Impact of Information Technology and Communication on the Performance of Nepalese Commercial Banks

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Abstract

The study examines the impact of information technology and communication on the performance of Nepalese commercial banks. Return on assets and net profit margin are selected as the dependent variables. The selected independent variables are automated teller machine, internet banking, mobile banking, point of sales and quick response code. The study is based on primary and secondary data of 25 commercial banks with 150 respondents. To achieve the purpose of the study, structured questionnaire is prepared. Secondary data were collected from Banking and Financial Statistics published by Nepal Rastra Bank and annual reports of the selected commercial banks. The correlation coefficients and regression models are estimated to test the significance and importance of information technology and communication on the performance of Nepalese commercial banks.

The study showed that ATM banking has a positive impact on return on assets and net profit margin. It indicates that better the ATM banking services, higher would be the return on assets and net profit margin. Similarly, internet banking has a positive impact on return on assets and net profit margin. It indicates that better the internet banking services, higher would be the return on assets and net profit margin. Likewise, mobile banking has a positive impact on return on assets and net profit margin. It indicates that better the mobile banking services provided by the banks, higher would be the return on assets and net profit margin. In addition, point of sales banking has a positive impact on return on assets and net profit margin. It indicates that practice of point of sales banking leads to increase in return on assets and net profit margin. Moreover, QR payment has a positive impact on return on assets and net profit margin. It indicates that higher the number of payments through QR, higher would be the return on assets and net profit margin.

Keywords: automated teller machine, internet banking, mobile banking, point of sales, quick response code, return on assets, net profit margin

1. Introduction

The advent of online banking and digital services has transformed the way customers interact with banks. Customers can now perform transactions,

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check balances, make payments, and even apply for loans online. This has not only enhanced convenience for customers but also reduced the need for physical branches and personnel. The way banks provide services has been dramatically changed by information technology. Globalization has led to fierce rivalry in the banking sector worldwide, claim (Nzotta and Okereke, 2009). The banking procedures in the majority of developing countries and economies have seen a significant transformation as a result of advances and changes in technology breakthroughs, e-commerce, and the borderless global economy (Calisir, 2014). Every bank is scrambling to modify their internal procedures to meet the demands of a picky clientele. The global information and communication technology revolution has had a significant impact on the banking sector (Al-Qeisi and Hegazy, 2015). Innovation has greatly accelerated its role in raising service standards in the financial institution sector. Over the past few years, advancements in information technology have transformed how businesses conduct and run their operations (Al-Jabri and Sohail, 2012). The financial and banking industries are expanding more quickly than in the past globally. As a result of online banking for financial transactions, the process of technology adoption has introduced the banking industry to new diverse business models, areas of improvements, and development concepts (Schumann and Tittmann, 2015). Nzotta and Okereke (2009) claimed that globalization has led to fierce rivalry in the banking sector on a global scale. The banking procedures in the majority of developing countries and economies have seen a significant transformation as a result of advances and changes in technology breakthroughs, as well as the borderless, global nature of e-commerce (Calisir, 2014). Due to the new age of technology acceptance in the banking industry, clients may now use daily activities more easily, faster, and for less money. The ICT revolution has had a significant impact on the banking business globally (Al-Qeisi and Hegazy, 2015). With mobile banking, internet banking, and e-services emerging as the primary delivery methods, information technology in banking has radically changed how banks provide their services. Currently, technology and digitalization have removed barriers to modern society, such as those related to participation, time, data acquisition, and space, giving users more flexibility to connect with different parties independent of location or even time (Koiranen *et al.,* 2010).

Information technology has enabled banks to streamline their operations and automate various processes, leading to increased efficiency. Tasks such as customer onboarding, transaction processing, and record-

