

# Effect of E-Banking on Financial Inclusion in Nepal

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**ABSTRACT :** The study examines the effect of electronic banking on financial inclusion in Nepal. Financial inclusion is the dependent variable. The selected independent variables are automated teller machine, point of sale terminal, internet banking, mobile banking, and agency banking. The primary source of data is used to assess the opinions of the respondents regarding the financial inclusion and electronic banking. The study is based on primary data of 150 respondents. To achieve the purpose of the study, structured questionnaire is prepared. The regression models are estimated to test the significance and importance of electronic banking on financial inclusion in Nepal. The study showed that automated teller machine has a positive impact on financial inclusion. It indicates that increase in number of automated teller machines leads to increase in financial inclusion. Similarly, mobile banking has a positive impact on financial inclusion. It indicates that better orientation towards mobile banking leads to increase in financial inclusion. Likewise, internet banking has a positive impact on financial inclusion. It indicates that better orientation towards the internet banking leads to increase in financial inclusion. Furthermore, agency banking has a positive impact on financial inclusion indicating that increase in agency banking leads to increase in financial inclusion. Lastly, point of sale has a positive impact on financial inclusion. It indicates that better orientation towards point-of-sale services leads to increase in financial inclusion.

**Keywords:** financial inclusion, automated teller machine, point of sale, internet banking, mobile banking, and agency banking.

## 1. Introduction

The advancement in technology and globalization has changed the way banking service is delivered across the world. Customers taste and preferences have also changed in response to new trends in technology. Banking customers have become more sophisticated and demand quality, speed and variety of services and products offered by banks. Customers who required banking services have had to leave everything and travel to their branches to be able to transact banking business. This put banking services out of reach of many people across the country. The emergence of electronic banking has meant that many banking products and services can be accessed through the internet. Thus, electronic banking has enabled many products and services to be offered to customers who do not have to travel to the branch before accessing banking service. E-banking has made banking more competitive (Chavan, 2013). Bank customers are more discerning,

sophisticated, and demanding. To meet customers' needs and expectations, banks have invested heavily in IT Infrastructure to offer a wide range of products and services including ATMs, telephone banking, Internet banking, Mobile banking etc. Electronic banking includes the systems that enable financial institution customers, individuals, or businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network (Daniel, 1999).

The concept of financial inclusion has continued to gain global acceptance since it was identified as one of the key drivers of inclusive economic growth and development. Financial inclusion means access to finance and financial services for all in a fair, transparent, and equitable manner at an affordable cost. In a more concise manner, it can be defined as delivery of basic banking services at an affordable cost to all sections of the society, especially the vast sections of disadvantaged and low-income groups who tend to be excluded (Abid and Noreen, 2006). Exclusion from the formal financial system has increasingly been identified as a barrier to eradicating poverty (Donovan, 2012). Indeed, lack of access to financial services such as credit and saving reduces household's ability to invest, save and respond to shocks (Aker and Wilson, 2013). At the micro level, low levels of financial inclusion led to lower economic growth and exacerbate income inequality (Demirguc-Kunt *et al.*, 2008). Financial inclusion refers to the absence of price or non-price barriers in the use of financial services (Sharma and Kukreja, 2013). In other words, financial inclusion comprises all initiatives that make formal financial services available, accessible, and affordable to all segments of the population (Nandhi, 2012). Electronic banking has played a significant role in improving the standard of service delivered to the customer. With just a click of a button, the customer can check the services or products on offer in different banks making it easy to compare and choose. Electronic banking has made banking more competitive and complex (Kirakosyan and Danaiata, 2014). Electronic banking has enabled customers to carry out several financial transactions from many different locations with just a few clicks. It helps in reducing costs by providing financial services cheaper and faster with less staff. Electronic banking has created variety for customers. Customers can choose the time, place, the products they want and the method by which they want to use to access the service or product. Electronic banking has become significantly popular, employed by making financial institutions to reduce costs associated with having personnel to serve customers physically. Electronic banking can help banks achieve competitive advantage (Yousafzai *et al.*, 2003). Financial innovation has a critical role in financial deepening, which include electronic banking services (Beck and Wagner, 2018). E-banking is the use of electronic means to deliver banking services, mainly through the internet.

