# Adoption of Digital Banking: Insights from a UTAUT Model

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### Abstract

The study examines the factors that affect the adoption of digital banking by clients of commercial banks in Nepal. The paper used a survey questionnaire to collect primary data from a sample of 384 respondents and applied statistical tools including descriptive statistics, correlation analysis, reliability testing, and regression analysis to analyse the data. The results showed that facilitating conditions, effort expectancy, and habit had a significant positive impact on digital banking adoption, while social influence and performance expectancy did not have a significant effect. The regression analysis identified habit as the strongest predictor of digital banking adoption, followed by effort expectancy and facilitating conditions. Overall, the findings suggest that banks should focus on making their digital banking services convenient and reliable to encourage more widespread adoption

## INTRODOUCTION AND STUDY OBJECTIVES

Digital banking refers to the online availability of - banking services, such as deposits, withdrawals, and account management (Amit, 2019). It also includes applying for financial products and paying bills. The popularity of digital banking is rising gradually among customers all around the world.

With the advent of digital technologies, the banking industry is undergoing a transformation, resulting in the use of electronic banking, internet banking, and online banking. These changes are having an impact on how financial

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services are delivered to customers. The use of digital technologies, such as the Internet of Things (IoT), and machine learning (ML) and artificial intelligence (AI) is changing the way that financial and banking services are delivered (Leung, 2009). These technologies enable banks to provide innovative products and improve customer satisfaction. However, implementing these technologies can also present challenges, including the need for institutional transformation, high investment costs, and a lack of skilled human resources (Nguyen et al., 2020). The adoption of new technology can also affect customer behaviour, with some willing to switch banks if their current bank does not offer online services (Lipton et al., 2016). To stay competitive in an increasingly digital market, it is important for banks to utilise digital technologies to improve their capabilities (Nguyen et al., 2020). The widespread availability of the internet and smartphone has been a key factor in the growth of digital banking (Lipton et al., 2016).

Convincing customers to switch to online banking channels is a challenging process, as factors influencing this behaviour are not fully understood from the customer perspective (Curran & Meuter, 2007). In this context, UTAUT is a theory that combines eight major theories on technology acceptance and use, including the Theory of Reasoned Action, Social Cognitive Theory, and Technology Acceptance Model (Venkatesh et al., 2003). Despite the potential benefits of digital banking, consumer adoption of these services remains a significant barrier (Suma-vally & Shankar, 2020). While there have been numerous research efforts that have looked into how the banking sector embraces technology (Savić & Pešterac, 2019; Khan et al., 2019; Raza et al., 2019; Malik, 2020) there have been few that have integrated the UTAUT model. Previous research has focused on either IT-based factors or trust-risk variables in analysing adoption of digital banking (Aboobucker & Bao, 2018; Akhtar et al., 2019; Gupta et al., 2019). Additionally, there has been no research specifically on the adoption of digital banking using the Unified Theory of Acceptance and Use of Technologies (UTAUT) model in the Nepalese context. However, in Nepal, researchers have studied the adoption of digital and internet banking using Technology Acceptance Model (TAM) including factors such as the credibility, perceived usefulness, ease of use, and convenience of the technology in predicting adoption (Shrestha et al., 2020). Therefore, the current paper seeks to address this gap by developing a modified UTAUT model that combines key elements of the UTAUT model, such as effort expectancy, performance expectancy, social influence, facilitating conditions, and habits, and provides insights for researchers into how internet users behave in relation to the adoption of digital banking in Nepal and addresses following research questions

How do factors such as performance expectancy, social influences, effort expectancy, facilitating conditions, and habit influence the acceptance and usage of digital banking services? In what way Performance Expectancy, Social Influences, Effort Expectancy, Facilitating Conditions, and Habit interact to shape an individual's decision to adopt and utilise digital banking?

### **Research objectives**

The aim of the research is to determine the factors that impact customers' adoption of digital banking in commercial banks, incorporating UTAUT model.