keeping have been digitized, reducing the need for manual intervention and minimizing errors. This efficiency improvement often translates into cost savings for banks. Customers are seeking multiple delivery options, flexible scheduling options, and convenient locations without regard to time or distance. As a result, practically all commercial banks now offer services via a variety of alternative e-channels; this practice is known as alternative banking. Alternative banking methods include electronic fund transfers (EFT), real-time gross settlement (RTGS), magnetic ink character recognition (MICR) clearing, automated teller machines (ATMs), point of sale (POS) terminals, mobile banking, internet banking, and credit cards and debit cards. The use of information technologies to enhance business models and increase their effectiveness is referred to as the digital transformation process. This process entails the continuous adoption of cutting-edge technologies, which will result in a complete digital transformation of the entire economy (Ablyazov and Asaul, 2018). Modernized methods of offering financial services must be widely adopted in order to undergo digital transformation. There are fewer bank locations and more services are provided online, particularly when lending or investing money (Piirainen, 2016). The greatest opportunity for a sustained and long-term increase in the effectiveness of banks is innovative development. Today, the global banking sector has made digitalization a strategic priority. Modern financial technology is causing the biggest changes in the banking industry (Rupeika-Apoga*et al.,* 2018). Due to the simplicity and accessibility of services from anywhere at any time, the telephone, internet, and mobile devices have grown to be essential DB service channels and are crucial to banks' existence (Sundarraj and Wu, 2005). Several office duties will be accomplished more quickly and cheaply as a result of the effects of digitalization. Digitalization is an opportunity for businesses to develop and adopt new business models, carry out corporate operations, and enhance customer relationships (Schumann and Tittmann, 2015).

Banks have access to vast amounts of data about their customers' financial behavior. IT has enabled sophisticated data analytics that help banks understand customer preferences, tailor their offerings, and provide personalized financial advice. This has the potential to improve customer satisfaction and loyalty. IT and communication technologies have enabled banks to extend their services beyond geographical boundaries. This has facilitated international transactions, trade finance, and cross-border investments. Customers can access their accounts and conduct business

from anywhere in the world, thus expanding the customer base for banks. Advanced IT systems have significantly improved risk management in the banking sector. Banks can employ real-time monitoring and predictive modeling to identify and mitigate risks such as fraudulent activities, credit defaults, and market volatility. Agboola *et al.* (2019) examined the impact of digitization on the performance of commercial banks in Nigeria. The study found a weakly significant and favorable correlation between the performance of commercial banks and the digitalization process. Similarly, Karimi and Oluoch (2019) analyzed the impact of bank innovations on the financial expansion of commercial banks in Kenya was explored by. The study found that the most substantial impact on financial growth is caused by bank product innovation. Likewise, Adeniran and Junaidu (2014) examined the introduction of automated teller machines (ATM). The study showed that ATM services have favorable and significant impact on how easy they are to use, how much transactions cost, and how secure the services are.

Furst *et al*. (2002) found that banks in all size categories offering Internet banking were generally more profitable and tended to rely less heavily on traditional banking activities in comparison to non-Internet banks. Nui and Ekin (2001) concluded that online banking has a positive impact on the profits of Turkish banks. Online banking has changed the dimensions of competition in the retail banking sector. It has also provided opportunities for emerging a gradual process. Similarly, Siam (2006) examined the impact of online banking on Jordanian banks. The study concluded that majority of the banks are providing services on internet through their websites. The result showed that the attention is more to achieving e-banking as satisfying and fulfilling customers' needs. The study also concluded that there should be a well-articulated strategy to achieve success and profits in the long run. DeYoung *et al*. (2007) observed the change in financial performance of Internet community banks in U.S. during 1999-2001. The results found that internet adoption improved community banks' profitability, particularly through increased revenues from deposit service charges.

Nimako *et al*. (2013) assessed the impact of internet banking on service quality in the context of commercial banks and merchant banks of Ghana. The study revealed that as more and more customers adopt the internet for their banking transactions, it becomes important for management of banks to be innovative in their approach for meeting customer requirement. Firdous and

Farooqi (2017) revealed that the internet banking service quality dimensions have significant impact on the customer satisfaction of internet banking customers. Each of the dimension namely efficiency, system availability, fulfillment, privacy, contact, responsiveness and contact individually contribute 70% to the overall customer satisfaction in internet banking. The use of internet banking has been rejected or ignored by most of the customers because of the perceived worried or problems associated with technology-based service delivery systems as most lack confidence that it can be used to addresses challenges that arises (Annor, 2017). Wung (2002) indicated the dissatisfaction with the electronic or internet banking is because of the high failure rates of most of the innovative products and services introduced. Casalo *et al*. (2007) indicated that increasing levels of website usability might lead to increasing levels of consumer's affective and commitment to the website which would have a direct, positive and significant effect on it usage as well as on satisfaction.

Juma (2012) investigated the impacts of ICT adoption on growth of commercial banks. The study concluded that there was a positive correlation between ICT and performance of commercial banks. Commercial banks that embraced ICT were found to have a higher growth in market share. Likewise, Muyoka (2014) examined the relationship between mobile banking on the financial performance of commercial banks. The study found that there existed a statistically significant relationship between mobile banking and profitability of commercial banks. This was attributable to increased deposits through mobile transactions and reduced costs. Berentsen (1998) assessed the impact that the substitution of smart cards for currency will have on monetary policy, arguing that although electronic substitutes for currency will become widespread, monetary policy will continue to work as before because this currency substitution will leave the demand for central bank reserves largely intact.

