallets.

And, for the mediator, the following hypothesis are created:
H7a: Brand awareness mediates the relationship between perceived usefulness and the adoption of digital wallets.
H7b: Brand awareness mediates the relationship between perceived ease of use and the adoption of digital wallets.
H7c: Brand awareness mediates the relationship between promotional offers and the adoption of digital wallets.
H7d: Brand awareness mediates the relationship between digital literacy and the adoption of digital wallets.
H7e: Brand awareness mediates the relationship between perceived risk and the adoption of digital wallets.

2.7 Research Gap

The research on adopting digital wallets has traditionally been based on the Technology Acceptance Model, but its priorities are long since outdated, with special attention to the perceived usefulness and ease of use. Loyalty programs, biometric security and personalization of AI, and convenience and rewards are key motivators of modern wallets and security fears keep users away. The results show that existing models do not pay due attention to such significant drivers as promotional benefits, digital literacy, perceived risk and brand trust. According to industry statistics, wallets are being used as ongoing advertising forums, consumers observe real-time offers and loyalty points on their lock screens, more than two-thirds of shoppers appreciate their automatic loyalty passes. Nevertheless, even in scholarly literature, promotions are considered peripheral and seldom do they investigate the role of incentives in sustained wallet use or merely stimulates trial or do not they often consider the role of brand awareness in mediating the effect of promotions.

Other than marketing, they are hampered by structural problems. Numerous individuals do not have smartphones, high-speed internet, or other digital skills; however, most research studies tend to sample technologically-sophisticated students or urban residents and make digital literacy a control measure rather than a driving factor. It is evidenced that literacy enhances the ease of use and perceived risk but most of the adoption models do not consider the importance of literacy pointing to the creation of bridging the digital divide. Security and privacy are the primary issues of concern, 71 percent of consumers' desire improved anti-fraud mechanisms and 64 percent worry about data breaches, but in most studies such financial, privacy and psychological risks are aggregated into one. With biometric authentication becoming a commodity, it is imperative to dissect various types of risks and analyze the extent to which trust and brand recognition drives these anxieties (mitigated or not). Among the issues that marketing research highlights is the fact that brand awareness lowers perceived risk and skepticism but the mediating influence of the perceptions and promotions and adoption is rarely tested. Lastly, the number of global wallet users has already exceeded 5.6 billion and 3.4 billion users in Asia-Pacific and Latin America, and Bangladesh is not thoroughly researched. The local research continues focusing on usefulness and ease of use and is disregarding promotions and ignoring literacy and brand awareness, despite the fact that adoption choices are influenced by socio-economic situations, rules and cultural standards such as cash dependency. The context-specific studies are thus critical towards comprehending the role of the usefulness, ease of use, promotions, literacy and risk motivation mix in boosting adoption in emerging markets.

In conclusion, the literature review highlights key factors influencing digital wallet adoption and continued use, focusing on perceived usefulness, ease of use, digital literacy, and brand awareness. Studies from Bangladesh, India, and Pakistan reveal that perceived usefulness is a major factor in both initial adoption and long-term use, while ease of use and digital literacy are essential for overcoming adoption barriers, especially in rural areas. Promotional incentives and brand awareness also play a significant role in boosting adoption rates, though their effectiveness varies by demographics and market competition. Overall, the review provides a comprehensive understanding of the factors driving digital wallet adoption, offering valuable insights for policymakers, businesses, and future research in digital finance.

3. THEORETICAL AND CONCEPTUAL FRAMEWORK

The use of digital wallets has turned into one of the critical topics of research because of the accelerated revolution of financial transactions in Bangladesh. The aim of the current study is to examine the issue of factors impacting the adoption of digital wallets with a particular emphasis on the mediating aspects of brand awareness. In this section, the theoretical foundation as well as conceptual underpinnings regarding the independent, dependent, and mediating variables of the study are presented.

3.1 Dependent Variable: Digital Wallets Adoption.

Digital wallet adoption can be defined as the desire and behavior intention of users to adopt and use mobile-based financial applications in making transactions. Experts suggest that the Technology Acceptance Model (TAM) by Davis (1989) is a powerful tool that helps to comprehend the relationship between the perceived ease of use and the perceived usefulness of the technology. Considering the case of Bangladesh, where the mobile financial services are expanding at an unprecedented rate (e.g., bKash, Nagad, Rocket), user adoption behavior is the most important element to predict the future market penetration and digital financial inclusion.

3.2 Independent Variables

3.2.1 Perceived Usefulness (PU)

Perceived usefulness reflects how much the users believe that the digital wallets can ease their transactions in terms of efficiency and effectiveness. TAM postulates that the intention to adopt is directly positively influenced by the perceived usefulness. In Bangladesh, convenience, speed, and cost-effectiveness are common features that are promoted as attributes of a digital wallet, so this consideration is the focus of adoption.

3.2.2 Perceived Ease of Use (PEOU)

Perceived ease of use will describe how easy a digital wallet can be perceived as being. When the consumers feel that applications are user-friendly and need little effort to operate, then chances are high that they will be adopted. This aspect is especially applicable in Bangladesh whereby such a large percentage of the population remains at the innovative level of developing the basis of technology.

3.2.3 Promotional Benefits (PB)

Promotional benefits refer to the use of cashback deals, discounts or referral bonuses as extrinsic incentives that are used to lure users to use digital wallets. Consumer behavior studies indicate that financial rewards can affect first time adoption, but that their effects may be short lived depending on how much they are still perceived as valuable.

3.2.4 Digital literacy (DL)

Digital literacy refers to the capability of users to utilize digital technologies, such as mobile applications. In Bangladesh, the difference in digital literacy between urban and rural communities can have major impacts concerning the adoption. Greater digital literacy generates confidence, perceived risk, and financial technology adoption.

3.2.5 Perceived Risk (PR)

There is perceived risk which is in terms of privacy, security and probable monetary loss. What the perceived risk theory suggests is that the deeper the risk perceptions, the lower the chances of adoption. Trust is a problem facing the use of digital wallets in Bangladesh with fraud, system failures, or mishandling of personal data being major concerns.

3.3 Mediator: Brand Awareness (BA)

Brand awareness is the degree to which the consumer is aware of a brand and remembers it. In the digital wallet business, brand awareness moderates the connection of the independent variables to adoption. A powerful, trusted brand can help increase perceived usefulness, decrease concerns over complexity, generate confidence among more digitally inept consumers and help decrease risk perceptions. As an illustration, such brands as bKash and Nagad have developed trust and recognition through massive advertising efforts that have impacted positively on adoption. Therefore, brand awareness can be considered as a psychological filter which influences the impact of other factors of adoption.