## LITERATURE REVIEW

Digital banking is a paperless banking system that facilitates customers to access and perform typical banking activities online, eliminating the need to visit physical branches (Shaikh & Karjaluoto, 2016). There has been limited research on internet banking adoption and user acceptance of this technology (Rahi, 2017). To understand how users adopt new technologies, Technology Acceptance Model (TAM) and UTAUT model have been developed. TAM asserts that the utilisation of a system is driven by an individual's deliberate intention to use it, which is shaped by their perspective and evaluation of its usefulness (Taylo & Todd, 1995). UTAUT, on the other hand, was created to analyse how users embrace new technologies and has been deployed to research the adoption of various technologies, including webbased learning (Chiu & Wang, 2008), internet bulletin boards (Marchewka & Kostiwa, 2007) and instant messaging (Lin & Anol, 2008). It has also been applied in cultural contexts, such as the comparison of mp3 player and internet banking technologies in Korea and the US (Im et al., 2011) and the study of technology adoption in developed and developing countries (Yuen et al., 2010)

## Theory of Reasoned Action (TRA)

TRA is a social psychology model developed by Fishbein and Ajzen in 1975 and 1980 that explains how attitude and subjective norm influence intentional behaviour. It posits that individuals weigh the outcomes before acting in a manner that is guided by rational thought. The TRA has been applied to understanding organisational attitudes towards technology adoption, use, and acceptance (Sarver, 1983; Bagozzi, 1982) and in this paper; it is used to understand digital banking behaviour. (Fishbein & Ajzen, 1980)

## Technology Acceptance Model (TAM)

TAM is a theory developed by Davis (1985) that predicts user acceptance of new technology and explains internet shopping behaviour. It is based on the Theory of Reasoned Action (TRA) and focuses on the intention and attitude towards using an information system. TAM argues that an individual's adoption of technology is shaped by their assessment of its usefulness (PU) and ease of use (PEOU). These constructs are based on the belief that a person's emotions and perceptions shape their attitude and behaviour. TAM has good validity and has been widely used in information systems research (Jogiyanto, 2007).

## Theory of Planned Behaviour (TBP)

TPB is an addition to the TRA that Ajzen (1991) developed to address the original

model's shortcomings in dealing with behaviours that individual have only partial control over. According to TPB, in addition to normative and influence, perceived behavioural control (PBC) affects both behavioural actual and intentions behaviour. TPB states that three types of factors influence human behaviour: normative views, behavioural beliefs, and control beliefs These factors are thought to influence behaviour through attitudes and subjective norms. It is used to explain actions over which people have only partial voluntary control (Fishbein & Ajzen, 1980).

## Motivational Model

The motivational framework by Davis et al. (1992) contrasts external objectives like career growth against intrinsic individual goals. It suggests that both extrinsic factors (e.g., perceived usefulness) and intrinsic factors (e.g., enjoyment) can influence the use of a system. The model can help explain why customers prefer certain channels and what influences their desire to use digital banking. Adoption and motivation for online channels are influenced by consumers' positive perceptions of digital banking services (Tan & Teo, 2000). Motivation is defined as the factors that drive the nature, scope, and persistence of behaviours (Keller, 1983).

## Innovation Diffusion Theory

The diffusion of innovations theory developed by Rogers,1962), explains how new ideas and technologies spread and adopted across cultures and societies. It is particularly relevant in understanding the adoption of digital technologies, for example online banking by consumers. The theory suggests that individual's level of innovativeness, or their tendency to adopt new ideas and technologies, can influence the adoption of digital technologies, those who are less accustomed to traditional banking methods may have difficulty adapting to digital platforms, while those who are more innovative may be more likely to embrace digital banking applications.