Triki and Faye (2013) defined financial inclusion as all initiatives which makes formal financial services readily available, easily accessible, and affordable to all subgroups of the population in a particular country. Financial inclusion is also defined as the process

which ensures accessibility, availability, and utilization of financial system by members of an economy (Sharma, 2008). Financial inclusion is an intervention strategy that seeks to overcome the market friction that hinders the market from operating in favour of the poor and under privilege. Financial inclusion offers incremental and complementary solutions to tackle poverty, to promote inclusive development (Chibba, 2009). It aims at drawing the unbanked population into the formal financial system so that they can access financial service ranging from savings, payments, and transfers to credit and issuance. Financial inclusion strategies aim at increasing the number of people with accounts in banks and other formal and financial institutions saving current and credit. It also pursues the promotion of the uses of formal payment media, including cheques, ATM cards, internet payments, mobile payments (Mbutor and Uba, 2013).

E-banking services are being deployed rapidly across emerging markets as a key tool to further the goal of financial inclusion. Hussien and El Aziz (2013) stated that rapid growth in the e-banking services has led to increased access for the less privileged and disadvantage population to affordable financial services not only within but also across the borders. The integration of banking technologies with mobile technologies that have much wider penetration hold new promise of financial inclusion for the mass. Nwudeet al. (2020) stated that e banking transactions have increased at a rapid place for the success of financial inclusion. Thus, the rapid growth of e-banking services user has made an important platform for extending banking services. The affordability of e-banking services means e-banking services is a useful avenue towards increased financial inclusion, making it is important in countries where financial inclusion is high or where people are informally served (Casaloet al., 2008). The efficiency of cashless payments channel significantly encourages the use of financial products and services. The desire to own bank account and excessive digital payments charges have significant influence on financial inclusion. E-banking payments have enhanced equal access and use of financial products and services (Eze and Markjackson, 2020). Ozili (2018) observed that digital finance has a positive effect on financial inclusion in emerging and advancing economies. According to Lumsden (2018), implementing e- banking financial systems can increase financial inclusion and improve economic development. E-banking is a powerful instrument that banks can employ to drive financial inclusion because of its convenience and cost effectiveness (Bizahet al., 2013). Digital financial services can be more convenient and affordable than traditional banking services. It enables low- income and poor people in developing countries to save and borrow in the formal financial system, earn a financial return, and smooth their consumption.

In the context of Nepal, Dangol and Humagain (2020) concluded financial innovation and quality of financial services are the significant determinants of financial inclusion. Financial literacy plays a moderating role between financial innovation and financial inclusion. The study revealed that the tendency of higher level of financial inclusion was

influenced by gender, educational level and monthly income and internet banking. Many countries have introduced comprehensive measures to improve access to and usage of tailored financial services. Greater financial inclusion is achieved when all economic activities and segments of the society have access to financial services with ease and at minimum cost. According to Pant (2016), most of the measures could not be executed to the degree desired due to problems of low financial literacy, paucity of infrastructural facilities as well as inadequate technology-based facilities. Likewise, Simkhada (2013) found that co-operative model should receive increased attention in Nepal, allowing existing cooperatives to be strengthened and more cooperatives to be established, reaching more remote rural communities. The digital finance improves the services provided by banking and financial institutions which plays positive role in encouraging financial accessibility. Likewise, Rana (2016) stated those consumers are interested in electronic banking services because of ease and time saving. Increase in use of internet banking services has also led to increase in the number of customers. The study also stated that people are encouraged to engage in banking and financial institutions due to increase in technology and research.

The above discussion shows that empirical evidence varies greatly across the studies on the effect of electronic banking on financial inclusion. Therefore, to support one view or the other, this study has been conducted. Hence, this study focuses on the influence of electronic banking on financial inclusion in Nepal. The major purpose of the study is to examine the effect of the electronic banking on financial inclusion in Nepal. Specially, it examines the relationship of automated teller machine, mobile banking, internet banking, point of sale terminal and agency banking with financial inclusion in Nepal.

The remainder of this study is organized as follows: Section two describes the sample, data, and methodology. Section three presents the empirical results and final section draw conclusions and discuss the implications of the study findings.

## **2. Methodological Aspects**

The study is based on the primary data which were gathered from 150 respondents. The respondents' views were collected on automated teller machine, mobile banking, internet banking, point of sale terminal, agency banking and financial inclusion. The study is based on descriptive and causal comparative research designs.

