# Digital Payment Adoption and Financial Inclusion in Nepal

Dipesh Yadav*

## Abstract

This study analyzed the digital payment adoption and financial inclusion in Nepal. The dependent variable is digital payment system. Similarly, the selected independent variables are social influences, technological infrastructure, and ease of use, financial literacy, and security influence. The primary source of data is used to assess the opinions of the respondents regarding social influences, technological infrastructure, and ease of use, financial literacy, and security influence in Nepal. The study is based on primary data of 165 respondents. To achieve the purpose of the study, structured questionnaire is prepared. The correlation coefficients and regression models are estimated to test the significance and importance of digital payment adoption and financial inclusion in Nepal.

The study showed that social influence is positively correlated to digital payment system. This reveals that better social influence leads to better performance of digital payment system. Similarly, technological infrastructure is positively correlated to digital payment system. This implies that technological infrastructure may have impact on digital payment system. Likewise, ease to use is positively correlated to digital payment system. It indicates that ease to use leads to better digital payment system. Moreover, financial literacy is positively related to digital payment system. It means that the financial literacy leads to increase digital payment system. Similarly, security is positively correlated to digital payment system which indicates that good security leads to better digital payment system.

*Keywords*: social influences, technological infrastructure, and ease of use, financial literacy, security, digital payment system

## 1. Introduction

Digital payments include any method of transferring money or digital currency between two parties using digital payment technologies. Digital marketing is a marketing activity, including branding, that uses various media like blogs, websites, e-mails, ad words and various social media networks (Chen &Lin, 2019). According to Taken (2012), digital marketing is described as the practice of promoting products and services using digital distribution channels through mobile computing, smartphones, or other digital devices. Purchasing decision is an integration process that combines knowledge to evaluate two or more alternatives and choose one of them (Sitompul and Ferawati, 2021). Similarly, Smith (2023) defined digital media as content or file that has been encoded in machine- readable forms that may be viewed, distributed, edited and stored on digital equipment.

Digital marketing is the advertising and acquiring of information, products and services using a computer or internet network (Rao & Ratnamadhuri, 2018). Digital marketing is an act of promoting products and services with the help of digital devices or technology also referred as online marketing, internet marketing or web marketing use internet to reach consumers (Cherukur, 2020). Likewise, Evans (2008) defined social media as a medium of communication where people with the same mind connect and interact with each other to share their life experiences. Similarly, Shankar & Balasubramanian (2009) defined mobile

* Mr. Yadav is a Freelance Researcher, Kathmandu, Nepal.

marketing as two -way or multi-way communications and promotion of an offer between a business firm and its customers using a mobile medium, device or technology. Likewise, Chole & Dharmik (2018) defined digital marketing as supporting new entrepreneurs to promote their product at low cost and can generate business with the help of social media in domestic countries and outside of the nation. According to Stone & Woodcock (2013), digital marketing can be designed to engage with the consumer at any time and in any place, with the purpose of informing, educating, entertaining, or providing insights for the brand.

Qazzafi (2019) stated that e-marketing, social networking sites, internet ads and mobile networks may enhance the shopping experience of consumers by making it possible to order, buy and pay for stuff, saving customers time and money. Most consumers currently possess and use a variety of digital media such as computers, mobile devices, and social media such as Facebook, Instagram, Twitter, WhatsApp, YouTube that contribute to the extraordinary progression of digital advertising expenditure (Yasmin *et al.*, 2015). Likewise, Ouyang (2023) stated on the impact of cashless payment adoption on credit access for the underprivileged, using Alipay as a case study. Digital marketing is the utilization of electronic media by the marketers to promote the products or services into the market (Yasmin *et al.,* 2015). Similarly, Fitrianna & Aurinawati (2020) found that marketing through digital media has a significant effect on increasing brand awareness and brand image so that it can influence the purchasing decision of Mongo Chocolate products in Yogyakarta. Likewise, Pebrianti *et al*. (2020) found that digital marketing has an insignificant effect on brand awareness, while e-WOM has a significant influence on brand awareness. Similarly, Kinanti & Imran (2021) found that digital marketing has a significant influence on brand awareness.