3.4 Conceptual Framework

Based on the literature review and theoretical discussion, the following framework has been developed:

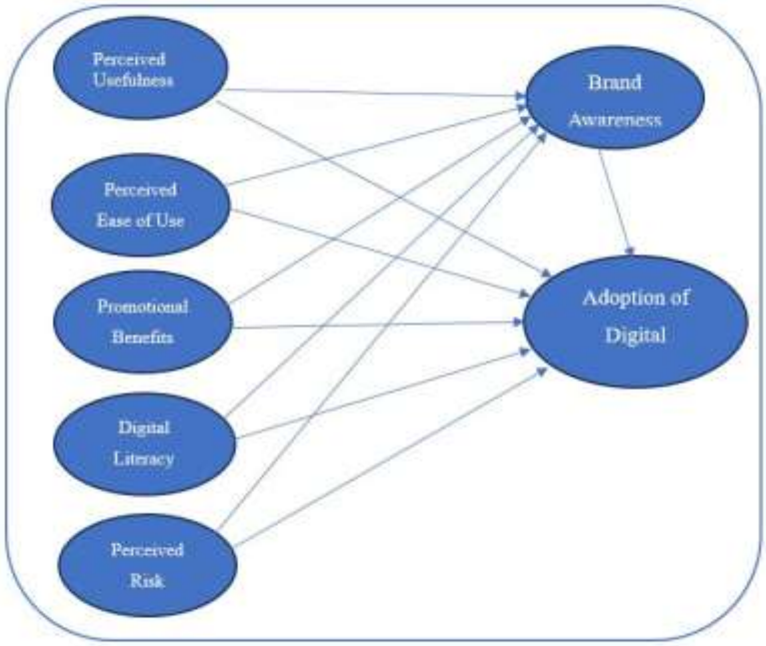

Figure 1: Theoretical Framework of the Research

3.5 Application In Bangladesh

Since the data presented in this research originated mostly in Bangladesh, the theoretical discussion is applicable to the practical world. The emergence of the digital financial services sector in Bangladesh offers a rare chance to examine the interaction of technological, behavioral and psychological factors. The knowledge of such relations will assist policymakers, banks, and FinTech businesses to develop more effective policies to facilitate the use of digital wallets.

4. METHODOLOGY

4.1 Participants and Sampling

The survey comprising of primary data in the form of an online survey was conducted via Google Forms to the consumers. A screening question was used to make sure that only those people who were familiar with the idea of digital wallets were invited to answer the questionnaire. Cumulatively, more than 300 responses were received and with the removal of the incomplete responses, about 300 valid cases were left. The method of purposive or convenience sampling was employed, just like other studies of DW that gathered data through online survey in the COVID 19 epidemic. The population was limited to adults (18 and above) because they are the ones who know about or have used digital wallets. Although such a sampling technique made the process easy, it resulted in the limited generalizability and can cause bias in samples; the limitations section takes care of these concerns.

Demographic data was gathered to characterize the sample (name, email, gender, age, education, occupation). The demographic variables need to be controlled as age, gender and education have been identified to have an impact on the use of technology. To summarize the character of the participants, descriptive statistics will be reported.

4.2 Instrumentation

A questionnaire was developed in a structured form based on validated scales in previous studies and modified to suit the digital wallets situation. The tool consisted of 28 questions. There were four items used to measure each construct except the demographic section. The respondents were asked to agree with it on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The items were modified in the following way:

- **Perceived Usefulness (4 items):** Items were scaled by Adapting questions of Bhattacherjee (2001) and Schierz et al. (2010) that referred to perceptions of whether DWs help to make payment handling easier and enhance the making of the transaction decisions.
- **Perceived Ease of Use (4 items):** The scale is based on Kapoor et al. (2015) and Rana et al. (2014) to determine how easy DWs are to use.

- **Promotional Offers (4 items):** New items were created to evaluate the effectiveness of cash backs, discounts, reward points and referral bonuses on the willingness of consumers to use DWs. They were informed by the literature that accentuates promotional advantages as the stimulants of utilizing DW.
- **Digital Literacy (4 items):** Digital literacy was assessed with items that were modified to accommodate Ng (2012) like: I can easily learn new technologies and I have good ICT skills.
- **Perceived Risk (4 items):** The items were based on the seven-dimension model of perceived risk and the criteria required the respondents to assess perceived risks of financial loss, privacy invasion, security concerns and performance/time concerns on using DWs.
- **Brand Awareness (4 items):** Items assessed the capacity of the customers to recollect and identify DW brands and to be familiar and assured with them.
- **Digital Wallets Adoption (4 items):** The dependent variable was intention to adopt or use DWs (e.g., I will use digital wallets in future) on the basis of Belanger and Carter (2008) and Venkatesh et al. (2012) scales.

  There were two pre testing of the questionnaire. To begin with, a pilot test was carried out among expert academicians and users with the view of refining the wording of the items. Second, a pilot survey of approximately 20 participants assessed the clarity of items and the time needed to take to complete the survey and had minor modifications. This refinement step aided in content validity and increased reliability.

4.3 Data Collection Procedure

The questionnaire is available in Google Forms where the final questionnaire was published and distributed via social media and email lists to get potential respondents. The survey was not closed in less than three weeks. Before consenting to the study, the respondents were informed on the purpose of the research and guaranteed of confidentiality. The participants that answered the question of familiarity with digital wallets were the only ones who received the main questionnaire. However, since each of the data was obtained by self-reported survey, post hoc statistical tests (e.g., Harman single factor test and full collinearity tests) will be imposed to determine common method variance.

4.4 Procedure of Statistical Data Analysis.

SMARTPLS will be used to analyze the data in three steps:

- **Pre analysis checks and data cleaning:** This will be prescreened on the dataset in reference to missing values, outliers and normality. Demographic characteristics will be summarized by the descriptive statistics.
- **Measurement model testing:** The reliability and validity of every construct will be tested. The internal consistency will be determined through Cronbach alpha and composite consistency. Cronbach's alpha of more than 0.7 means that the reliability is acceptable. Tests of convergent validity will be carried out by ensuring that factor loadings are more than 0.7 and average variance extracted (AVE) are more than 0.5. Fornell-Larker criterion will be used in determining discriminant validity. The confirmatory factor analysis (CFA) and exploratory factor analysis will ensure that items can be correctly loaded on their constructs.
- **Structural model and mediation analysis:** Structural equation modelling (SEM) will be used to test the hypothesized relationships. SEM is appropriate to test complex models and mediate effects since it provides the opportunity to estimate multiple paths simultaneously and takes into consideration measurement error. Bootstrapping procedures will be used to investigate the mediation effect of brand awareness. Path coefficients, t statistics and p values will be provided. The adequacy of the structural model will be measured by model fit indices (e.g., CMIN /DF, GFI, CFI, TLI, RMSEA). Compared between adopters and non-adopters, group differences can undergo t tests or multi group SEM.

4.5 Addressing Common Method Bias

Considering the self-reported type of data collection, there is a possibility of common method bias (CMB). The procedural remedies were anonymous responses, use of instructions, and separation of measurement items to predictor and criterion constructs. Post hoc statistical remedies, like Harman single factor test and the entire collinearity test, will be used to identify the presence or absence of a single factor which explained most of the variance. In the event of the need, the introduction of marker variables will take place to regulate CMB.

4.6 Ethical Considerations

Voluntary Participation: The survey itself was voluntary in nature, as the people who participated did so without being forced or pressured to take part. They were told that they had nothing to lose by participating and that they could pull out at any time.
Purpose of the Study: The research aim was well explained to the respondents during the beginning of the survey. The objectives of the study were shared with participants, giving them a context and the purpose of their participation prior to them giving any answers.
Anonymity and Confidentiality: Participants were assured anonymity and confidentiality of the responses. The survey was aimed at ensuring that personal information was not obtained and thus privacy was not compromised by collecting and tying specific responses to particular individuals.
Data Collection: There was no verifiable information-gathered in the survey. The study took care that the information respondents may give could not be subjected to identifying any individual, keeping the information intact and safeguarding the identity of the participants.

5. RESEARCH FINDINGS AND ANALYSIS

5.1 Research Findings

This sub-topic reports the outcomes of the analysis carried out with the help of the Partial Least Squares Structural Equation Modeling (PLS-SEM) to determine the connection between different independent variables and the adoption of digital wallets (AODW). The prompts included in the study are perceived usefulness (PU), perceived ease of use (PEOU), promotional offers (PO), digital literacy (DL) and perceived risk (PR) to determine their impact on both AODW and brand awareness (BA). Along with that, the mediating role of brand awareness in the association between the independent variables and AODW are discussed. This study, based on direct path analysis, specific indirect effects, and total effects, gives a complete picture of the elements affecting the adoption of digital wallets within a tech-savvy population, which has many implications on the future marketing and technology implementation strategies.