## Model of PC Utilisation (MPCU)

Thompson et al. (1991) proposed the model to predict the use of personal computer based on numerous determinants such as work fit, long-term effects, complexity, affect towards use, facilitating settings, and social aspects. The model suggests that these factors directly influence behaviour and can be used to predict an individual's likelihood of using a personal computer. The model does not include behaviour intention or habits as predictors of behaviour (Taherdoost, 2018) and focuses on actual behaviour. Results from the model show that factors such as work fit, social considerations, long-term effects, and complexity have a significant impact on personal computer usage, while facilitating circumstances and affect do not significantly affect its use.

## Social Cognitive Theory

Social Cognitive Theory proposed by Albert Bandura in 1960s posits that individuals learn through observations and outcome of their behaviours. .It addresses the importance of selfregulation and an individual's belief in their ability to apply to effectively apply their skills, known as perceived selfefficacy (Bandura & Cervone, 1986).

## UTAUT Framework

UTAUT was developed to better understand the elements that drive customer acceptance and use of technological breakthroughs. The model is based on the integration of eight existing theories and in 2012, it was expanded to include three additional constructs: price value, habitand hedonic motivation (Venkatesh et al., 2012).

## **Empirical Review**

Wei et al. (2021) examined the adoption of mobile payment among young people in Taiwan using an extended version of UTAUT model. The study concluded that social influence, including the influence of peers, celebrities, and role models, had a significant positive effect on the intention of young people to adopt mobile payment. Additionally, the study found that the stronger the behavioural intention to adopt mobile payment, the more likely young people was to use the service. The model was found effective to explain the mobile payment usage of generations Y and Z in Taiwan.

Suma-Vally and Shankar (2020)examined the the determinants of consumer acceptance of digital bankingin Hyderabad, India, using the UTAUT model. The study found that effort expectancy, performance expectancy, facilitating conditions, hedonic motivation, and attitude towards using digital banking all significantly impacted the intention to adopt digital banking. Additionally, Security concerns were identified as a

reason for resistance to mobile banking services. Similarly, Shrestha et al. (2020) conducted a study in Pokhara, Nepal to examine the influencing factors regarding adoption of internet banking services by Nepalese commercial banks' customers. They revealed that all three TAM variables of perceived usefulness, perceived risk, and perceived ease of use had a positive influence on the adoption of internet banking and a significant relationship with each other. Customers reported being satisfied with the usefulness, security, and usability of internet banking services.

Rahi et al. (2018) revealed the impact of the UTAUT on the intention of Pakistani users to adopt internet banking. They concluded that performance expectancy had a significant impact on the intention to adopt internet banking while facilitating conditions, effort expectancy, and social influence had small effects on the intention to use internet banking. The study used a convenience sample of 398 bank employees and analysed the data using the partial least squares variancebased technique.

Astudy by Diep et al. (2016) demonstrated that performance expectancy is a key determinant in understanding technology adoption. In earlier research, performance expectations were seen as a major influence on attitude (Dwivedi et al., 2019; Rana et al., 2017).

From the preceding reviews, it is understood that various studies have explored the factors that influence customers' willingness to use digital

banking services. For instance, Anggraeni et al. (2021) conducted research on Indonesian customers and discovered that habit was the primary factor influencing behavioural intention and usage behaviour, while other factors such as effort expectancy, price value, performance expectancy, and facilitating conditions did not show a significant relationship, Nouven et al. (2020), on the other hand, focused on attributes such as effort expectancy, habit, performance expectancy, hedonic motivation, and trust discovered that these factors influenced the intention to use digital banking services.

