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Financial Inclusion through FinTech Innovation: Predicting User Acceptance of Digital Wallet

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Abstract

Conceptualizing the theme that a person is more likely to be left out of the financial system, the poorer and more disadvantaged they are, because the financial service sector functions in a way that benefits the socially powerful. This study is carried out to understand the factors influencing adoption of digital wallet and to examine the impact of digital wallet adoption on financial inclusion. Two established models of technology adoption; Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT), are used to conduct the study. The customers of Kathmandu valley were surveyed in terms of their attitudes, perceptions, and behaviors. The results showed that Perceived Usefulness, Price Value and Trust had a significant impact on the adoption of digital wallet. However, Perceived Ease of Use and Social Influence do not significantly impact the adoption. The study concludes that digital wallets have the potential to promote greater financial inclusion among disadvantaged and low-income individuals by addressing barriers to financial inclusion. The results provide insights for policymakers and FinTech companies in designing and implementing effective digital wallet so as to promote greater financial inclusion.

Keywords: financial inclusion, FinTech, digital wallet, innovation, digital finance

1. Introduction

Financial inclusion is a process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy (Sarma, 2008) which provides a channel for poor people's savings to enter the formal financial intermediation system (Subbarao, 2009). Financial inclusion include not only financing but also extending coverage to disadvantaged people (Dev, 2006).

FinTech contributes to inclusive growth and economic development by leveraging technology for the design and delivery of financial services and products in an innovative manner (Mehrotra, 2019). Understanding the importance financial inclusion, Nepal has also placed financial inclusion as an important agenda. The Nepal Rastra Bank (NRB) has taken a number of policy steps to increase financial access which include

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promoting financial literacy, rewarding the opening of branches in rural regions, initiating an open bank account campaign, easing the operation of branchless banking, and increasing the focus on payment system modernization. As a result, in mid-June 2020, the population with at least one account is estimated to be 67.3 percent (Nepal Rastra Bank, 2021). Despite the wide variety of financial institutions, Nepal has yet to profit from a developed financial services industry since a sizable portion of the country's population is still unbanked. Today, mobile phones and smartphones based financial transaction and digital payments constitute an essential part of the financial system. Nepal with mobile penetration exceeding 100% and internet penetration reaching 63% has potential to eliminate geographical reach barrier of Nepal and bridge the gap of financial access as mobile wallet can be accessible via mobile phone (Ministry of Communication and Information Technology [MOCIT], 2019). According to Nepal Telecommunication Authority (NTA), there were 2.25 million new internet users in 2017, which translates to over 250 new internet users every hour indicting Nepal to be well positioned to profit from digital financial services. Mobile/Internet Banking, mobile wallets and online digital payments have the ability to address issues such as bank access and excessive service costs. Consumer-to-consumer, Consumer-to-business, Consumer-to-machine and consumer-to-online transactions are all supported by mobile wallets. Furthermore, companies may engage customers more directly by delivering discount coupons to their mobile phones to strengthen the relationships with clients (Shin, 2009).

It is critical to assess the acceptability of these newly produced FinTech innovations and the growth trend of FinTech services in the country. The analysis of user perceptions and acceptance of FinTech solutions will aid financial service providers in providing a better experience to consumers, make FinTech more user friendly, and to attract the unbanked. In this context, based upon the technology acceptance theory, this study has been conducted to examine the impact of perceived usefulness (PU), Perceived Ease of Use (PEOU), Social Influence (SI), Price Value (PV), and Trust (T) on adoption of digital wallet (A), and the impact of digital wallet adoption on financial inclusion (FI).

Literature Review

Digital wallet and their impact on financial inclusion reviews that how people perceive and adopt new information systems and technologies and how this adoption affects financial inclusion and provides the understanding of the current state of research on digital wallet acceptance and financial inclusion, and to identify any gaps or areas for further investigation.