5.2 Response Rate

Table 1 gives the response rate that was realized in the data collection process. The respondents were given 600 questionnaires. Among them, 320 questionnaires were returned, and 304 of them were discovered to be viable in the analysis. 14 questionnaires were either incomplete or had an inconsistent answer. Thus, the total amount of usable questionnaires that can still be further analyzed in this study is 304. This research has a response rate of 50.67.
Fowler Jr et al. (2002) state that no predetermined response rate is viewed as appropriate to analyse the data with SMART PLS. In social science research, however, a response rate of 20 to 30 per cent is usually assumed to be acceptable in data analysis (Allinson et al., 2000). The current study has a response rate of 50.67 percent which is not only acceptable but also adequate to the objectives of the study implying the high degree of participation. Such response rate is significantly higher than the average standard of social science research strengthening the credibility of the analysis.

Questionnaire	**Number**
Distributed Questionnaires	600
Returned Questionnaires	320
Usable Questionnaires	304
Incorrect/incomplete response	14

Table 1: Response of Questionnaires

5.3 Profile of the Respondents

The section provides the overview of the demographic characteristics of the respondents in the study that were found to be important. The knowledge of these elements will allow putting the data into perspective and drawing conclusions about the outcomes. The aspects that are taken into account are gender, age, education level, and occupation, all these aspects shape the views and behaviors of the participants included in the study. The factors are broken down below.

Demographic Factors	**Frequency N= 304**	**Percent**

Gender	Male	215	29.3%
	Female	89	70.7%
	Total	**304**	**100%**
Age	Under 20	6	2%
	20-30	248	81.6%
	31-40	37	12.2%
	40 to Above	13	4.3%
	Total	**304**	**100%**
Education	Masters	132	43.4%
	Honours	152	50%
	HSC	14	4.6%
	SSC or below	6	2%
	Total	**304**	**100%**
Occupation	Student	96	31.6%
	Employed	149	49%
	Self-employed	23	7.6%
	Jobseeker	33	10.9%
	Retired	3	1%
	Total	**304**	**100%**

Table 2: Demographic Factors

Gender

The sample of the study is rather male dominated (70.7% of the total number of respondents 215 males). By contrast, the proportion of females in the sample (89 females) is 29.3. This indicates that it is more likely to have males represented in this dataset and this could affect the general analysis and generalization of the data.

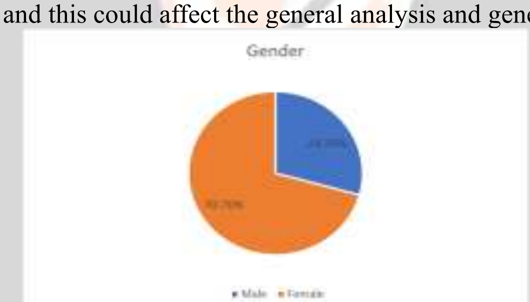

Figure 2: Gender

Age

Most of the respondents are between the ages of 20 and 30 years and constitute 81.6 percent of the sample (248 respondents). The data is dominated by the younger age groups which include only 2% of respondents under the age of 20 and a minor percentage (12.2) between the age of 31 and 40. With only 4.3 percent of the respondents being 40 and above, this shows that the survey is younger.

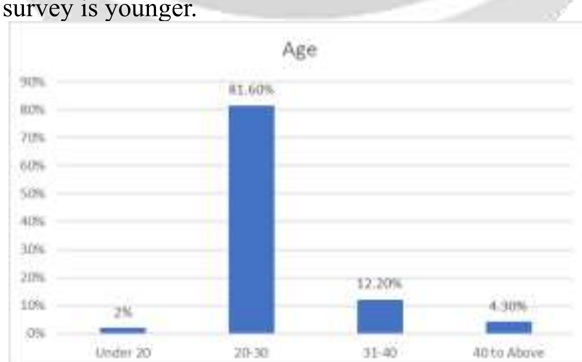

Figure 3: Age

Education

The majority are educated to higher degree, with 43.4% having a Master degree and 50% having an Honours degree.

The percentage of people who have only completed Higher Secondary Certificate (HSC) is a mere 4.6 and even those with less education is only 2%. This implies that the sample consisted of a highly educated population of respondents that may affect their perceptions and answers.

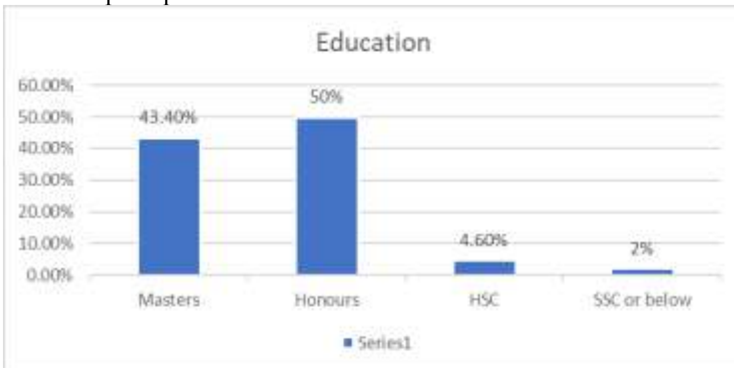

Figure 4: Education

Occupation

The jobs of the respondents are varied, 49 percent of the respondents are employed, 31.6 are students and 7.6 are self-employed. A lower percentage are jobseekers (10.9%), or retired (1%). This distribution assumes that there is a combination of career stages with a high proportion of students and employed people which can contribute to various financial behaviors or attitudes.

Figure 5: Occupation

5.4 Results of PLS-SEM

Here is the PLS-SAM analysis that entails the measurement along with a structural model. The outcome of the measurement model determines reliability and validity of the measurement of the latent constructs and the structural model examine the hypothetical relationship between them. As per the methodology of this paper we have used disjoint two stage higher order analysis wherein we will first establish the reliability and validity of the lower order and then analyze the latent constructs score to determine the reliability and validity of the higher order construct.

5.4.1 Measurement Model of Lower Order Constructs

The quality of construct is determined according to the results of our measurement model. The quality analysis criteria begin with the factor loading then the construct reliability and construct validity.

5.4.2 Factor Loading

Confirmatory factor analysis (CFA) is a popular methodology in the structural equation modeling (SEM) to test the validity of the measurement models. CFA assists in knowing whether observed indicators are suitable to represent latent constructs. Factor loading is one of the most relevant criteria that are used to assess the quality of indicators, and it is the power of the relationship between the indicator and the latent construct. Factor loadings above 0.7 are generally deemed as a good relationship between the two (Hair et al., 2021). Also, the p-value of the factor loading tests the statistical significance of the indicator. The p-value of below 0.05 tends to imply that the correlation between the indicator and latent construct is statistically significant (Field, 2013).

This analysis has considered some indicators of the adoption of digital wallets. The factor loading of indicators, namely AODW1, AODW2, AODW3, and AODW4 as the use of digital wallets, were more than 0.7, and the p-value of 0.05 indicated that these indicators were strongly related to the latent construct and were statistically significant. Similarly, the indicators with Brand Awareness (BA2, BA3, BA4) and Digital Literacy (DL1, DL2, DL3, DL4) properties also passed the loading and significance tests, as they indicate the applicability of these indicators in explaining the two constructs.

Nevertheless, some indicators were not at the optimal level. An example is that BA1 (Brand Awareness) has a factor loading of 0.691 which is lower than the advised 0.7 factor loading and PU1 (Perceived Usefulness) had a lower factor loading of 0.700. These measures, thus, might not be effective in measuring the constructs and may be improved in subsequent studies. Optimizations to these indicators might be able to enhance the quality of model fit and reliability.