Elisabeta loanals *et al.* (2014) revealed that social media has impact on behavior changes of consumers. Similarly, Zaidi and shukri (2022) found that there is better exposure, awareness, usage, comfort ability, result, layout application, and design application and satisfaction level in the present online business scenario. Likewise, Hui *et al.* (2013) found that there is a positive impact of mobile marketing on consumer perception as well as purchasing intention. Similarly, Sheikh and Khan (2021) found that the variables trust, perceived value and positive review are all statistically significant and are positively related to consumers' buying behavior in digital marketing. Likewise, Artanti *et al.* (2019) revealed that there is a high positive relationship between viral marketing dimension and customer purchasing decisions. Sulaiman *et al.* (2021) found that digital marketing has a significant impact on online purchase intention. The study utilized a natural experiment and a representative sample of Alipay users to investigate how cashless payment adoption influences credit access. The study found that adopting cashless payments significantly increases credit access, particularly for less educated and older individuals (Ouyang, 2023). Concerns about cyber security and data privacy need to be addressed to build user trust and encourage the adoption of digital payment systems. Ouyang (2023) found that while cashless payment systems can significantly increase credit access, there are prevailing security concerns that deter many potential users. Lin *et al*. (2020) found that knowledge was needed to achieve low level curriculum goals and high- level curriculum goals (the production of valuable, diverse, and original digital works). According to Timothy (2012), E-banking deals with getting availability to help ATM, phone access, E-mail access, and account access when abroad. With more convenient way, online banking also permits consumer to have direct access to their financial information and to undertake financial transactions (Rotchanakitumnuai and Speece, 2003).

Pavlou *et al*. (2006) found that trust is critical in the development and acceptance of any system or technology, as it creates a positive attitude between citizens. Furthermore, Bunduchi (2005) found that trust is an important factor in the success of intraorganizational systems or internet-based electronic markets. Likewise, Wang *et al.* (2003) found that trust has a significant positive influence on the behavioral intentions to use online banking. Peer influence also plays a pivotal role. Likewise, Hanafizadesh *et al*. (2014) found that the user of the system has to perceive the operation of the e-payment system is consistent with their existing technical knowledge and skills.

In the context of Nepal, Pradhan *et al*. (2021) showed that automated teller machine, mobile banking, internet banking, agency banking and point of sale have positive impact on financial inclusion. Rahman (2023) revealed that digital banking access, usage, and quality significantly influence digital financial inclusion achieved by digital banking. Among the three factors, 'Quality,' 'Usage,' and 'Access' have the most impact on digital financial inclusion. The current study found that there was a very strong positive link between ADB, UDB and QDA. Niraula & Adhikari (2019) found significant and positive relation between mobile and internet access on number of deposit accounts used as proxy for financial inclusion. Shrestha and Paudel (2022) found that socio-economic disparities further exacerbate the challenges in adopting digital payments. Addressing these disparities is essential for achieving widespread financial inclusion.

This trend, further accelerated by the COVID-19 pandemic, has showcased the consistent growth in mobile banking adoption (Paudel & Kayastha, 2022). The introduction of Payment System Operators (PSOs) like the Unified Payment Interface (UPI) presents new challenges, making it essential to understand the factors influencing the effectiveness of PSPs to ensure continued growth and development of digital payment systems in Nepal (Shrestha & Pandey, 2021). Individuals often look to their peers and social networks for guidance on new technologies and financial practices (Sharma & Bhandari, 2020). Similarly, Pant (2016) found that the importance of financial literacy in promoting the adoption of digital financial services. This gap in financial literacy acts as a major barrier to the adoption of digital payments. Effective financial literacy programs are crucial to educate the population and promote the use of digital financial services (Rana & Kafle, 2020). Furthermore, interoperability among different digital payment platforms and financial institutions is critical for seamless transactions (Subedi & Thapa, 2023). Paudel and Kayastha (2022) found that transformative potential of digital payment systems in enhancing financial inclusion in Nepal. Despite the rapid technological advancements and the rise in mobile banking adoption, significant barriers persist. Additionally, the lack of robust digital infrastructure poses a significant challenge to the accessibility and reliability of digital financial services (Shrestha & Pandey, 2021). Mobile devices serve as primary tools for accessing digital financial services, offering convenience and accessibility, especially in remote areas (Sharma & Bhandari, 2020).