### **2.1 The model**

The model estimated in this study assumes that financial inclusion depends on different factors. Moreover, the various factors influencing financial inclusion are automated teller machine, mobile banking, internet banking, point of sale terminal and agency banking. Therefore, the model takes the following form:

$$FI = \beta_0 + \beta_1 ATM + \beta_2 MB + \beta_3 IB + \beta_4 AB + \beta_5 POS + e \quad (1)$$

Where,

FI= Financial inclusion

ATM= Automated teller machine

MB = Mobile banking

IB = Internet banking

POS = Point of sale

AB = Agency banking

Financial inclusion was measured using a 5-point Likert scale where the respondents were asked to indicate responses using 5 for strongly agree and 1 for strongly disagree. There are 10 items and sample items include “Financial institution provides inexpensive and easy to use services,” “Financial technology makes banking services easier to achieve” and so on. The reliability of the items was measured by computing the Cronbach’s alpha ( $\alpha= 0.740$ ).

Automated teller machine was measured using a 5-point Likert scale where the respondents were asked to indicate responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include “ATM banking is flexible and suitable for daily transaction,” “ATM banking fees are minimal for customer” and so on. The reliability of the items was measured by computing the Cronbach’s alpha ( $\alpha= 0.771$ ).

Mobile banking was measured using a 5-point Likert scale where the respondents were asked to indicate responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include “M-banking transaction can be done from any place to any banks,” “Mobile banking assures quick transaction in terms of time” and so on. The reliability of the items was measured by computing the Cronbach’s alpha ( $\alpha= 0.730$ ).

Internet banking was measured using a 5-point Likert scale where the respondents were asked to indicate responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include “Internet banking is easier than traditional banking,” “Internet banking transaction is confidential and secure” and so on. The reliability of the items was measured by computing the Cronbach’s alpha ( $\alpha= 0.760$ ).

Point of sale was measured using a 5-point Likert scale where the respondents were asked to indicate responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include “POS is very useful among customers at retail store,” “POS technology helps to execute transaction fast” and so on. The reliability of the items was measured by computing the Cronbach’s alpha ( $\alpha= 0.778$ ).

Agency banking was measured using a 5-point Likert scale where the respondents were asked to indicate responses using 5 for strongly agree and 1 for strongly disagree. There are 5 items and sample items include “Agency banking cost is minimal,” “Agent banking is useful to solve problems without visiting banks” and so on. The reliability of the items was measured by computing the Cronbach’s alpha ( $\alpha = 0.845$ ). The following section describes the independent variables used in this study.

## **2.2 Automated teller machine**

ATM system is an inter-organizational system that links bank and financial institutions to retail banking customer for several types of routine banking transactions. These includes inquires, deposits, cash withdrawals, cash transfer and payments (Santos and Peffers, 1993). Peat et al. (2011) found that ATM has a significant positive relationship with the financial inclusion. Furthermore, Bayero (2015) showed that there is significant positive relationship between ATM service and financial inclusion. The study found that customers are increasingly associating quality of bank service with ATMs. Idowu et al. (2002) also revealed that automated teller machine has a positive and significant influence on the financial inclusion. Based on it, the study develops the following hypothesis:

*H<sub>1</sub>: There is a positive relationship between automated teller machine and financial inclusion.*

## **2.3 Mobile banking**

Mobile banking refers to the provision of banking and financial services with the help of mobile telecommunication devices. It is a system that allows customers of financial institutions to conduct several financial transactions through mobile devices such as mobile phone (Adewuyi, 2011). Mobile banking has a positive correlation with the access and use of financial services (Chakrabarty, 2011). Ishengoma (2011) assessed the influence of banking through mobile phones system on the financial addition in Tanzania. The study exhibited positive association and statistically important link between financial inclusion and mobile banking. In addition, Ngugi (2015) empirically investigated mobile banking and financial inclusion in Kenya. The study showed that mobile money transfer services are positively associated to financial inclusion. Based on it, the study develops the following hypothesis:

*H<sub>2</sub>: There is a positive relationship between mobile banking and financial inclusion.*