In the context of Nepal, Thapa (2016) examined the customer satisfaction and ATM service quality in Nepalese commercial banks. The study found that customer satisfaction is positively impacted by the ATM service aspects of convenience, dependability, usability, and cost effectiveness. Similarly, Shakya (2016) investigated the effects of internet banking on client happiness and business performance. The findings showed that return on assets (ROA) and return on equity are strongly correlated with customers' satisfaction

with online banking (ROE). Likewise, Banstola (2007) found that there is no connection between customer's use of e-banking and their gender, marital status, or income. The study also discovered that dependability and user-friendliness are the most crucial factors that persuaded customers to adopt the e-banking service.

The above discussion shows that empirical evidences vary greatly across the studies on the impact of information technology and communication in the performance of commercial banks. 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 examine the impact of information technology and communication in the performance of Nepalese commercial banks. Specifically, it examines the relationship of automated teller machine, internet banking, mobile banking, point of sales and quick response code with performance of Nepalese commercial banks.

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 section draws the conclusion.

2. Methodological aspects

The study is based on primary data where 150 respondents have been taken and secondary data which were gathered from 25 Nepalese commercial banks for the study period from 2014/15 to 2019/20, leading to a total of 105 respondents. The main source of data includes Banking and Financial statistics published by Nepal Rastra Bank, and the annual report of respective banks. The study is based on descriptive as well as casual comparative research designs. Table 1 shows the list of commercial banks for the study along with the study period and number of observations.

Table 1

List of commercial banks selected for the study along with the study period and number of observations

S.N.	Name of the banks	Study period	Observations
1	Bank of Kathmandu Limited	2014/15-2019/20	6
2	Century Commercial Bank Limited	2014/15-2019/20	6
3	Citizens Bank International Limited	2014/15-2019/20	6
4	Civil Bank Limited	2014/15-2019/20	6
5	Everest Bank Limited	2014/15-2019/20	6
6	Global IME Bank Limited	2014/15-2019/20	6
7	Himalayan Bank Limited	2014/15-2019/20	6
8	Kumari Bank Limited	2014/15-2019/20	6
9	Laxmi Bank Limited	2014/15-2019/20	6
10	Machhapuchchhre Bank Limited	2014/15-2019/20	6
11	Mega Bank Nepal Limited	2014/15-2019/20	6
12	Nabil Bank Limited	2014/15-2019/20	6
13	Nepal Bangladesh Bank Limited	2014/15-2019/20	6
14	Nepal Bank Limited	2014/15-2019/20	6
15	Nepal Investment Bank Limited	2014/15-2019/20	6
16	Nepal SBI Bank Limited	2014/15-2019/20	6
17	NIC Asia Bank Limited	2014/15-2019/20	6
18	NMB Bank Nepal Limited	2014/15-2019/20	6
19	Prabhu Bank Limited	2014/15-2019/20	6
20	Prime Commercial Bank Limited	2014/15-2019/20	6
21	RastriyaBanijya Bank Limited	2014/15-2019/20	6
22	Sanima Bank Limited	2014/15-2019/20	6
23	Siddhartha Bank Limited	2014/15-2019/20	6
24	Standard Chartered Bank Limited Nepal	2014/15-2019/20	6
25	Sunrise Bank Limited	2014/15-2019/20	6
Total number of respondents			150

Thus, the study is based on 150 observations.

The model

The model used in this study assumes that performance of commercial banks depends upon information technology and communication. The dependent variables selected for the study are return on assets and net profit margin. Similarly, the selected independent variables are automated teller machine, internet banking, mobile banking, point of sales and quick response code. Therefore, the model takes the following form:

$$ROA_{it} = \beta_0 + \beta_1 ATM + \beta_2 IB + \beta_3 MB + \beta_4 POS + \beta_5 QRC + \varepsilon$$

$$NPM_{it} = \beta_0 + \beta_1 ATM + \beta_2 IB + \beta_3 MB + \beta_4 POS + \beta_5 QRC + \varepsilon$$

Where,

ROA= Return on assets is measured as the ratio of net income to total assets, in percentage.

NPM= Net profit margin is measured as the ratio of net income to revenue, in percentage.