The above discussion shows that empirical evidences vary greatly across the studies on the digital payment adoption and financial inclusion in Nepal. Though there are above mentioned empirical evidences in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, in order to support one view or the other, this study has been conducted.

The major objective of the study is to determine the digital payment adoption

and financial inclusion in Nepal. More specifically, it examines the relationship of social influences, technological infrastructure, and ease of use, financial literacy, security in digital payment adoption and financial inclusion.

The remainder of this study is organized as follows. Section two describes the sample, data and methodology. Section three presents the empirical results and the final sections draws the conclusion.

## 2. Methodological aspects

The study is based on the primary data. The data were gathered from 165 respondents through questionnaire. The respondents' views were collected on social influence, technological infrastructure, and ease to use, financial literacy, and security. This study is based on descriptive as well as causal comparative research designs.

*The model*

The model used in this study assumes that digital payment system depends upon adoption of financial inclusion. The dependent variable selected for the study is digital payment system. Similarly, the independent variables are social influence, technological infrastructure, ease to use, financial literacy, and security. Therefore, the model to be estimated in this study is stated as follows:

$$DPS= \beta_0 + \beta_1 SI + \beta_2 TI + \beta_3 ETU + \beta_4 FI + \beta_5 BA + e$$

Where,

DPS = Digital payment system

SI= Social influences

TI= Technological infrastructure

ETU= Ease to use

FI = Financial literacy

S = Security

Social influences was measured using a 5-point Likert scale where respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "My friends and family significantly influence my decision to use digital payment systems", "I frequently observe people around me using digital payments" and so on. The reliability of the items was measured by computing the Cronbach's alpha ($\alpha = 0.761$).

Technological infrastructure was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "Digital payment options are easily available where I live", "The digital payment methods I use are up to date" and so on. The reliability of the items was measured by computing the Cronbach's alpha ($\alpha = 0.735$).

Ease to use were measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "Digital payment apps are easy for me to understand", "It is easy for me to set up and use digital payment services", and so on. The reliability of the items was measured by computing the Cronbach's alpha ($\alpha = 0.754$).

Financial literacy competence was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "I am confident in my understanding of digital payment systems", "I am aware of the benefits of digital payments, such as convenience and security" and so on. The reliability of the items was measured by computing the Cronbach's alpha ($\alpha = 0.718$).

Security was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "I am confident in the security of digital payment platforms", I am worried about unauthorized access to my digital payment accounts." and so on. The reliability of the items was measured by computing the Cronbach's alpha ($\alpha = 0.756$).

Digital payment system was measured using a 5-point Likert scale where the respondents were asked to indicate the responses using 1 for strongly disagree and 5 for strongly agree. There are 5 items and sample items include "My friends and family significantly influence my decision to adopt digital payment systems", my friends and family significantly influence my decision to adopt digital payment systems." and so on. The reliability of the items was measured by computing the Cronbach's alpha ($\alpha = 0.843$).