## **2.4 Internet banking**

Internet banking is also referred as online banking. It involves banking transaction on the internet using electronic tools such as the computer without visiting the banking hall (Daniel 1999). Cheruiyot (2010) assessed the impact of electronic banking on financial inclusion. The study discovered that financial inclusion and offerings of internet banking

have positive and significant relationship. Brich and Young (1997) assessed the impact of internet banking on financial inclusion in Nigerian economy. The study found that use of internet banking helps to increase the financial inclusion in Nigerian economy. Similarly, Maiyo (2013) found positive relation between internet banking and financial inclusion due to technological advancement. The study also found that internet banking services have improved and increased financial inclusion due to ease, efficiency, and effectiveness. Based on it, the study develops the following hypothesis:

*H<sub>3</sub>: There is a positive relationship between internet banking and financial inclusion.*

### **2.5 Agency banking**

Agency banking refers to delivery of financial services outside the conventional bank branches (Kelly, 1989). Agency banking is new strategy commercial banks are employing to increase market share and offer banking services to their clients in varied places (Howcraft and Beckett, 1996). Agency banking increases trust and usages of banking services. Moreover, Doh (2020) found that agency banking leads to increase in usages of banking facilities, reduces the cost of accessing and managing new clients. Thus, agency banking is positively correlated with financial inclusion. Likewise, Muasya and Kerongo (2015) revealed that agency banking services awareness among the rural population are positively correlated to access to financial services. Similarly, Anyanzwa (2012) found that agent banking is positively correlated to financial inclusion. Based on it, the study develops the following hypothesis:

*H<sub>4</sub>: There is a positive relationship between agency banking and financial inclusion.*

### **2.6 Point of sale**

Point of sale is an electronic device that is used for verifying debit card and credit card transaction. Sorescu et al. (2003) showed that point of sale includes convenience and low transaction cost which leads to increase in financial services. According to Colombia (2006), point of sale has made significant contribution to enhance financial inclusion across the world. Point of sale terminal increases ease convenience and reduces the transaction cost which encourage customer to use banking services. Bolivia (2006) found that point of sale terminal is positively correlated to financial inclusion. Based on it, the study develops the following hypothesis:

*H<sub>5</sub>: There is a positive relationship between point of sale and financial inclusion.*

## **3. Results and Discussion**

### **3.1 Correlation analysis**

On analysis of data, correlation analysis has been undertaken first and for this purpose, Kendall's Tau correlation coefficients along with mean and standard deviation has been

computed and the results are presented in Table 1. This table presents Kendall's Tau correlation coefficients between dependent variable and independent variables. The correlation coefficients are based on 150 observations. The dependent variable is FI (Financial inclusion). The independent variables are ATM (Automated teller machine), MB (Mobile banking), AB (Agency banking), IB (Internet banking) and POS (Point of sale).

**Table 1: Kendall's Tau Correlation Coefficients Matrix**

Variables	Mean	SD	FI	ATM	MB	IB	AB	POS
FI	3.793	0.651	1					
ATM	3.847	0.596	0.320**	1				
MB	3.911	0.691	0.398**	0.417**	1			
IB	3.771	0.702	0.497**	0.336**	0.443**	1		
AB	3.547	0.698	0.498**	0.274**	0.366**	0.514**	1	
POS	3.865	0.785	0.478**	0.282**	0.380**	0.427**	0.472**	1

Notes: The asterisk sign (\*\*) indicates that the results are significant at one percent level.

The result shows that automated teller machine has a positive relationship with financial inclusion. It indicates that increase in number of automated teller machines leads to increase in financial inclusion. Similarly, mobile banking has a positive relationship with financial inclusion. It indicates that better orientation towards mobile banking leads to increase in financial inclusion. Likewise, internet banking has a positive relationship with financial inclusion. It indicates that better orientation towards the internet banking leads to increase in financial inclusion. Furthermore, agency banking has a positive relationship with financial inclusion indicating that increase in agency banking leads to increase in financial inclusion. Lastly, point of sale has a positive relationship with financial inclusion. It indicates that better orientation towards point-of-sale services leads to increase in financial inclusion.