ATM = Automated teller machine

IB = Internet banking

MB = Mobile banking

POS = Point of sale

QRC = Quick response code

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

Automated teller machine

Alber (2011) found a positive impact of ATMs on commercial banks' profitability. The number of ATMs a bank installs has a favorable effect on the profitability of the bank (Holden and El-Bannany, 2004). Chin *et al.* (1980) found that ATMs banking services have positive relationship with return on assets. Likewise, Dos and Peffers (1993) asserted that the implementation of ATM technology enhances the efficiency of the bank. The quantity of ATM rollout increased Nigerian banks' cost effectiveness (Adewoye, 2013). Based on it, this study develops the following hypothesis:

H_1: There is a positive relationship between ATMs banking services and bank performance.

Internet banking

Ngango *et al.* (2015) observed a positive relationship of internet banking and with the performance of banks. Similarly, Onay and Ozsoz (2013) stated that internet banking services leads to a higher banking efficiency. Similarly, Mateka *et al*. (2016) revealed that internet backing has a positive influence on bank incomes, operating costs, loan book, and customer deposits. In addition, Yasin (2018) examined the impact of internet banking on financial performance. The study found that internet banking has a positive but statistically an insignificant relationship with financial performance of banks. Based on it, this study develops the following hypothesis:

H_2: There is a positive relationship between internet banking and bank performances.

Mobile banking

Kiplangat and Tibbs (2018) found a significant positive influence of mobile banking on financial performance of commercial banks. Similarly, Aghdaie and Faghani (2012) found that four factors; reliability, responsiveness, tangibility and empathy have positive relationship with mobile banking customer satisfaction and firm performance. Likewise, Jayawardhena and Foley (2000) showed that mobile banking has a positive impact on bank performance measured by net profit margin. Based on it, this study develops the following hypothesis:

H_3: There is a positive relationship between mobile banking and bank performance.

Point-of-sale

POS banking is the point at which a customer makes a payment to the merchant in exchange for goods or after provision of a service. Morufu (2016) examined the impact of POS adoption by banks. The study showed a positive and significant impact of POS banking on the financial performance of commercial banks. Similarly, Odhiambo and Memba (2012) assessed the relationship between adoption of credit cards and credit card holders' satisfaction. The results showed that credit cards contributed positively to satisfaction of credit card holders and adoption of credit cards improved commercial banks revenue. Likewise, Dion (2003) analyzed the effects of POS implementation and retail technology on sales and profitability for small to mid-sized retailers. The study found a positive relationship between POS banking and bank performance. Further, Thomas *et al.* (2005) showed that point of sales has relatively higher positive impact on customer satisfaction and firm performance. Based on it, this study develops the following hypothesis:

H_4: There is a positive relationship between point of sales (POS) banking and bank performance.

QR code payment

The two-dimensional barcode known as the QR code (Brindha and Gopikaarani, 2014). Chinwoke and Victor (2021) examined the nexus between financial innovation and financial intermediation in Nigeria's banking sector. The study revealed that digital banking has a positive but insignificant effect on the performance of commercial banks in Nigeria. Similarly, Dwivedi *et*

al. (2021) analyzed the future of digital and social media marketing research: Perspectives and research propositions. The study found that the number of branches could have a positive impact on operational efficiency by increasing customer service through QR code. Likewise, Madzimure (2019) assessed the influence of strategic networks and logistics integration on firm performance among small and medium enterprises. The study showed that effective use of QR code helps to improve the firm performance. Further, Chukwu and Molokwu (2022) examined the effects of digital banking on the performance of commercial banks in Nigeria 2010-2019. The study found that digital banking has a positive and insignificant effect on the performance of commercial banks in Nigeria. Based on it, this study develops the following hypothesis:

H_5: There is a positive relationship between QR code payment and bank performance.

3. Results and discussions

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 2.

Table 2

Kendell's Tau correlation coefficients matrix

This table presents Kendall's Tau coefficients between dependent variable and independent variables. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percentage) and NPM (Net profit margin as measured by the ratio of net profit to total assets, in percentage). The independent variables are ATM (ATM banking), IB (Internet banking), MB (Mobile banking), POS (Point of sales banking), and QR (Quick response).