The following section describes the independent variables used in this study along with hypothesis formulation:

*Social influences*

Social influences play a significant role in shaping individuals' attitudes and behaviors towards digital payments in Nepal. Giri & Ghimire (2020) found that societal factors such as cultural norms, peer influence, and community practices are crucial determinants affecting the adoption of digital payment systems. Likewise, Mayer *et al.* (1995) found that the belief of the trustor that the trustee will fulfill the tractor's expectations without taking advantage of the trustor's vulnerabilities. Moreover, McKnight *et al.* (2002) found that in the online transaction scenario, conceptualize trust as the belief which allows consumers to willingly become vulnerable to online vendors for an expected service after duly considering the vendor characteristics. Similarly, Gao and Waechter (2017) found that the existence of expressions of low levels of trust is the main reason for not adopting online payments offered by financial institutions. Positive experiences and recommendations from friends and family can accelerate adoption rates, while skepticism or negative perceptions can hinder progress (Acharya & Shrestha, 2021). Based on it, this study develops the following hypothesis:

$H_1$: There is a positive relationship between social influences and digital payment system.

*Technological infrastructure*

Technological infrastructure plays a pivotal role in shaping the adoption and usability of digital payment systems in Nepal. According to Resendiz (2017), the availability and quality of digital systems, including internet connectivity, mobile phone penetration, and reliability of digital platforms, are critical factors influencing the accessibility and adoption of digital payment systems. Improving broadband access and network reliability is essential to extend the reach of digital financial services to underserved populations (Acharya & Shrestha, 2021). Likewise, Kim *et al. (*2010) revealed that knowledge about individual IT services is crested through experience and learning. Furthermore, Black *et al.* (2001) found that mobile banking requires the use of mobile devices such as a Personal digital assistant or 3G mobile

phones, which are usually purchased by young consumers with more disposable income. Similarly, Barnard *et al*. (2013) found that individuals with experience with ICT systems are more likely to be satisfied with the usability of a system and in contrast, individuals with relatively little computer experience may find the same system as having low usability. Efforts to standardize systems and protocols can facilitate greater convenience and efficiency in digital payments across diverse service providers and regions (Giri & Ghimire, 2020). Based on it, this study develops the following hypothesis:

$H_2$: There is a positive relationship between technological infrastructure and digital payment system.

*Ease to use*

The ease of use of digital payment systems is crucial for their adoption and sustained usage among users in Nepal. Pant (2016) identified that ease to use as a key independent variable that influences how individuals perceive and utilize digital payment systems. Ease of use is an important determinant for the customer preferring the internet banking (Beer, 2006). Likewise, Chong *et al.* (2010) found that if users feel that online banking is easy to use and free of hustle, then the chances of them using the system will be greater. The study shows that ease of use is a major factor in determining the adoption and use of various corporate information technologies such as online banking (Gounaris and Koritos, 2008). Similarly, the banking industry is now utilizing the new communication media (internet) to provide its flexible services to the customers with easy and convenience (Haque, 2009). Likewise, Lau (2002) found that perceived ease of use was significantly correlated with intention towards using the online trading system. Davis (1989) stated that ease of use refers to the individual's perception that using a particular system will be effortless or, simply, easy to handle. Based on it, this study develops the following hypothesis:

$H_3$: There is a positive relationship between ease to use and digital payment and financial inclusion.

*Financial literacy*

Financial literacy plays a crucial role in shaping the adoption and effective utilization of digital payment systems in Nepal. Giri & Ghimire (2020) found that financial literacy as a critical independent variable encompassing user interface design, transaction simplicity, and overall convenience of digital payment methods, all of which significantly influence adoption rates. In Nepal, improving financial literacy is essential to familiarize individuals with the benefits and functionalities of digital payment systems (Sharma & Bhandari, 2020). Enhanced financial literacy enables users to better understand and navigate digital financial services, thereby increasing their confidence and willingness to adopt these technologies (Acharya & Shrestha, 2021). Intuitive interfaces that are easy to navigate and understand are critical for encouraging adoption among diverse user groups, including those with limited technological expertise (Pokhrel *et al*., 2020). Based on it, this study develops the following hypothesis:

$H_4$: There is a positive relationship between financial literacy and digital payment system.