In conclusion, most indicators in this paper achieved the anticipated factor loading and p-value significance levels, but others need to be optimized. Future research and additional model refinements may produce a stronger and more realistic model of the latent constructs within the digital wallet adoption model.

Variables	Indicators	Loading Value	T Statistics	P Values
Adoption of Digital Wallets (AODW)	AODW1	0.775	24.508	0.000
	AODW2	0.847	39.428	0.000
	AODW3	0.830	39.189	0.000
	AODW4	0.859	42.376	0.000
Brand Awareness (BA)	BA1	0.691	13.838	0.000
	BA2	0.756	20.465	0.000
	BA3	0.738	17.095	0.000
	BA4	0.809	27.199	0.000
Digital Literacy (DL)	DL1	0.809	33.948	0.000
	DL2	0.750	20.171	0.000
	DL3	0.834	34.792	0.000
	DL4	0.756	21.958	0.000
Perceived Ease of Use (PEOU)	PEOU1	0.700	15.092	0.000
	PEOU2	0.773	26.016	0.000
	PEOU3	0.775	21.791	0.000
	PEOU4	0.817	26.181	0.000
Promotional Offers (PO)	PO1	0.764	15.438	0.000
	PO2	0.773	17.341	0.000
	PO3	0.777	17.156	0.000
	PO4	0.873	34.673	0.000
Perceived Risk (PR)	PR1	0.897	54.509	0.000
	PR2	0.926	85.052	0.000
	PR3	0.800	18.340	0.000
	PR4	0.902	50.561	0.000
Perceived Usefulness (PU)	PU1	0.700	12.468	0.000
	PU2	0.816	25.779	0.000
	PU3	0.632	8.142	0.000
	PU4	0.786	18.834	0.000

Table 3: Loading Value

5.4.3 Convergent validity

Hulland (1999) advises that in cases where numerous items are used to describe one latent variable, the researcher ought to not only worry about the validity of the specific measurement items, but also the extent to which the items share a convergent validity relationship. Convergent validity measures the internal consistency. It is estimated to ensure that the items which are supposed to measure one and not another latent variable actually measure this variable and not another. In order to measure the convergent validity of the constructs in PLS, two tests may be implemented.

Constructs	Cronbach's Alpha	Composite Reliability (rho a)	Composite Reliability (rho c)	Average Variance Extracted (AVE)

AODW	0.847	0.849	0.897	0.686
BA	0.739	0.745	0.836	0.562
DL	0.797	0.805	0.867	0.621
PEOU	0.769	0.782	0.851	0.589
PO	0.810	0.830	0.875	0.637
PR	0.909	0.967	0.934	0.779
PU	0.717	0.734	0.825	0.543

Table 4: Convergent Validity

The findings included in the table indicate measurement characteristics of various constructs employed in the study with a concern on reliability and validity. Cronbach Alpha of each construct is greater than the generally recognized value of 0.7 meaning that there is good internal consistency. As an example, AODW has a Cronbachs Alpha of 0.847, which indicates that the items to measure this construct are reliably representing the same construct. Conversely, PU of 0.717 implies that there is a relatively lower consistency, though it falls within the minimum parameter of reliability. The PR construct shows the best reliability having a Cronbachs Alpha of 0.909 meaning that the items are highly consistent.

The additional data on the internal consistency of the constructs is provided by Composite Reliability values (rho a and rho c). PR again takes the lead in terms of highest values of composite reliability (rho a = 0.967, rho c = 0.934), which goes a long way in supporting its reliability. AODW is also very well measured by rho a = 0.849 and rho c = 0.897. Other constructs such as PU (rho a = 0.734, rho c = 0.825) are only acceptable but slightly lower, which implies that the stability of the reliability of this construct is not as high as other constructs, but it remains acceptable.

Lastly, the values of the Average Variance Extracted (AVE) are the measures of the validity of the constructs, which reflect how much of the variance in the indicators is accounted by the construct. A value greater than 0.5 is a good value and a number of constructs including PR (AVE = 0.779), AODW (AVE = 0.686) and PO (AVE = 0.637) all have values that are higher than 0.5 indicating that they explain an adequate amount of variance in each of their respective measures. PU on the other hand, with AVE of 0.543, is at the borderline of acceptability and hence moderate validity, whereas BA (AVE = 0.562) is acceptable but not strong. In general, the constructs tend to be well-reliable and valid, but certain of them, especially PU and BA, might need additional development.

5.4.4 Analysis of cross-loadings

Cross-loadings play an important role in determining the discriminant validity in structural equation modeling (SEM). The discrimination validity is the assurance that the constructs in the model are differentiated and the indicators will be higher to their own constructs compared to others. One of the most frequently used methods to test discriminant validity is to compare loading of individual indicators on its own construct with that of indicators on the other constructs. Ideally, a single indicator is supposed to be loaded maximum on its construct, and less on the other constructs (Fornell and Larcker, 1981).

Cross Loadings	AODW	BA	DL	PEOU	PO	PR	PU
AODW1	0.775	0.353	0.327	0.301	0.369	-0.198	0.344
AODW2	0.847	0.437	0.297	0.285	0.247	-0.197	0.380
AODW3	0.830	0.416	0.362	0.373	0.198	-0.151	0.421
AODW4	0.859	0.366	0.264	0.289	0.211	-0.235	0.436
BA1	0.285	0.691	0.324	0.298	0.146	0.140	0.268
BA2	0.339	0.756	0.283	0.331	0.163	0.122	0.268
BA3	0.359	0.738	0.311	0.251	0.209	0.102	0.181
BA4	0.431	0.809	0.404	0.370	0.165	-0.033	0.200
DL1	0.388	0.365	0.809	0.475	0.356	-0.142	0.343
DL2	0.243	0.310	0.750	0.309	0.317	-0.078	0.255
DL3	0.289	0.347	0.834	0.454	0.341	-0.123	0.259
DL4	0.247	0.372	0.756	0.409	0.353	0.042	0.234

PEOU1	0.219	0.268	0.303	0.700	0.190	-0.086	0.308
PEOU2	0.370	0.330	0.520	0.773	0.306	-0.166	0.269
PEOU3	0.238	0.307	0.364	0.775	0.265	-0.079	0.296
PEOU4	0.304	0.372	0.405	0.817	0.350	0.004	0.307
PO1	0.178	0.201	0.313	0.334	0.764	-0.053	0.203
PO2	0.307	0.090	0.228	0.130	0.773	-0.160	0.295
PO3	0.190	0.191	0.350	0.291	0.777	-0.076	0.266
PO4	0.286	0.237	0.470	0.411	0.873	-0.118	0.325
PR1	-0.190	0.093	-0.127	-0.095	-0.108	0.897	-0.051
PR2	-0.262	0.114	-0.076	-0.139	-0.103	0.926	-0.107
PR3	-0.092	0.038	-0.086	-0.059	-0.050	0.800	-0.016
PR4	-0.219	0.090	-0.072	-0.060	-0.171	0.902	-0.100
PU1	0.402	0.189	0.153	0.137	0.120	-0.101	0.700
PU2	0.433	0.240	0.358	0.373	0.410	-0.113	0.816
PU3	0.202	0.287	0.265	0.366	0.192	0.084	0.632
PU4	0.329	0.197	0.251	0.262	0.270	-0.093	0.786

Table 5: Cross Loadings

In the given set, signals represent a difference in the level of cross-loadings among constructs. As one can see, AODW1 is most loaded (0.775) on Adoption of Digital Wallets (AODW) but less loaded on the other constructs such as Brand Awareness (BA) (0.353) and Perceived Usefulness (PU) (0.344). This trend is typical of the majority of indicators in the AODW construct with them having relatively higher loadings to their own construct than to other constructs. The same tendencies can be seen regarding the rest of the constructs including Digital Literacy (DL), Perceived Ease of Use (PEOU), and Promotional Offers (PO).
There are, however, indicators that have moderate cross-loadings, which might indicate possible problems. As an illustration, BA1 loads on Brand Awareness (BA) (0.691) are also highly loaded on Adoption of Digital Wallets (AODW) (0.285) and Digital Literacy (DL) (0.324). This shows that there is a certain overlap between the constructs and that it might need more consideration or refinement to achieve clear discriminant validity.
Cross-loadings must be examined doubly to be sure of strong model validity and indicators with a lot of overlap must be reviewed or restrained. The constructs that have weaker cross-loadings like the Perceived Risk (PR) and the Promotional Offers (PO) seem to have better discriminant validity.