Similarly, Chikondi and Phiri (2019) discovered that factors such as performance expectancy, facilitating conditions, effort expectancy and behavioural intention were significant in e-banking service adoption, while social influence had no effect. Yu (2012) conducted an empirical study and concluded that perceived financial cost, social influence, perceived credibility and performance expectancy all had a significant impact on intent of an individual to use mobile banking, which in turn influenced their behaviour. Further, Ivanova and Kim (2022) conducted previous research on mobile banking adoption among university students in Central Asia and discovered that effort expectancy, social influence, performance expectancy. and facilitating conditions all had a significant and positive impact on the intention to use. Despite some contradictory findings, the majority of empirical literature suggests a positive and significant relationship between effort expectancy, performance expectancy, facilitating conditions, social influence, and habit, and the intention to use digital banking services. However, empirical evidence on this topic is scarce in Nepal, particularly related to factors influencing digital banking adoption among clients of commercial bank using UTAUT model in Nepal. As a result, this research bridges the gap by investigating the factors influencing digital banking adoption among customers of Nepalese commercial banks based on effort expectancy, performance expectancy, facilitating conditions, social influence and habit incorporating UTAUT model in the context of Nepal.

Based on the above discussions, the following hypothesis was formulated:

H<sub>1</sub>: Performance Expectancy has a positive and significant effect on digital banking adoption.

Davis (1989) discovered that the ease of use of a technology plays a significant role in determining an individual's willingness to adopt and utilise it. This concept has been supported by various research studies (Gupta & Arora, 2020; Soomro, 2019; Musa et al., 2015) in the subject to digital payment and banking. As a result of the above discussion, the following hypothesis was proposed:

H<sub>2</sub>: Effort Expectancy has a positive and significant relationship on digital banking adoption.

According to Venkatesh et al. (2003) a person's social circle has an influence on their conduct because they can maintain harmonious connections and within-group dynamics. Previous studies have looked into the major influence that social factors have on individuals' intentions to adopt technologies (Musa et al., 2015; Rahi et al., 2019). In light of the above discussion, the following hypothesis was formulated

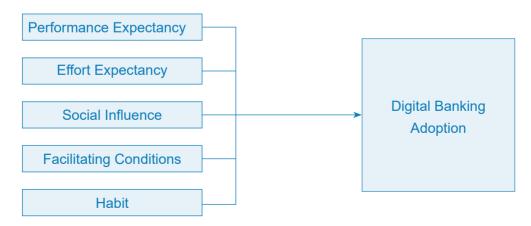
H<sub>3</sub>: Social Influence has a positive and significant relationship on digital banking adoption.

Some research has suggested that when an individual perceives that using a technology would lead to improved performance and is not difficult to use, the presence of facilitating conditions does not have a significant impact on their intention to adopt the technology (Venkatesh et al., 2003). However, other studies on IS/IT adoption have found that facilitating conditions do have a direct effect on an individual's intention to adopt the technology (Alalwan et al., 2016; Mbrokoh, 2015). In light of the discussion above, the following hypothesis was formulated: H<sub>4</sub>: Facilitating Conditions has a positive and significant relationship on digital banking adoption.

Venkatesh and Davis (2000) stated automation, which is the outcome of the same, repetitive, and consistent mental processes in certain circumstances, will encourage people to accidentally make the same choice when presented with the same situation again. Some technology acceptance experts have come to the conclusion that habits play a significant role in forecasting technology adoption (Changchit et al., 2017; Tarhini et al., 2017). Therefore, the following hypothesis has been proposed:

H₅: Habit has a positive and significant relationship on digital banking adoption.

Based on previous literature, following conceptual framework is developed



#### **Independent Variables**

### Dependent Variable

Figure 1. *Conceptual Framework* 

## **RESEARCH METHODS**

This paper used a positivist approach, descriptive and correlational а research design, and a quantitative approach to understand the digital banking adoption among customers of commercial banks in Nepal. The population of this study constitutes the banking customers using digital banking services of commercial bank. From 400 questionnaires distributed, only 384 questionnaires (male constitutes 52.08 percent of the total respondents and the female constitutes 47.92 percent of the total respondents) were collected and used for analysis using a convenience sampling method, and self-administered structured questionnaires. The obtained data was then analysed using Cronbach's alpha, One-way ANOVA, descriptive statistics, regression analysis, and a correlational study to test hypotheses on the relationships between effort expectancy. social influence. performance expectancy, habit, and facilitating condition with digital banking adoption. Furthermore, researchers faced difficulty in finding willing respondents who were willing to share genuine information, and therefore, convenience sampling was incorporated. The convenience of the researchers in terms of the sample was taken into consideration in this research.