Variables	Mean	S.D.	ROA	NPM	ATM	IB	MB	POS	QR
ROA	1.660	0.543	1						
NPM	27.870	10.584	0.235**	1					
ATM	3.577	0.550	0.012	0.043	1				
IB	3.610	0.600	0.056	0.106*	0.370**	1			
MB	3.799	0.541	0.140*	0.175*	0.269**	0.516**	1		
POS	3.793	0.588	0.021	0.004	0.222**	0.392**	0.488**	1	
QR	3.700	0.600	0.036	0.176*	0.209*	0.286**	0.320**	0.400**	1

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

Table 2 shows that ATM banking has a positive relationship with return on assets. It indicates that better the ATM banking services, higher would be the return on assets. Similarly, internet banking has a positive relationship with return on assets. It indicates that better the internet banking services, higher would be the return on assets. Likewise, mobile banking has a positive relationship with return on assets. It indicates that better the mobile banking services provided by the banks, higher would be the return on assets. Further, point of sales banking has a positive relationship with return on assets. It indicates that practice of point of sales banking leads to increase in return on assets. In addition, QR payment has a positive relationship with return on assets. It indicates that higher the number of payments through QR, higher would be the return on assets.

Similarly, ATM banking has a positive relationship with net profit margin. It indicates that better the ATM banking services, higher would be the net profit margin. Similarly, internet banking has a positive relationship with net profit margin. It indicates that better the internet banking services, higher would be the net profit margin. Likewise, mobile banking has a positive relationship with net profit margin. It indicates that better the mobile banking services provided by the banks, higher would be the net profit margin. Further, point of sales banking has a positive relationship with net profit margin. It indicates that practices of point of sales banking leads to increase in net profit margin. In addition, QR payment has a positive relationship with net profit margin. It indicates that higher the number of payments through QR, higher would be the net profit margin.

Regression analysis

Having indicated the Kendall's Tau correlation coefficients, the regression analysis has been carried out and the results are presented in Table 3. More specifically, it shows the regression results of leave provision, organizational support, family conflict, time management, and organizational culture on work life balance.

Table 3

Estimated regression results of ATM banking, internet banking, mobile banking, POS banking, and QR code payment on return on assets

The results are based on panel data of 25 commercial banks with 150 observations for the period of 2014/15-2019/20 by using the linear regression model and the model is ROA = β_0 + β_1 ATM + β_2 IB + β_3 MB + β_4 POS + β_5QR + ewhere the dependent variable is ROA (Return on assets as measured by the ratio of net income to total assets, in percentage). The independent variables are ATM (ATM banking), IB (Internet banking), MB (Mobile banking), POS (Point

of sales banking), and QR (Quick response).

Model	Intercept	Regression coefficients of					Adj. R_bar2	SEE	F-value
		ATM	IB	MB	POS	QR			
1	1.483 (4.724)**	0.049 (0.556)					0.006	0.545	0.309
2	1.261 (4.280) **		0.111 (2.356)*				0.107	0.541	11.840
3	1.149 (3.510) **			0.134 (2.564)*			0.112	0.540	12.447
4	1.787 (5.840) **				0.036 (0.437)		0.007	0.545	0.191
5	1.482 (5.008) **					0.047 (0.592)	0.005	0.544	0.350
6	1.286 (3.663) **	0.014 (0.134)	0.117 (2.238)*				0.101	0.543	10.922
7	1.130 (2.950) **	0.039 (0.376)	0.070 (1.661)	0.110 (2.018)*			0.121	0.543	10.960
8	1.299 (3.312) **	0.013 (0.125)	0.093 (1.882)	0.191 (2.636)**	0.176 (1.735)		0.115	0.539	11.485
9	1.267 (3.186) **	0.012 (0.116)	0.091 (1.864)	0.172 (2.416)*	0.208 (1.758)	0.062 (0.535)	0.110	0.540	11.238

Notes:

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. Return on assets is the dependent variable.

Table 3 shows that the beta coefficients for ATM banking are positive with return on assets. It indicates that ATM banking has a positive impact on return on assets. This finding is consistent with the findings of Alber (2011). Similarly, the beta coefficients for internet banking are positive with return on assets. It indicates that internet banking has a positive impact on return on assets. This finding is similar to the findings of Ngango *et al.* (2015). Likewise, the beta coefficients for mobile banking are positive with return on assets. It indicates that mobile banking has a positive impact on return on assets. This finding is consistent with the findings of Kiplangat and Tibbs (2018). Further, the beta coefficients for point of sales banking are positive with return on assets. It indicates that point of sales banking has a positive impact on return on assets. This finding is similar to the findings of Morufu (2016). In addition, the beta coefficients for QR payment are positive with return on assets. It indicates that QR payment has a positive impact on return on assets. This finding is consistent with the findings of Chinwoke and Victor (2021).