Arner et al. (2016) found that new start-ups and established technology company have begun to sell financial products and services directly to business and the general public, as well as to banks, since 2008, in what we refer to as FinTech 3.0. The new era since

2008 has been defined not by the financial products and services offered but by who offers them digitally. It is a technological development led by FinTech startups that are not only enhancing financial services but also competing with or even replacing traditional banks in the provision of financial services by delivering financial services via FinTech products and services such as mobile wallets, payment apps, cryptography, rob advisors (which use algorithms and surveys to enable investors to build portfolios) and crowd funding (Makina, 2019). These findings may reflect the use and acceptance of FinTech in banking sector.

Second, researchers have investigated how digital wallet effectiveness is associated with financial performance. For example, digital wallet is defined by Wadhera et al. (2017) as a form of smart phone application that merges a physical wallet, money, payment cards, and other cards allowing users to utilize all of these cards using simply a smart phone using Near Field Communication (NFC) technology (Palumbo & Dominici, 2015). According to Wadhera et al., there are four types of wallets based on reload ability, linkage with the bank, and cash withdrawal option.

Table 1

Types of Mobile Wallets

Wallet Type	Re-loadable	Linkage with bank	Cash withdrawal	Example
Semi-closed wallets	✓	×	×	Paytm, PayU
Semi-open wallets	×	✓	×	Airtel money
Open wallets	✓	✓	✓	m-pesa, PayPal, Amazon Pay
Closed wallets	×	×	×	Google Wallet, Walmart Pay, Flipkart e-wallet, Gift vouchers

Source. Alaeddin et al. (2018)

Scott-Briggs (2020) concluded that the world of mobile wallet and more merchants are beginning to accept mobile payments. It showed that digital wallet has been becoming one of the tools to effective financial inclusion. In Nepal, the concept of digital payment service providers began with Nabil Bank's issuance of a credit card in 1990. Kumari bank pioneered online banking in Nepal. After F1 Soft International launched eSewa in 2009, the concept of digital/mobile wallets was first introduced and transformed the concept of digital payment. Since the advent of eSewa, some of the most popular providers in Nepal include ConnectIPS, eSewa, Khalti Digital Wallet, IME Pay, and Prabhu PayFonepay. Utility payments (electricity, water bills), airline ticketing, movie

ticketing and so on are the most common uses for digital payment systems. These providers offer a range of services, including utility payments, bill payments for mobile and landline devices, and ticket purchases for airlines and movies. These providers require both a merchant account (for the seller) and a user account (for the buyer) to facilitate transactions, and they offer various security measures, such as PIN and biometric authentication, to protect against unauthorized use. In order to transact large amounts, users must undergo KYC (know your customer) verification, which typically involves providing a personal identity card, such as a citizenship card. These providers also offer various rewards and cashback incentives to encourage customers to use their services (Timsina, 2022). Because of the requirement to connect the services of mobile service providers and financial institutions that operate within the legislation of that nation, each country provides its own form of mobile wallet (Shaw, 2014).

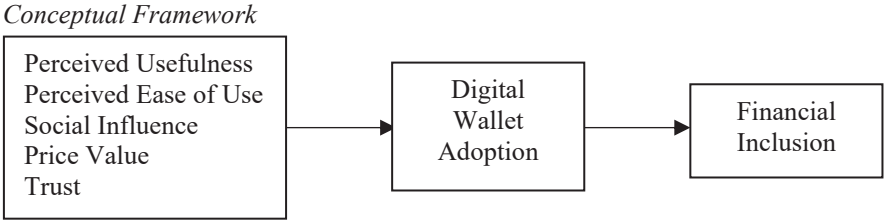
Lastly, a few studies have examined the specific activities of Fintech on financial inclusion. Shaw (2014) examined the factors that influence consumers to adopt the mobile wallet. Similarly, Rathore (2016) and Oliveira et al. (2016) revealed that compatibility, perceived technology security, performance expectations, innovativeness and social influence have a significant direct and indirect impact on the adoption of mobile payment systems as well as individuals' intentions to recommend them. Ridaryanto et al. (2019) analyzed the influence of trust, social influence and promotion on the intention to use e-wallets and revealed that trust and promotion had a substantial effect on e-wallet intention. However, they did not found effect of social influence on the intention to use an e-wallet.