**Model (Regression Assumptions)**: This paper employed the regression model to identify the influence of the variables on digital banking adoption as under. DBA =  $\alpha$  +  $\beta$ 1P +  $\beta$ 2E +  $\beta$ 3S + $\beta$ 4F +  $\beta$ 5H + $\epsilon_{i}$  (1)

#### Where,

DBA	=	Digital Banking Adoption
α	=	Constant
β	=	Coefficient or slope of
		regression model

- P = Performance Expectancy
- E = Effort Expectancy
- S = Social Conditions
- F = Facilitating Conditions
- H = Habit
- εi = Error Term

## **DATA ANALYSIS**

In this paper, data was collected from 384 in Nepal who use digital banking services through the distribution of structured questionnaires. For the data collection, two government banks (Nepal Bank Ltd.; Rastriya Banijya Bank), one joint venture bank (Everest Bank Ltd.). and two privately-owned banks (Global IME Bank Ltd. and Sanima Bank Ltd.) were selected. Data revealed that the majority of responders were males between the ages of 21 to 30 years. Also, most respondents were also married and had a higher education level of a master's degree or above. Most respondents were employed, with the majority having an income above Rs.40,000 (forty thousand). The majority of respondents also used digital banking services more than 5 times per week and primarily used the services for personal purposes. Most respondents also used digital banking for utility payments and account transfers and had been using the

### Table 1 Reliability Analysis

Code	Variables	Cronbach's Alpha	N of items
PE	Performance Expectancy	0.922	5
EE	Effort Expectancy	0.918	5
SI	Social Influence	0.871	5
FC	Facilitating Conditions	0.915	5
Н	Habit	0.874	5
DBA	Digital Banking Adoption	0.920	5

## Table 2

#### Pearson Correlation Matrix and Multicollinearity Test

	EE	SI	FC	Н	PE	DBA
EE VIF	1 4.085					
	.688**					
SI	(0.006)	4				
VIF	2.29	1				
FC	.735** (0.004)	.704**				
VIF	3.545	(0.002)	1			
	.684**					
Н	(0.006)	.607**	.750**			
VIF	2.52	(0.003)	(0.002)	1		
	.823**					
PE	(0.002)	.595**	.731**	.636**		
VIF	3.491	(0.008)	(0.007)	(0.002)	1	
	.757**	.641**	.792**	.940**	.711**	
DBA	(0.003)	(0.007)	(0.002)	(0.007)	(0.004)	1

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

Note. DBA: Digital Banking Adoption (Dependent Variable); EE: Effort Expectancy, FC: Facilitating Conditions, SI: Social Influence, , H: Habit, PE: Performance Expectancy(Independent Variables)

services for at least 4 years. The data also portrayed that the most of respondents used digital banking for convenience, security, and accessibility.

#### Reliability

The result showed that the measurement scales used for the independent and dependent variables had high reliability,

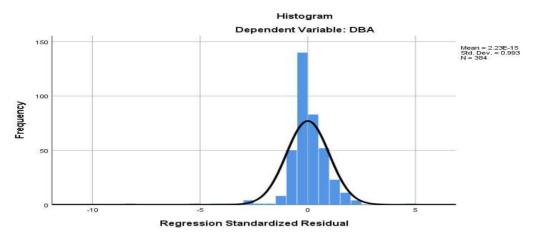
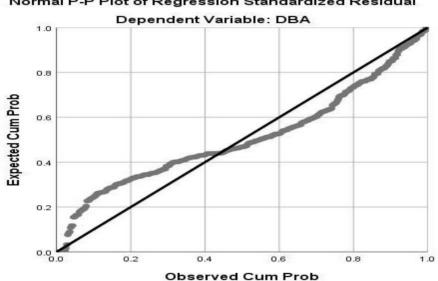


Figure 1. Normality Test



Normal P-P Plot of Regression Standardized Residual

Figure 2. Linearity Test

with Cronbach's Alpha values exceeding 0.80 for all scales, indicating a high level of internal consistency.