*Security*

Security is a paramount concern influencing the adoption and utilization of digital payment systems in Nepal. Factors such as trust in the security and privacy of digital

transactions, alongside robust cyber security measures, play pivotal roles in shaping user perceptions and behaviors towards digital payments. Users must trust that their financial information and transactions are protected from unauthorized access and cyber threats (Sharma & Bhandari, 2020). Implementing effective security frameworks can mitigate risks and vulnerabilities, thereby enhancing the overall security posture of digital payment platforms (Acharya & Shrestha, 2021). Moreover, regulatory frameworks play a vital role in establishing standards and guidelines for cyber security practices in digital finance (Subedi & Thapa, 2023). Clear regulations help ensure compliance with security standards and promote best practices among financial institutions and service providers (Giri & Ghimire, 2020). This is an important factor for E-banking users against their account information guarantee that the record showing banking activities and security of account information is not shared (Yang and Fang, 2004). According to Madu (2002), security is another common interest of customers to decide usage of Internet banking. Moreover, customers will use electronic media for banking transaction when system is suitable and hacking proof (Hanudin *et al.,* 2007). Security and privacy will help bank to gain trust of their customers which will result into increased mobile banking transactions. Likewise, Zhao and Saha (2005) found that privacy has a strong influence on customer satisfaction. Similarly, Churchill (1982) found that one of the most important future challenges facing individuals or customers of a bank is the fear of higher risks associated with using the Web for banking and financial transaction. Similarly, Dabholkar *et al.* (1996) recommended adding the security dimension to future service quality research. Security is ensued when the service becomes safe, and the customer information gets protection (Zeithaml *et al.,* 2002). Based on it, this study develops the following hypothesis:

$H_5$: There is a positive relationship between security and digital payment system.

## 3. Results and discussion

*Correlation analysis*

On analysis of data, correlation analysis has been undertaken first and for this purpose, Kendall's Tau correlation coefficients along with means and standard deviations have been computed, and the results are presented in Table 1.

Table 1

**Kendall's Tau correlation coefficients matrix**

This table presents Kendall's Tau correlation coefficients between dependent and independent variables. The correlation coefficients are based on 165 observations. The dependent variable is DPS (digital payment system). The independent variables are SI (social influence), TI (technological infrastructure), ETU (ease to use), FI (financial literacy), and S (security)

| Variables | Mean | S.D. | DPS | SI | TI | ETU | FI | S |
|---|---|---|---|---|---|---|---|---|
| **DPS** | 2.081 | 0.314 | 1 | | | | | |
| **SI** | 2.273 | 0.324 | 0.277** | 1 | | | | |
| **TI** | 2.072 | 0.315 | 0.330** | 0.333** | 1 | | | |
| **ETU** | 2.350 | 0.411 | 0.292** | 0.145* | 0.233** | 1 | | |
| **FI** | 2.025 | 0.334 | 0.340** | 0.410** | 0.094* | 0.433** | 1 | |
| **S** | 2.091 | 0.363 | 0.375** | 0.360** | 0.327** | 0.144* | 0.139* | 1 |

Notes: The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.

Table 1 shows Kendall's Tau correlations coefficients of dependent and independent variables for Nepalese customer. The result shows that social influence is positively correlated to digital payment system. This reveals that higher social influence leads to better performance of digital payment system. Similarly, technological infrastructure is positively correlated to digital payment system. This implies that technological infrastructure may have positive or negative impact on digital payment system. Likewise, ease to use is positively correlated to digital payment system. It indicates that ease to use leads to better digital payment system. Moreover, financial literacy is positively related to digital payment system. It means that the financial literacy leads to better student performance. Similarly, security is positively correlated to digital payment system which indicates that good security leads to better digital payment system.

*Regression analysis*

Having analyzed the Kendall's Tau correlation coefficients matrix, the regression analysis has been carried out and the results are presented in Table 2. More specifically, it presents the regression results of social influence, technological infrastructure, ease to use, financial literacy, and security on digital payment adoption and financial inclusion in Nepal.