2. Methodology

This study employed descriptive as well as causal comparative research design. Descriptive research design is used to identify and define the variables causing digital wallet adoption decision (Figure 1). On the other hand, causal comparative research design is used to examine the impact of variables on adoption of digital wallet and subsequently its effect on financial inclusion. Survey among 384 digital wallet users was conducted by administering a set of questionnaires. The questionnaire was divided into two parts: Part A to collect demographic information, and Part B to collect the respondents' attitudes towards the use of digital wallet. The data were analyzed using SPSS.

Figure 1

Conceptual Framework



Based on the proposed framework, this study intended to test the hypothesis as follows:

H_1: Perceived usefulness significantly impacts the adoption of digital wallet.

H_2: Perceived ease of use significantly impacts the adoption of digital wallet.

H_3: Social influence significantly impacts the adoption of digital wallet.

H_4: Price value significantly impacts the adoption of digital wallet.

H_5: Trust significantly impacts the adoption of digital wallet.

H_6: The adoption of digital wallet significantly impacts financial inclusion.

The Model

Basic regression models for the study are developed as follows:

Model 1

$$\boldsymbol{A = \alpha + \beta_1 PEOU + \beta_2 PU + \beta_3 SI + \beta_4 PV + \beta_2 T + \varepsilon}$$

Model 2

$$FI = \alpha + \beta_1 A + \varepsilon$$

Where,

A	= Adoption of Digital wallet
α	= Intercept (Constant)
β_x	= Coefficient of the independent or explanatory variable
PEOU	= Perceived Ease of Use
PU	= Perceived Usefulness
SI	= Social Influence
PV	= Price Value
T	= Trust
ε	= Error Term
FI	= Financial Inclusion

3. Results

It is found that the respondents generally had positive attitudes towards digital wallet. They consider digital wallet users as an important personality to them, influence their behavior, and have high profiles in the community. The survey results showed that the respondents generally agree that people who are important to them use digital wallet, with an average score of 4.48 for the SI1 measure of social influence. On the other hand, the lowest average score for the social influence variable was 4.04 for the SI2 measure, which indicates that respondents somewhat agree that they use digital wallet because

other people are using them. The responses to the statements about the digital wallet with respect to Price Value were mostly positive, with means ranging from 4.24 to 4.57 on a scale of 1 to 6. The standard deviations for the statements were all relatively small, ranging from 1.01 to 1.19, indicating that the responses were relatively consistent. The overall mean for the construct PV was 4.45, with a standard deviation of 0.98. This suggests that the responses were generally positive and consistent overall. The variable "Price Value" has highest average value of 4.57 for PV1, which suggests that respondents believe the digital wallet is reasonably priced. The lowest average value for this variable is 4.24 for PV3, indicating that respondents somewhat agree that the Discounts and Rewards offered by the digital wallet help save money.

The respondents also have a relatively high level of trust in the digital wallet service, with an overall mean rating of 4.59 out of 6. The standard deviation of .801 indicates that the ratings are relatively consistent, with most respondents giving similar ratings. People generally trust Digital Wallet, with the highest average trust score being 4.63 for the statement "Digital wallet is trustworthy." And, the lowest average trust score was 4.52 for the statement "I trust that the provider of the digital wallet will not disclose any of my information to third parties," suggesting that people are slightly less confident in the ability of digital wallet providers to protect their personal information. For example, for the statement "I plan to continue using Digital wallet frequently," the mean response is 4.76 and the standard deviation is 1.004. This suggests that the majority of the respondents plan to continue using digital wallet service, and the responses are relatively consistent.