## **Correlation Analysis and Multicollinearity Test**

The paper found a strong correlation betweenhabitanddigitalbankingadoption,

as well as strong correlations between various other variables including effort efficiency and performance expectancy, habit and facilitating conditions. performance expectancy and facilitating conditions, facilitating conditions and effort expectancy, and social influence and facilitating conditions. Additionally,

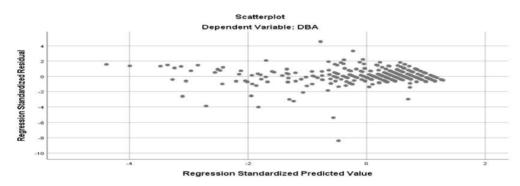


Figure 3. Independence of Error

there is a moderate correlation between performance expectancy and social influence. Multicollinearity was checked using Variance Inflation Factor (VIF), and it was determined that the regression analysis can be performed.

## Regression Assumption Tests

Before running a regression analysis, it is important to ensure that certain assumptions are met which includes linearity, homoscedasticity, and multicollinearity, and are checked as a prerequisite for the analysis.

To verify the results' credibility, it is important to check whether the data for the multiple regression analysis are normally distributed. This can be done through visual inspection of plots, checking for skew and kurtosis, and using P-P plots. The normality and linearity tests revealed that the data are normally distributed.

## Independence of error

The consistency of variations in data across different levels of independent variables, known as homoscedasticity, is crucial for accurate multiple regression analysis, as a lack thereof can lead to distorted results. Verifying homoscedasticity by plotting residuals against fitted values, and observing a consistent pattern in the graph, confirms that the data is free from heteroskedasticity and thus suitable for regression analysis.

## Multiple Regression Analysis

Multiple regression analysis is an extension of simple linear regression in which more than one independent variable is used to estimate the unknown values of a dependent variable (Sharma & Chaudhary, 2018). The regression analysis reveals that four out of five independent variables (Effort Expectancy, Performance Expectancy, Facilitating Conditions, and Habit) have a significant impact on Digital Banking Adoption, with a one unit increase resulting in an increase in adoption. Social Influence was found to have no impact. The model explains 91.4% of the variance in adoption. The findings indicate that all factors considered have a significant impact on the adoption of digital banking.

## Table 3

Multiple Regression Analysis and Coefficients of Independent Variables Panel A: The table depicts the model summary regression analysis and coefficients of regression analysis for the major variables under study. The regression analysis is conducted for the whole sample.

Independent variables	Unstandardised Coefficients B	Std. Error	Standardised Coefficients Beta	Sig.
(Constant)	0.725	0.106		0
PE	0.069	0.029	0.067	0.018
EE	0.125	0.031	0.124	0
SI	0.004	0.022	0.004	0.849
FC	0.102	0.029	0.1	0
Н	0.839	0.027	0.74	0
R	0.956a			
R square	0.914			
Adjusted R square	0.913			

Panel B: The table depicts the ANOVA of the major variables under study.