5.4.5 Fornell-Larcker criterion

Fornell-Larcker criterion is often applied to determine the discriminant validity of the structural equation modeling (SEM). On the basis of this criterion, discriminant validity is also supported when the square root of Average Variance Extracted (AVE) of each construct is larger than the correlations between that construct and the rest of the constructs in the model. In particular, the value in the diagonal symbolizes the square root of AVE of each construct, and the off-diagonal values are the correlations of constructs (Fornell and Larcker, 1981).

Fornell-Larcker criterion	**AODW**	**BA**	**DL**	**PEOU**	**PO**	**PR**	**PU**
AODW	0.828						
BA	0.475	0.750					
DL	0.377	0.443	0.788				
PEOU	0.377	0.420	0.529	0.768			
PO	0.306	0.227	0.434	0.370	0.798		
PR	-0.236	0.103	-0.099	-0.107	-0.131	0.883	
PU	0.478	0.304	0.350	0.381	0.346	-0.089	0.737

Table 6: Fornell-Larcker criterion

In the case of the constructs in this dataset, we can see the extent to which the square root of AVE (which is depicted on the diagonal), is greater than the correlations among the constructs. On the one hand, the square root of Adoption of Digital Wallets (AODW) = 0.828 is greater than its relationship with other constructs, like Brand Awareness (BA) (0.475) and Perceived Usefulness (PU) (0.478), thus, indicating discriminant validity of AODW.
Equally, Perceived Risk (PR) has a square root of AVE of 0.883 that is greater than its correlations with other constructs, including AODW (-0.236) and Perceived Usefulness (PU) (-0.089). It means that PR also has good discerning validity. Conversely, the square root of AVE of Perceived Usefulness (PU) is higher (0.737) than the correlations of Usefulness with most of the constructs and thus, it indicates that Usefulness may overlap with other constructs, such as AODW (0.478) and Brand Awareness (BA) (0.304).
Other constructs such as Brand Awareness (BA) (AVE = 0.750) and Digital literacy (DL) (AVE =0.788) exhibit good discriminant validity since their values of AVE are higher than the one with other constructs. Conversely, constructs with lower values of AVE, including Promotional Offers (PO) (AVE = 0.798) have a stronger correlation with the respective indicators than other constructs, which support their uniqueness.
In this way, the Fornell-Larcker criterion provides the discriminant validity of most constructs, but a few overlapping correlations, especially between PU and AODW, indicate some aspects to be improved in future studies.

5.4.6 Heterotrait-Monotrait Ratio (HTMT)

The Heterotrait-Monotrait Ratio (HTMT) is a recent technique of evaluating discriminant validity in structural equation modeling (SEM). It is the ratio of the correlations of Heterotrait constructs (i.e., the different constructs) to the correlations of the Monotrait constructs (i.e., the same construct). The prevalent HTMT cut-off point is 0.85, and therefore, when the value of the HTMT falls below this value, the constructs are said to be discriminant (Henseler et al., 2015). When the HTMT value is greater than this value, then it indicates that there is no discriminant validity meaning that the constructs might overlap.

Heterotrait-monotrait ratio (HTMT) - Matrix	AODW	BA	DL	PEOU	PO	PR	PU
AODW							
BA	0.596						
DL	0.451	0.573					
PEOU	0.456	0.548	0.653				
PO	0.367	0.293	0.529	0.452			
PR	0.245	0.160	0.148	0.130	0.141		
PU	0.594	0.429	0.456	0.525	0.436	0.147	

Table 7: Heterotrait-Monotrait Ratio (HTMT)

The values of the HTMT of most constructs in this dataset are less than the 0.85 cutoff indicating high levels of discriminant validity. To illustrate, Adoption of Digital Wallets (AODW) gives the values of HTMT of 0.596 Brand Awareness (BA) and 0.451 Digital Literacy (DL). These values are far lower than the threshold, and this means that AODW has sufficient discriminant validity on these constructs. Equally, Perceived Risk (PR) has even lower values of HTMT like 0.245 with AODW and 0.141 with Perceived Usefulness (PU), which proves its uniqueness in the model.
Nevertheless, some of the constructs have some constructs with the HTMT values close to the threshold like Perceived Usefulness (PU), which has HTMT values of 0.594 with AODW and 0.525 with PEOU. Such values imply that although the different constructs are different there is some overlapping and even more focus should be given to improve the model further.
In general, the HTMT matrix demonstrates that the vast majority of the constructs have good discriminant validity since the values of HTMT are much less than 0.85. Nevertheless, the moderately high HTMT values of some constructs, especially PU, can be regarded as a sign that the model should be refined further to provide more distinct constructs.

5.4.7 R-square

R-Squared values indicate the percentage of the variance that is accounted by the predictors of the model. In the case of Adoption of Digital Wallets (AODW), the R-square value is 0.417, meaning that the independent variables used in developing the model accounted 41.7 percent of the variance in AODW. Adjusted R-squared of AODW = 0.405, that adjusts the R-squared of the number of predictors, and gives a better fit estimate of the model. The marginal difference between R-square and adjusted R-square indicates that the model explains a large amount of the variance albeit that some predictors might have less influence in explaining AODW.

	R-square	R-square adjusted
AODW	0.417	0.405
BA	0.284	0.272

Table 8: R-square

Under Brand Awareness (BA), the R-Squared of 0.284 gives us appreciation that 28.4% of the interest in brand awareness is covered by the independent variables and the adjusted RSquared is 0.272. This suggests that the explanatory power of BA is relatively low and thus other external variables that cannot be explained by the existing model may have significant influence on brand awareness (Chin et al., 2003).

5.5 Path Analysis

5.5.1 Result of Direct Path

The direct path analysis results give significant information about the relationship between different variables, including perceived usefulness (PU), perceived ease of use (PEOU), promotional offers (PO), digital literacy (DL), and perceived risk (PR) and adoption of digital wallets (AODW) and brand awareness (BA). The results of the hypothesis testing are used to know what factors are having significant impacts and which are not.

Hypothesis	Relationships	Path coefficient β	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Statistical Inference
H1	PU -> AODW	0.297	0.074	4.029	0.000	Supported*
H2	PEOU -> AODW	0.045	0.075	0.603	0.547	Not Supported
H3	PO -> AODW	0.058	0.061	0.939	0.348	Not Supported
H4	DL -> AODW	0.042	0.083	0.509	0.611	Not Supported
H5	PR -> AODW	-0.230	0.047	4.927	0.000	Supported*
H6	BA -> AODW	0.358	0.107	3.354	0.001	Supported*
	PU -> BA	0.130	0.067	1.927	0.054	Supported**
	PEOU -> BA	0.237	0.074	3.226	0.001	Supported*
	PO -> BA	-0.011	0.058	0.198	0.843	Not Supported
	DL -> BA	0.294	0.075	3.906	0.000	Supported*
	PR -> BA	0.168	0.052	3.204	0.001	Supported*

Table 9: Result of Direct Path

*Supported at 5% Significance Level

**Supported at 10% Significance Level

H1: Perceived Usefulness (PU) -> Adoption of Digital Wallets (AODW): The relationship between Perceived Usefulness (PU) and Adoption of Digital Wallets (AODW) is supported, with a path coefficient of 0.297 and a T-statistic of 4.029. The P-value is 0.000, which is statistically significant, indicating that perceived usefulness plays a crucial role in encouraging consumers to adopt digital wallets.