Table 2

**Estimated regression results of social influence, technological infrastructure, ease to use, financial literacy, and security on digital payment system**

The results are based on 165 observations using linear regression model. The model is DPS= $\beta_0 + \beta_1$ SI + $\beta_2$ TI + $\beta_3$ ETU + $\beta_4$ FI+ $\beta_5$ BA +e, where the dependent variable is DPS (adoption of digital payment). The independent variables are SI (social influence), TI (technological infrastructure), ETU (ease to use), FI (financial literacy), and S (security)

| Model | Intercept | Regression coefficients of | | | | | Adj. $R\_bar^2$ | SEE | F-value |
|---|---|---|---|---|---|---|---|---|---|
| | | SI | TI | ETU | FI | S | | | |
| 1 | 1.239 (7.795) ** | 0.369 (5.343) ** | | | | | 0.176 | 0.285 | 28.550 |
| 2 | 1.317 (8.227) ** | | 0.368 (4.822) ** | | | | 0.147 | 0.290 | 23.253 |
| 3 | 1.267 (8.860) ** | | | 0.346 (5.762) ** | | | 0.200 | 0.280 | 33.201 |
| 4 | 1.267 (8.860) ** | | | | 0.496 (6.522) ** | | 0.244 | 0.273 | 42.541 |
| 5 | 1.063 (6.778) ** | | | | | 0.485 (6.549) ** | 0.245 | 0.272 | 42.885 |
| 6 | 0.785 (4.657) * | 0.312 (3.655) ** | 0.317 (3.616) ** | | | | 0.310 | 0.260 | 30.003 |
| 7 | 1.680 (3.959) ** | 0.218 (2.339) ** | 0.285 (3.259) ** | 0.157 (2.343) * | | | 0.334 | 0.257 | 22.53 |
| 8 | 0.339 (1.785) * | 0.209 (2.344) ** | 0.285 (3.259) ** | 0.106 (1.613) * | 0.243 (3.584) ** | | 0.391 | 0.245 | 21.705 |
| 9 | 0.268 (1.378) * | 0.206 (2.323) ** | 0.285 (3.259) ** | 0.067 (0.949) * | 0.226 (3.310) ** | 0.111 (1.526) * | 0.397 | 0.243 | 18.014 |

Note:

i. Figures in parenthesis are t-values.
ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.
iii. Digital payment system is the dependent variable.

The regression result shows that the beta coefficients for social influence is positively correlated to digital payment system. This reveals that higher social influence leads to better performance of digital payment system. This finding is consistent to the findings of Lin *et al*. (2020). Similarly, technological infrastructure is positively correlated to digital payment

system. This implies that technological infrastructure may have positive or negative impact on digital payment system. This finding is consistent to the findings of Beer (2006). Likewise, ease to use is positively correlated to digital payment system. It indicates that ease to use leads to better digital payment system. This finding is consistent to the findings of Churchill (1982). Moreover, financial literacy is positively related to digital payment system. It means that the financial literacy leads to better student performance. Similarly, security is positively correlated to digital payment system which indicates that good security leads to better digital payment system.

## 4. Summary and conclusion

Digital payments include any method of transferring money or digital currency between two parties using digital payment technologies. Financial inclusion refers to efforts to make financial products and services accessible and affordable to all individuals and businesses, regardless of their personal net worth or company size. With the rise of digital payment systems, transactions have been transformed, leading to a notable increase in the number and value of transactions using digital wallets over recent years. Digital marketing is a marketing activity, including branding, that uses various media like blogs, websites, e-mails, ad words and various social media networks.

This study attempts to examine the digital payment adoption and financial inclusion in Nepal. The study is based on primary data with 165 respondents.

The study showed that social influence, technological infrastructure, ease to use, financial literacy, and security have positive impact on digital payment adoption and financial inclusion. Likewise, the study concludes that security followed by ease to use is the most dominant factors that influence digital payment adoption and financial inclusion.

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