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	543.539	5	108.708	801.045	.000b
Residual	51.297	378	0.136		
Total	594.837	383			

### Table 4

Summary of hypotheses testing results

S. N	Hypotheses	Hypothesis Relationship	Findings
H <sub>1</sub>	Performance Expectancy has a positive and significant effect on digital banking adoption	Positive	Not Significant
H <sub>2</sub>	Effort Expectancy has a positive and significant relationship on digital banking adoption	Positive	Significant
H <sub>3</sub>	Social Influence has a positive and significant relationship on digital banking adoption.	Positive	Not Significant
$H_4$	Facilitating Conditions has a positive and significant relationship on digital banking adoption.	Positive	Significant
H <sub>5</sub>	Habit has a positive and significant relationship on digital banking adoption.	Positive	Significant

## DISCUSSION

The impact of Performance Expectancy on digital banking adoption has been found to be inconsistent across different studies. Some research has discovered that Performance Expectancy does not have a significant impact on adoption behaviour, such as Anggraeni et al. (2021) and Purwanto and Loisa (2020). However, other studies have revealed that Performance Expectancy does have a significant impact, such as Chikondi and Phiri (2019); Nguyen et al. (2020), and Al-Saedi et al. (2020). Additionally, Rajendran et al. (2017) found that Performance Expectancy had a positive and significant relationship with adoption factors in the UTAUT model.

Effort Expectancy, or the belief that using digital banking requires minimal effort, has been found to have a significant impact on digital banking adoption in several studies. Chikondi and Phiri (2019), Nguyen et al. (2020) and Al-Saedi et al. (2020) all revealed that Effort Expectancy had a significant impact on adoption of e-banking services, m-payment systems and intention to use respectively. Rajendran et al. (2017) also found that Effort Expectancy had a positive and significant relationship with adoption factors in the UTAUT model, and Purwanto and Loisa (2020) also found a positive and significant relationship between Effort Expectancy and adoption.

The research revealed that there is no significant relationship between adoption of digital banking by commercial banksand socialinfluencein Nepal.

This can be because consumers are unaware of digital banking services and don't value social influence as a driving force behind adoption behaviour. These results align with the findings of Chikondi and Phiri (2019) who found that Social Influence had an insignificant impact on the adoption of e-banking services, and Tang et al. (2021) who found that impact of social influence on a user's intention to utilise mobile payments in Malaysia was not significant. However, these results differ from the findings of Rajendran et al. (2017) who found that Social Influence had a positive and significant relationship with adoption factors in the UTAUT model, and Anggraeni et al. (2021) and Anh TRAN (2021) who found that Social Influence had a positive impact on the intention to use digital banking.

The research found that Facilitating Conditions have a significant positive relationship with the adoption of digital banking by Nepalese commercial banks. Facilitating Conditions are key factors that enable the use of digital banking services and have a positive impact on adoption behaviour. This research is congruent with Rahi et al. (2018) and Chikondi and Phiri (2019) who found that Facilitating Conditions had a significant impact on the intention to adopt internet banking and e-banking services respectively. Rajendran et al. (2017) also found that Facilitating Conditions had a positive and significant relationship with adoption factors in the UTAUT model.

The study also disclosed that habit, or the repetitive use of digital banking, has a significant positive relationship with the adoption of digital banking by Nepalese commercial banks. The most important factor in the adoption of digital banking is habit and has a positive impact on adoption behaviour. These findings align with the research of Anggraeni et al. (2021) and Nguyen et al. (2020) who found that the adoption of digital banking and behavioural intention were significantly influenced by habit by Vietnamese customers respectively. Additionally, Rajendran et al. (2017) also discovered a positive and significant relationship between habit and adoption components in the UTAUT model.

## CONCLUSION AND IMPLICATIONS

The paper found that a combination of ease of use, convenience and familiarity

drive adoption of digital banking in Nepalese commercial banks. Improving infrastructure, making digital services more appealing and addressing technical problems can increase adoption. These findings can help banks and policymakers improve customer satisfaction and drive digital transformation in the banking sector.

This paper explores the reasons why customers turn to digital banking and provides suggestions for banks to enhance adoption by creating userfriendly and easy-to-understand services. It highlights the need for further research with larger sample sizes and more variables, particularly in the context of Nepal where there is a lack of existing studies on the subject.

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## Conflict of interest

The authors declared having no conflict of interest in the research work.

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