H2: Perceived Ease of Use (PEOU) -> Adoption of Digital Wallets (AODW): The relationship between Perceived Ease of Use (PEOU) and Adoption of Digital Wallets (AODW) is not supported, as the path coefficient is 0.045 and the T-statistic is 0.603. The P-value of 0.547 indicates that perceived ease of use does not have a significant impact on the adoption of digital wallets in this study.

H3: Promotional Offers (PO) -> Adoption of Digital Wallets (AODW): The relationship between Promotional Offers (PO) and Adoption of Digital Wallets (AODW) is not supported, with a path coefficient of 0.058 and a T-statistic of 0.939. The P-value of 0.348 suggests that promotional offers do not significantly influence the adoption of digital wallets in this study.

H4: Digital Literacy (DL) -> Adoption of Digital Wallets (AODW): The relationship between Digital Literacy (DL) and Adoption of Digital Wallets (AODW) is not supported, as the path coefficient is 0.042 and the T-statistic is 0.509. With a P-value of 0.611, the data does not show a significant impact of digital literacy on the adoption of digital wallets.

H5: Perceived Risk (PR) -> Adoption of Digital Wallets (AODW): The relationship between Perceived Risk (PR) and Adoption of Digital Wallets (AODW) is supported, with a path coefficient of -0.230 and a T-statistic of 4.927. The P-value of 0.000 indicates that perceived risk significantly negatively impacts the intention to adopt digital wallets, suggesting that higher perceived risks discourage adoption.

H6: Brand Awareness (BA) -> Adoption of Digital Wallets (AODW): The relationship between Brand Awareness (BA) and Adoption of Digital Wallets (AODW) is supported, with a path coefficient of 0.358 and a T-statistic of 3.354. The P-value of 0.001 shows that higher brand awareness positively influences digital wallet adoption, underlining the importance of strong brand recognition in driving consumer adoption.

Other Relationships: The results also show significant relationships between several independent variables and Brand Awareness (BA). Perceived Usefulness (PU) has a positive effect on brand awareness, with a path coefficient of 0.130 and a T-statistic of 1.927, which is marginally significant with a P-value of 0.054. Perceived Ease of Use (PEOU) has a strong positive effect on BA with a path coefficient of 0.237 and a significant T-statistic of 3.226 (P-value 0.001). Digital Literacy (DL) has a significant positive impact on BA (0.294 path coefficient, 3.906 T-statistic, P-value 0.000). Perceived Risk (PR) also positively affects BA (0.168 path coefficient, 3.204 T-statistic, P-value 0.001). However, Promotional Offers (PO) do not significantly influence Brand Awareness, with a path coefficient of -0.011 and a T-statistic of 0.198 (P-value 0.843).

5.5.2 Specific Indirect Effect:

The discussion about the mediation effect of brand awareness (BA) on the association between different independent variables and the adoption of digital wallets (AODW) offers useful lessons on the indirect impact of brand awareness on adoption. To give this decision, the mediation analysis is utilized to determine whether the effect of an independent variable on a dependent variable is mediated by a mediator in this case, brand awareness.

Hypothesis	**Relationships**	**Path coefficient β**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**	**Statistical Inference**
H7a	PU -> BA -> AODW	0.046	0.026	1.819	0.069	Supported**
H7b	PEOU -> BA -> AODW	0.085	0.030	2.833	0.005	Supported*
H7c	PO -> BA -> AODW	-0.004	0.021	0.194	0.846	Not Supported
H7d	DL -> BA -> AODW	0.105	0.038	2.761	0.006	Supported*
H7e	PR -> BA -> AODW	0.060	0.025	2.444	0.015	Supported*

Table 10: Specific Indirect Effect

*Supported at 5% Significance Level
**Supported at 10% Significance Level

Firstly, Perceived Usefulness (PU) has a positive indirect effect on digital wallet adoption through brand awareness, with a path coefficient of 0.046 and a p-value of 0.069, supported at the 10% significance level. This suggests that when consumers perceive a digital wallet as useful, it positively influences their awareness of the brand, indirectly encouraging adoption. Similarly, Perceived Ease of Use (PEOU) also demonstrates a positive indirect effect with a path coefficient of 0.085 and a p-value of 0.005, supported at the 5% significance level. This indicates that the easier users find a digital wallet to use, the more aware they become of the brand, leading to higher adoption rates. Digital Literacy (DL) shows a significant positive indirect effect with a path coefficient of 0.105 and a p-value of 0.006, supported at the 5% significance level. A higher level of digital literacy enhances brand awareness, thereby promoting digital wallet adoption. Lastly, Perceived Risk (PR) has a positive indirect effect with a path coefficient of 0.060 and a p-value of 0.015, supported at the 5% significance level. While it might seem counterintuitive, the higher perceived risk is associated with greater brand awareness, which in turn encourages adoption.

On the other hand, Promotional Offers (PO) does not show a significant indirect effect on digital wallet adoption through brand awareness. With a path coefficient of -0.004, a t-statistics value of 0.194, and a p-value of 0.846, this relationship is not supported. The lack of significance suggests that promotional offers do not substantially affect brand awareness in a way that influences the adoption of digital wallets.

In conclusion, Brand Awareness plays a critical role as a mediator in the adoption process, with Perceived Ease of Use, Digital Literacy, and Perceived Risk significantly affecting adoption through brand awareness, while Promotional Offers does not appear to have any substantial impact.

5.5.3 Total Effect

The results of the overall impact of the independent variables on the adoption of digital wallets (AODW) can be helpful in understanding the factors that greatly determine the adoption behavior.

Relationships	Path coefficient β	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Statistical Inference
PU -> AODW	0.343	0.067	5.146	0.000	Supported*
PEOU -> AODW	0.130	0.070	1.856	0.063	Supported**
PO -> AODW	0.053	0.066	0.808	0.419	Not Supported
DL -> AODW	0.147	0.068	2.158	0.031	Supported*
PR -> AODW	-0.169	0.052	3.283	0.001	Supported*

Table 11: Total Effect

*Supported at 5% Significance Level
**Supported at 10% Significance Level

Starting with the supported hypotheses, Perceived Usefulness (PU) shows a significant positive total effect on the adoption of digital wallets, with a path coefficient of 0.343 and a p-value of 0.000, supported at the 5% significance level. This suggests that when consumers find digital wallets useful, it strongly influences their decision to adopt them. Perceived Ease of Use (PEOU) also has a positive total effect with a path coefficient of 0.130 and a p-value of 0.063, supported at the 10% significance level. This indicates that while the effect is weaker than perceived usefulness, the ease of use still plays a role in encouraging digital wallet adoption. Digital Literacy (DL) shows a positive total effect with a path coefficient of 0.147 and a p-value of 0.031, supported at the 5% significance level. Higher digital literacy increases the likelihood of digital wallet adoption, emphasizing the importance of users' ability to navigate technology. Lastly, Perceived Risk (PR) demonstrates a significant negative total effect on adoption, with a path coefficient of -0.169 and a p-value of 0.001, supported at the 5% significance level. This indicates that a higher perceived risk reduces the likelihood of adopting digital wallets.