The mean of the ASUMA score is 4.71, with a standard deviation of 0.95. This suggests that the respondents are generally positive about the digital wallet, with some variation in their responses. The highest average value for the Adoption variable is 4.76, which corresponds to the statements “I plan to continue using Digital Wallet frequently." This suggests that the respondents agree with the statement and plan to continue using Digital Wallet. On the other hand, the lowest average value for the Adoption variable is 4.67, which corresponds to the statement "I use Digital Wallet for payment and transfer." This suggests that the respondents agree with this statement and use Digital Wallet for payment and transfer. I use Digital Wallet Services for most of my transactions: The mean response of 4.55 suggests that, on average, respondents feel that they use digital wallet services for most of their transactions. The process of getting digital wallet services is easy: The mean response of 4.59 suggests that, on average, respondents feel that the process of getting digital wallet services is somewhat easy. The services provided by digital wallet services have improved our access to utilities: The mean response of 4.64 suggests that, on average, respondents feel that the services provided by digital wallet services have somewhat improved their access to utilities. This is the mean

response for all of the survey questions combined. The mean response of 4.56 suggests that, on average, respondents feel that financial inclusion through the use of digital wallet services is somewhat positive.

Correlation Analysis

Table 2 shows the Pearson correlation coefficient for variables PEOU, PU, SI, PV, T, A and FI with respect to each other. The Pearson correlation coefficients for the variables PU, SI, PV, T, A, and FI with respect to the variable PEOU are .201, .201, .200, .194, .072 and .163 respectively. This means that there is a slight positive relationship between PEOU and PU, but it is not particularly strong. Similarly, the correlations between PEOU and SI, PV, and T are also relatively weak positive correlations. The correlation between PEOU and A is even weaker, at .072, and the correlation between PEOU and FI is .163, which is also a relatively weak positive correlation.

Table 2

Correlations for Study Variables

Variables	PEOU	PU	SI	PV	T	A	FI
PEOU	1						
PU	.201	1					
SI	.201	.293	1				
PV	.200	.293	.604	1			
T	.194	.261	.576	.554	1		
A	.072	.240	.295	.366	.453	1	
FI	.163	.330	.523	.516	.649	.458	1

Association of Influencers and Adoption of Digital Wallet

Table 3

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
1	.488[a]	.238	.228	.83638	1.999

Predictors: (Constant), PEOU, PU, SI, PV, T

Table 4

ANOVA

ANOVA[a] Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	82.658	5	16.532	23.633	.000[b]
	Residual	264.422	378	.700		
	Total	347.081	383			

Table 5

Regression Coefficients of Influencers on Adoption of Digital Wallet

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.864	.358		5.202	.000
	PEOU	-.057	.057	-.047	1.016	.310
	PU	.126	.051	.118	2.459	.014
	SI	-.037	.061	-.037	-.608	.544
	PV	.157	.058	.162	2.707	.007
	T	.431	.069	.363	6.243	.000

The value of R, in regression is 0.488[a], which indicates a moderate, positive relationship between the two variables. The square of R is .238 means that 23.8% of the total variation in Digital wallet Adoption can be explained or accounted for by the variation in PEOU, PU, SI, PV and T. The adjusted R-squared is .228, which indicates that the model explains about 22.8% of the variance in the dependent variable after adjusting for the number of variables and observations. The standard error of the estimate is .83638, which indicates that the estimated values for the dependent variable may vary somewhat from the true population regression line. The Durbin-Watson test statistic of 1.999 indicates a very low level of autocorrelation in the data. It is typically represented as a p-value. A p-value of 0.000 means that the probability of the results occurring by chance is very low. The significant value.000[b] shows that overall, there is a significant impact of PEOU, PU, SI, PV and T on adoption of digital wallet.