### 3.2 Regression analysis

Having estimated the Kendall's Tau correlation coefficients, the regression analysis has been carried out and the results are presented in Table 2. More specifically, it presents the regression results of automated teller machine, internet banking, mobile banking, agency banking and point of sale on financial inclusion in Nepal. The results are based on 150 observations using linear regression model. The model is

$$FI = \beta_0 + \beta_1 ATM + \beta_2 SMB + \beta_3 IB + \beta_4 AB + \beta_5 POS + e \quad (2)$$



Where, the dependent variable is FI (Financial inclusion). The independent variables are ATM (Automated teller machine), MB (Mobile banking), AB (Agency banking), IB (Internet banking) and POS (Point of sale).

**Table 2: Estimated Regression Results of Automated Teller Machine, Internet Banking, Mobile Banking, Agency Banking and Point of Sale on Financial Inclusion**

Model	Intercept	Regression coefficients of					Adj. R <sup>2</sup>	SEE	F-value
		ATM	MB	IB	AB	POS			
1	1.797	0.519					0.221	0.574	43.244
	(5.847)**	(6.579)**							
2	1.709		0.533				0.316	0.537	69.954
	(6.754)**		(8.364)**						
3	1.42			0.63			0.458	0.478	126.968
	(6.626)**			(11.268)**					
4	1.51				0.644		0.474	0.471	135.137
	(7.545)**				(11.625)**				
5	1.604					0.566	0.464	0.471	129.965
	(8.185)**					(11.400)**			
6	1.316	0.222	0.415				0.338	0.529	38.994
	(4.418)**	(2.403)*	(5.207)**						
7	0.882	0.105	0.184	0.474			0.484	0.462	49.518
	(3.291)**	(1.269)	(2.378)*	(6.816)**					
8	0.622	0.093	0.145	0.251	0.366		0.572	0.425	50.803
	(2.475)*	(1.225)	(2.024)*	(3.274)*	(5.253)**				
9	0.571	0.079	0.099	0.18	0.279	0.224	0.604	0.409	46.473
	(2.355)*	(1.075)	(1.412)	(2.355)*	(3.910)**	(3.567)**			
10	0.843		0.141	0.315		0.312	0.565	0.429	65.438
	(3.809)**		(4.367)**	(2.129)*		(5.254)**			

Notes: 1. Figures in parentheses are t-values. 2. The asterisk signs (\*\*) and (\*) indicate that results are significant at one percent and five percent level of significance respectively. 3. Dependent variable is financial inclusion.

The results show that the beta coefficients for automated teller machine are positive with financial inclusion. It indicates that automated teller machine has a positive impact on financial inclusion. This finding is like the findings of Peat *et al.* (2012). Likewise, the beta coefficients for mobile banking are positive with financial inclusion. This finding is consistent with the findings of Ishengoma (2011). Similarly, the beta coefficients for internet banking are positive with purchase intention. It indicates that internet banking has a positive impact on financial inclusion. This finding is consistent with the findings of Brich and Young (1997). Furthermore, the beta coefficients for agency banking are positive with financial inclusion. It indicates that agency banking has a positive impact on financial inclusion. This finding is like the findings of Muasya and Kerongo (2015). In addition, the beta coefficients for point-of-sale terminal are positive with financial inclusion. It indicates that point of sale terminal has a positive impact on financial inclusion. This finding is like the findings of Bolivia (2006). The result also shows that the beta coefficients for all explanatory variables are significant at one and five percent level.

#### 4. Summary and Conclusion

Financial inclusion has been broadly recognized as critical in reducing poverty and achieving economic growth. When people participate in the financial system, they are better able to start and expand businesses, invest in education, manage risk, and absorb financial shocks. Digital finance services are vital to the public as it boosts security for their cash and it's more convenient compared to keeping money at home travelling with the money. Digital financial inclusion can improve the welfare of individuals and business that have a reliable digital platform with which to access funds in their bank accounts to carry out financial transaction. The study attempts to examine the effect of e banking on financial inclusion in Nepal. The study is based on the primary data which were collected from 150 respondents. The study shows that automated teller machine, internet banking, mobile banking, agency banking and point of sale have positive impact on financial inclusion in Nepal. The study concluded that better orientation of customers towards automated teller machine, internet banking, mobile banking, agency banking and point of sale leads to increase in financial inclusion. The study also concluded that agency banking followed by point of sale and internet banking are the most influencing factors that determines the financial inclusion in Nepal.

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