However, Promotional Offers (PO) does not show a significant total effect on the adoption of digital wallets. The path coefficient is 0.053, with a t-statistics value of 0.808 and a p-value of 0.419, indicating that the relationship is not supported. This suggests that promotional offers do not significantly influence consumers' decisions to adopt digital wallets.

In conclusion, Perceived Usefulness, Perceived Ease of Use, Digital Literacy, and Perceived Risk play important roles in shaping the adoption of digital wallets, with Promotional Offers not having a substantial impact.

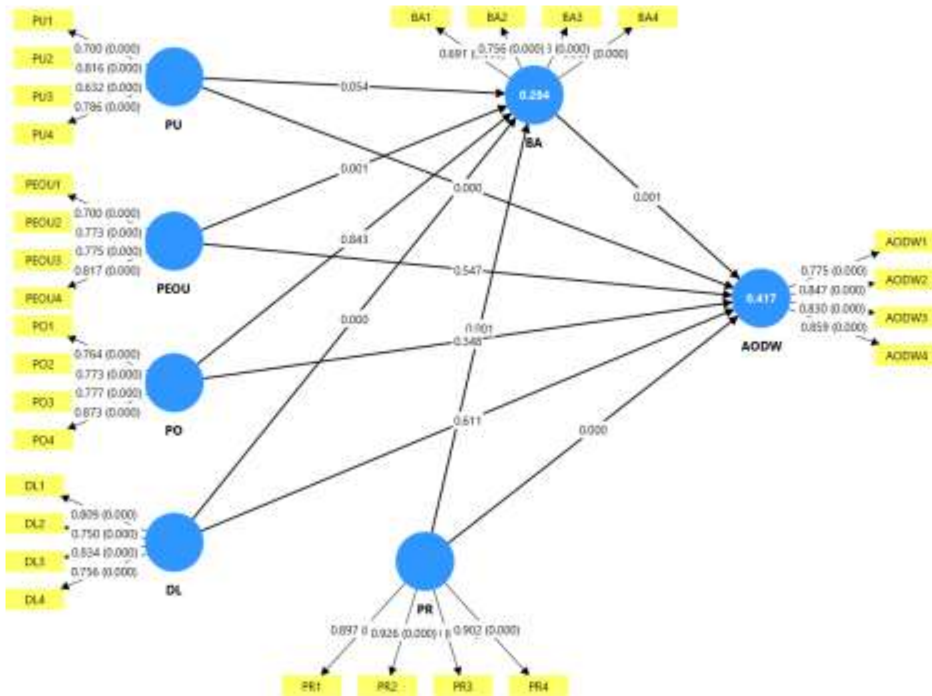

Figure 6: Results of SMARTPLS

5.6 Discussion and Summary Of Findings

The findings from this research highlight significant relationships between perceived usefulness (PU), perceived ease of use (PEOU), digital literacy (DL), and perceived risk (PR) on the adoption of digital wallets (AODW), with brand awareness (BA) playing a mediating role. Perceived usefulness (PU) was found to have a significant positive effect on the adoption of digital wallets, which is consistent with previous studies (Shetu, Islam, & Promi, 2022). In their study of university students in Bangladesh, Shetu et al. (2022) demonstrated that the convenience and utility of digital wallets strongly influenced users' intentions to adopt them. This finding suggests that service providers can improve adoption by focusing on how their digital wallets provide value to users, making the service more useful in everyday life (Akter et al., 2020).

Perceived ease of use (PEOU), however, did not have a significant effect on adoption in this study, which contrasts with findings from Chawla and Joshi (2024), who found that ease of use was a stronger predictor of adoption among rural populations. While the ease of use was supported at a 10% significance level, the findings suggest that users may prioritize other factors like usefulness over the simplicity of use. This indicates that, for adoption to occur, digital wallets must be not only user-friendly but also provide tangible benefits (Chawla & Joshi, 2024).

Promotional offers (PO) also did not significantly influence adoption in this study, which is consistent with the mixed results seen in previous research. Prasad et al. (2023) found that although promotional offers like cashback and referral bonuses can attract initial users, they do not guarantee long-term adoption unless the service provides sustained value. The lack of significant impact from promotional offers in this study suggests that service providers may need to focus less on short-term incentives and more on building long-term customer trust and brand recognition (Prasad et al., 2023).

On the other hand, digital literacy (DL) showed a significant positive effect on adoption, which aligns with the findings of Ullah et al. (2022). In their study, digitally literate consumers were more confident in making transactions and navigating digital payment platforms, which reduced perceived risks and increased adoption intention. Digital literacy empowers users to make informed decisions, enhancing their perceived usefulness of digital wallets and making them more likely to adopt such technologies (Ullah et al., 2022). This suggests that service providers can enhance adoption by providing educational campaigns or in-app tutorials to boost users' digital skills, particularly in regions with lower levels of digital literacy.

Perceived risk (PR) had a significant negative effect on adoption, aligning with the conclusions of Khan and Abideen (2023), who identified concerns about financial loss and data security as major deterrents for mobile wallet adoption in Pakistan. The results suggest that as consumers perceive higher risks associated with using digital

wallets, such as the potential for fraud or data breaches, their likelihood of adopting the technology decreases. This highlights the importance of addressing security concerns through robust encryption methods and transparent communication about safety measures to increase adoption (Khan & Abideen, 2023).
Finally, brand awareness (BA) was found to positively influence digital wallet adoption, supporting the conclusions of Bagale and Srivastava (2023), who found that consumers were more likely to trust and adopt digital wallets when they were familiar with the brand. Brand awareness builds consumer trust and reduces perceived risk, especially when users recognize and feel comfortable with the brand (Bagale & Srivastava, 2023). Therefore, service providers must focus on increasing brand visibility through advertising, public relations, and partnerships to boost consumer recognition and trust, thereby encouraging adoption.
In conclusion, brand awareness plays a critical mediating role in the adoption process, with perceived usefulness, digital literacy, and perceived risk significantly affecting adoption through brand awareness. Perceived ease of use and promotional offers, while often considered important in prior studies, were not found to have a significant impact in this research, suggesting that service providers should focus on delivering clear value propositions and building trust with users through robust security measures and educational initiatives. This study contributes to the understanding of the factors influencing digital wallet adoption, providing insights that can help service providers tailor their marketing strategies to improve adoption by focusing on building brand trust and awareness (Akter et al., 2020).

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study explores the variables that determine the uptake of digital wallets and identifies the influential role of brand awareness in mediating these variables. The study offers important insights regarding the drivers of digital wallet adoption by examining five independent variables, including perceived usefulness, perceived ease of use, promotional offer, digital literacy, and perceived risk.
The results indicate that the perceived usefulness is important and positive in adopting digital wallets. Customers who find the concept of digital wallet as helpful in their lives will embrace it more readily. This finding aligns with the prior research, which also highlighted the role of perceived usefulness in explaining the intentions to adopt digital wallets (Shetu, Islam, and Promi, 2022). In addition, this study emphasizes the need to communicate explicit, concrete value to users, which may result in higher rates of adoption. Since service providers seek to enhance the use of digital wallets, it can be a good idea to look at showing the value of the wallet in performing tasks such as bill payments and money transfer.

Although, perceived ease of use was important, it did not significantly influence in this study. This finding is contrary to the past literature where ease of use proved to be a better predictor of adoption especially in rural and underserved communities (Chawla & Joshi, 2024). The results indicate that even with ease of use as a factor, consumers might consider other additional elements like usefulness and perceived security when adopting a product. This emphasizes the importance of digital wallets being simple to use along with creating great value to their users to promote universal uptake.