Association between Adoption of Digital Wallet and Financial Inclusion

Table 6

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
1	.458[a]	.210	.208	.74188	2.043

Predictors: (Constant), Adoption of Digital Wallet

Table 7

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.906	1	55.906	101.575	.000[b]
	Residual	210.250	382	.550		
	Total	266.156	383			

Table 8

Regression Coefficients of Digital Wallet Adoption on Financial Inclusion

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.675	.191		13.992	.000
	A	.401	.040	.458	10.078	.000

The Table 6 depicts that, the value of R is .458, which indicates a moderate, positive relationship between the adoption of digital wallet and financial inclusion. The square of R is .210, which means that about 21% of the variance in the Financial Inclusion is explained by the adoption of digital wallet. The adjusted R-squared is .208, which indicates a good fit of the model to the data. The standard error of the estimate is .74188, which indicates that the estimated values for the dependent variable may vary somewhat from the true population regression line. A Durbin-Watson test statistic of 2.043 indicates a very low level of autocorrelation in the data. The F-statistic is 101.575 and the significance level is .000, which is less than 0.05. This indicates that the model is significant at the 0.05 level, and that the model explains a significant portion of the variance in the dependent variable. Similarly, it revealed that the adoption of digital wallet has significant (at 1% sig level) positive (0.401 beta coefficient) impact on financial inclusion. Summary of hypothesis testing is presented in Table 9.

Table 9

Summary of Hypotheses Testing

Hypotheses	Independent Variable	Beta	t value	p-value	Decision Accept: Sig. <0.05
H_1	PU→A	.126	2.459	.014	H1 supported
H_2	PEOU→A	-.057	-1.016	.310	H2 rejected
H_3	SI→A	-.037	-.608	.544	H3 rejected
H_4	PV→A	.157	2.707	.007	H4 supported
H_5	T→A	.431	6.243	.000	H5 supported
H_6	A→FI	.401	10.078	.000	H6 supported

In this research, multiple linear regression and single linear regression was used to test the hypotheses. The hypotheses summary Table 9 includes six hypotheses (H_1, H_2, H_3, H_4, H_5, and H_6, based on the results in the summary, H_2 and H_3 is rejected because the p-value is greater than .05, indicating that the observed relationship between the predictor and outcome variables was not statistically significant. Perceived ease of use and social influence don't significantly impact on Adoption of Digital Wallet. On the other hand, H_1, H_4, H_5, and H_6 is supported because the p-value is less than .05, indicating that the observed relationship between the predictor and outcome variables is statistically significant. Perceived Usefulness, Price Value, trust significantly impact on adoption of digital wallet. Chiefly, the result shows that the adoption of digital wallet significantly impacts financial inclusion.

4. Discussion

The number of digital wallet users is increasing each year, particularly in urban areas where technology is rapidly developing. Digital wallet has modernized the traditional banking system in Nepal and efforts are being made by various organizations to increase awareness about mobile banking. It has the potential to significantly change payment systems in Nepal, making financial activities easier and more effective for Nepalese people.

This study found that perceived usefulness, price value, and trust are important factors in the adoption of digital wallets, while perceived ease of use and social influence do not have a significant impact. The finding that perceived usefulness has a significant impact on the adoption of digital wallets suggests that efforts to increase adoption should focus on highlighting the benefits and features of digital wallets to potential users. Similarly, the finding that price value has a significant impact on the adoption of digital wallets suggests that efforts to increase adoption should focus on reducing fees and costs associated with digital wallets, and highlighting the rewards or benefits available to users. In addition, the finding that trust has a significant impact on the adoption of digital

wallets suggests that efforts to increase adoption should focus on building trust with potential users through measures such as transparent privacy policies and strong security measures. Digital wallet providers could invest in security measures to protect user information, or clearly communicate their privacy policies to potential users. In contrast, perceived ease of use and social influence do not find to have a significant impact on the adoption of digital wallets. It suggests that though while these factors are important to consider, they are not as critical as other factors influencing adoption.

Respondents feel confident in using e-wallets when they trust the service provider and believe that their interests are being prioritized. However, respondents do not believe that using digital wallet enhances their self-image or they are influenced socially to adopt digital wallet. Based on the findings, it is recommended that digital wallet providers should focus on building trust with customers, develop features that are useful and make service cost effective. It helps to increase adoption of their service which will ultimately influence financial inclusion.