Table 4 shows the regression results of ATM banking, internet banking, mobile banking, POS banking, and QR code payment on net profit margin.

Table 4

Estimated regression results of ATM banking, internet banking, mobile banking, POS banking, and QR code payment on net profit margin

The results are based on panel data of 25 commercial banks with 150 observations for the period of 2014/15-2019/20 by using the linear regression model and the model is NPM = $\beta_0 + \beta_1$ ATM + β_2 IB + β_3 MB + β_4 POS + β_5QR + e where the dependent variable is NPM ((Net profit margin as measured by the ratio of net profit to total assets, in percentage).). The independent variables are ATM (ATM banking), IB (Internet banking), MB (Mobile banking), POS (Point of sales banking), and QR (Quick response).

Model	Intercept	Regression coefficients of					Adj. R_bar2	SEE	F-value
		ATM	IB	MB	POS	QR			
1	27.587	0.081					0.008	10.627	0.082
	(4.504)**	(0.047)							
2	18.167		2.729				0.162	10.501	12.964
	(3.179) **		(2.722) **						
3	24.329			0.936			0.026	10.613	0.310
	(3.781) **			(0.557)					
4	27.236				0.172		0.018	10.626	0.012
	(4.563) **				(0.108)				
5	33.722					1.598	0.081	10.581	8.062
	(5.862) **					(2.031)*			
6	21.582	1.820	3.579				0.115	10.506	11.916
	(3.179) **	(0.933)	(2.957) **						
7	22.434	1.681	3.838	0.598			0.107	10.546	11.295
	(3.017) **	(0.833)	(2.875) **	(0.286)					
8	23.313	1.545	3.960	0.176	0.916		0.101	10.581	11.018
	(3.027) **	(0.755)	(2.913) **	(0.077)	(0.461)				
9	25.466	1.602	4.071	1.067	1.319	4.190	0.121	10.470	11.540
	(3.305) **	(0.791)	(2.986) **	(0.452)	(0.574)	(2.882) **			

Notes:

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. Net profit margin is the dependent variable.

Table 4 shows that the beta coefficients for ATM banking are positive with net profit margin. It indicates that ATM banking has a positive impact on net profit margin. This finding is similar to the findings of Adewoye (2013). Similarly, the beta coefficients for internet banking are positive with net profit margin. It indicates that internet banking has a positive impact on net profit margin. This finding is consistent with the findings of Yasin (2018). Likewise, the beta coefficients for mobile banking are positive with net profit margin. It indicates that mobile banking has a positive impact on net profit margin. This finding is similar to the findings of Jayawardhena and Foley (2000). Further, the beta coefficients for point of sales banking are positive with net profit margin. It indicates that point of sales banking has a positive impact net profit margin. This finding is consistent with the findings of Thomas *et al.* (2005). In addition, the beta coefficients for QR payment are positive with net

profit margin. It indicates that QR payment has a positive impact on net profit margin. This finding is similar to the findings of Brindha and Gopikaarani (2014).

4. Summary and conclusion

The way banks provide their services has been dramatically changed by information technology. The banking procedures in the majority of developing countries and economies have seen a significant transformation as a result of advances and changes in technology breakthroughs, e-commerce, and the borderless global economy. Every bank is scrambling to modify their internal procedures to meet the demands of a picky clientele. The global information and communication technology revolution has had a significant impact on the banking sector. Innovation has greatly accelerated its role in raising service standards in the financial institution sector. Over the past few years, advancements in information technology have transformed how businesses conduct and run their operations. The financial and banking industries are expanding more quickly than in the past globally. As a result of online banking for financial transactions, the process of technology adoption has introduced the banking industry to new diverse business models, areas of improvements, and development concepts.

The study attempts to examine the impact of information technology and communication in the performance of Nepalese commercial banks. The study is based on secondary data of 25 commercial banks of Nepal with 150 observations for the study period from 2014/15 to 2019/20 and primary data also be used as 150 respondents from different banks.

The major conclusion of this study is that ATM banking, internet banking, mobile banking, point of sales banking, and QR payment have positive relationship with return on assets. Similarly, ATM banking, internet banking, mobile banking, point of sales banking, and QR payment have positive relationship with net profit margin. Likewise, the study also concluded that mobile banking followed by internet banking is the most influencing factor that explains the changes in the return on asset of Nepalese commercial banks. Similarly, the study also concluded that internet banking followed by mobile banking is the most influencing factor that explains the changes in net profit margin in the context of Nepalese commercial banks.

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