Another influencing factor that was not found to influence the adoption intentions in this study was promotional offers. Though earlier research suggested that promotions might lead to initial adoption (Prasad et al., 2023), the findings show that such incentive cannot contribute to long-term adoption. Service providers are advised to pay less attention to short-term promotions and more to establishing a strong base of trust, security, and usability that can enable users to stay longer than during the initial attempts.

The level of digital literacy was identified to influence adoption positively, meaning that digitally literate consumers are more likely to adopt the digital wallet. This can be related to the results of recent research (Ullah et al., 2022) that indicate that the increasing level of digital literacy can allow users to feel safer when using digital payment options. Consequently, service providers need to invest in educational activities to enhance the digital literacy levels of users, especially in areas with low digital literacy. Such efforts would close the digital divide between more and less digitally literate citizens.

However, perceived risk negatively impacted adoption significantly, which validates the importance of trust and security in the adoption process of digital wallets. The findings indicate that increasing perceived risk of data security, monetary loss, and fraud decreases adoption. This observation is compatible with a related study, which outlines the fact that security issues are one of the primary obstacles to the use of mobile payment technologies (Khan and Abideen, 2023). To address such a challenge, service providers must focus on the high level of security systems and effective communication to ease the concerns of users and build trust.

It was found that brand awareness became an important mediator in the adoption process, with substantial influence on perceived usefulness and adoption. Familiarity to a brand allows consumers to trust a brand, and this affects their adoption behavior positively. This corresponds with the results presented in a study by Bagale and Srivastava (2023), who highlighted the role of brand recognition in consumer confidence and the adoption of digital wallets. As such, service providers need to create more brand awareness by waging specific marketing campaigns, strategic alliances and PR so that they can create more brand awareness.

6.2 Implications of the Findings

These findings have significant implications to stakeholders in the digital payments sector, such as service provider, marketers, and policy makers. The service providers need to work on increasing the perceived usefulness of the digital wallets by informing about the practical utility of using the service. One factor in this is the display of convenience like ease with which users can conduct transactions at ease and safely. Also, it is important to focus on the added value of the wallet that would make it a necessity in the day-to-day financial management. Moreover, by promoting digital literacy via specific educational programs, adoption will increase significantly, although in regions with lower digital literacy levels. Service providers can create a more competent and active user base by giving users the required abilities to fully navigate digital wallets. Service providers should also prioritize security since the perceived risk remains a challenge in adoption. Openness regarding measures related to security can address the concerns and develop consumer trust, resulting in increased adoption and usage. Development of brand awareness and recognition will also lead to trust and loyalty amongst users that is needed to maintain long term relationship and retaining the users.

Policymakers can be a key driver in the universalization of digital wallets through initiatives aimed at enhancing digital literacy and tackling security challenges. Policymakers can make more equitable access to digital financial services by developing policies that support digital literacy initiatives and incentivize people to use digital wallets. Moreover, it should help build the digital infrastructure, including a high-speed internet and a secure online platform, which would bring a favorable environment to the use of digital wallets. Additional adoption might also be encouraged by the electronic payment of government services and social programs, especially among less-serviced groups. Finally, policymakers must strive to put in place a law that promotes safety and security of electronic transactions. Policymakers can reduce the perceived risks of using digital wallets by implementing regulations safeguarding users against fraud and data breaches and help create a more secure digital financial landscape.

6.3 Limitations of the Study

Although the study is a great contribution to the literature, there are a number of limitations that must be recognized. To begin with, the study took place in Bangladesh in a cross-sectional study with a convenient sample of 304 participants, which could restrict the applicability of the results to other cultures or non-digital wallet users. Second, social desirability and recall biases are a possibility because the data are self-reported, so the respondent might have been predisposed to responding in a way that they find socially more acceptable or representative of how they would ideally act. Third, small number of factors are examined, such as perceived usefulness, perceived ease of use, promotional offers, digital literacy, and perceived risk, and failed to examine other potentially important factors, such as trust, government regulation, price sensitivity, and peer influence. Fourth, the brand awareness and digital literacy were mostly measured quantitatively without paying much attention to the qualitative dimension of brand personality or the level of digital skills of the respondents. Lastly, since the data are perceptions based on a single point in time, the research is not able to consider how fast technology is changing or how consumer attitudes are changing, both of which can, potentially, influence digital wallet adoption and use substantially.

6.4 Directions for Future Work

In future studies, the geographic and demographic boundaries of the study need to be extended by gathering data on users in different areas and age groups, such as rural users and the elderly. Longitudinal studies would enable the researchers to monitor the evolution of the perceptions and behavior with the advancement of digital wallet technology and with the experience of the users. Other constructs like trust, social influence, hedonic motivation, cost, regulatory support and quality of the customer service will be required to present a more detailed picture of adoption. To understand the reasons behind the lack of adoption of promotional offers, researchers may use the mixed method as a way of supplementing surveys with interviews or focus group discussions. Comparative research among various nations or developed versus developing economies would clarify contextual issues that soften the impacts that we see here. Lastly, with more and more digital payments being powered by artificial intelligence, biometric authentication and block-chain, future research needs to investigate how these new technologies impact perceived risk and utility.

6.5 Recommendations

With regard to future research suggestions, additional research exploring how digital literacy enables adoption in lowly-represented regions is required. It has been fiercely argued that digital literacy will help users to engage with the digital wallets and are able to use the technology with confidence, but little has been done to establish how digital literacy will determine further uptake of these technologies. The following wave of research should focus on the way certain educational initiatives and digital literacy interventions alter the adoption rates of various demographic groups, including rural and underserved populations. Understanding how digital literacy affects not only the initial adoption, but also the further usage will be essential in pinpointing which strategies can make people more inclined toward using digital wallets in the long term. Additionally, research could be done on how promotional offers affect the use of digital wallets in the long run to identify the effect it has on future use. The use of short-term promotions may be a useful starting point, but it is not clear how such incentives can affect user behavior over the long term. A study exploring the feasibility of promotional incentives, particularly post-expiry promotions, might reveal the influence of promotional incentives on long-term loyalty and usage patterns. The associations between perceived usefulness, ease of use, and perceived risk, across different socio-economic contexts, may also be an interesting field of study, which service providers can leverage to enhance their marketing strategies. These variables interact in various ways in various cultural and economic settings and knowledge of this interaction will help businesses market its goods on regional or socio-economic needs.

Digital literacy also should be researched even more, especially in a developing market. As the digital wallet has been introduced to the financial transactions, the digital divide between potential users and technology can be narrowed by conducting a research on the impact of digital literacy programs. Future research into the effects of digital literacy programs in other countries is particularly pertinent to countries that exhibit low levels of digital adoption where education and training can play an important role in influencing adoption levels. Another possibility would be to research how various audiences, such as the old or those with low socio-economic status, use digital wallets, and how their experiences can be influenced by individualized digital literacy programs. Furthermore, research is required on the durability of the promotion offers on using a digital wallet in order to determine the actual meaning of the promotion offers. Even though promotional deals, such as discounts or cashback, have been identified to stimulate the initial adoption, the effectiveness in terms of maintaining usage and ensuring long-term use has been questioned. Future research can focus on how different types of promotions, e.g., seasonal promotions, referral promotions, or loyalty promotions, can be effective in retaining customers and guaranteeing their future use of digital wallets. Lastly, we require studies on the interaction of perceived usefulness, perceived ease of use and perceived risk across varying socio-economic settings. An understanding of the changes in the levels of incorporating digital wallets will be important in the perception of these factors amongst various levels of income, education, and cultural background. This will allow service providers to develop superior marketing strategies and tailor their products to meet the personal need of consumers in different geographic locations or population segments.

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