Longitudinal study can be used to examine how adoption of digital wallet changes over time and how it is influenced by various factors. This could provide a more complete picture of the adoption process and identify any changes in the factors that influence adoption. Findings are specific to the research being referred to, and the results may not necessarily apply to other contexts. Investigate the role of other factors such as perceived benefits, and perceived risks in the adoption of digital wallet using qualitative research methods such as focus groups or in-depth interviews will help to gain a deeper understanding on this issue. Further research investigating the introduction of digital wallets and their interaction with other fintech innovations and their impact on financial inclusion is proposed to make the results more generalizable.

References

Alaeddin, O., Rana, A., Zainudin, Z., & Kamarudin, F. (2018). From physical to digital: Investigating consumer behaviour of switching to mobile wallet. *Polish Journal of Management Studies*, *17*(2), 18-30.

Arner, D. W., Barberis, J., & Buckley, R. (2016). 150 years of Fintech: An evolutionary analysis. *JASSA The Finsia Journal of Applied Finance*, (3), 22-29.

Dev, S. M. (2006). Financial Inclusion : Issues and Challenges. *Economic and Political weekly*, 4310-4313.

Makina, D. (2019). The Potential of FinTech in Enabling Financial Inclusion. In *Extending Financial Inclusion in Africa* (pp. 299-318). Academic Press. doi:https://doi.org/10.1016/B978-0-12-814164-9.00014-1

Mehrotra, A. (2019). Financial Inclusion Through FinTech-A case of Lost Focus. *2019 International Conference on Automation, Computational and Technology*

Management (ICACTM) (pp. 103-107). London: Institute of Electrical and Electronics Engineers. doi:https://doi.org/10.1109/ICACTM.2019.8776857

Ministry of Communication and Information Technology. (2019). *Digital Nepal Framework: Unlocking Nepal's Growth Potential*. Retrieved from https://shorturl.at/JOU01

Nepal Rastra Bank. (2021). *Financial Access in Nepal.* Kathmandu: Statistics Division Economic Research Department.

Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. *Computers in human behavior*, *61*, 404-414.

Palumbo, F., & Dominici, G. (2015). Unraveling the Complexity of Tourist Experience with NFC Technology and Mobile Wallets. *Springer Proceedings in Complexity* (pp. 189-196). Springer International Publishing Switzerland. doi:https://doi.org/10.1007/978-3-319-09710-7_16

Pant, B. (2016). Financial inclusion in Nepal: Policy review and prescriptions. *NRB Economic Review*, *28*(2), 1-18.

Rathore, H. S. (2016). Adoption of digital wallet by consumers. *BVIMSR's journal of management research*, *8*(1), 69.

Ridaryanto, F., Firmansyah, R. K., & AM, S. (2019). Factors affecting the use of E-Wallet in JABODETABEK Area. *International Journal of Advanced Trends in Computer Science and Engineering*, *8*(6), 3645-3651.

Sarma, M. (2008). Index of financial inclusion (No. 215). Working paper.

Scott-Briggs, A. (2020). W*hat is a Mobile wallet, origin and history in financial technology?* TechBullion. Retrieved from https://techbullion.com/mobile-wallet-origin-history-financial-technology/

Shaw, N. (2014). The mediating influence of trust in the adoption of the mobile wallet. *Journal of Retailing and Consumer Services*, *21*(4), 449-459.

Shin, D. H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior*, *25*(6), 1343-1354.

Subbarao, D. (2009). Financial inclusion: Challenges and opportunities. *Reserve Bank of India's Bankers Club*, Kolkata, December, 9.

Timsina, A. (2022, January 31). *Top mobile wallets:Digital payment providers in Nepal.* Retrieved from https://shorturl.at/cqAF3

Wadhera, T., Dabas, R., & Malhotra, P. (2017). Adoption of M-wallet: A way ahead. *International Journal of Engineering and Management Research* (IJEMR), *7*(4), 1-7.