Financial Technology as a Basis for Financial Inclusion and its Impact on Profitability: A Case of Nepalese Commercial Banks

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Abstract

This study examines the impact of financial technology as a basis for financial inclusion on the profitability of Nepalese commercial banks. Return on assets and return on equity are selected as the dependent variables. Similarly, number of ATMs, number of branches, debt to assets ratio, credit to assets ratio, credit to deposit ratio and deprived sector lending are selected as the independent variables. This study is based on secondary data of 16 commercial banks with 112 observations for the study period from 2015/16 to 2021/22. The data were collected from Banking and Financial statistics published by Nepal Rastra Bank, reports published by the Ministry of Finance, and annual reports of respective banks. The correlation coefficients and regression models are estimated to test the impact of financial technology on the profitability of Nepalese commercial banks.

The results showed that number of ATMs of a bank has a positive effect on return on assets and return on equity. This implies that increase in the number of ATMs of the bank leads to increase in return on assets and return on equity. Likewise, number of branches of a bank has a positive effect on return on assets and return on equity. This implies that increase in the number of branches of the bank leads to increase in the return on assets and return on equity. Similarly, debt to assets ratio has a positive effect on return on assets and return on equity. This indicates that higher the debt to assets ratio, higher would be the return on assets and return on equity. Likewise, credit to deposit ratio has a negative effect on return on assets and return on equity. This indicates that higher the credit to deposit ratio, lower would be the return on assets and return on equity. Similarly, credit to asset ratio has a negative effect on return on assets and return on equity. This indicates that higher the credit to asset ratio, lower would be the return on assets and return on equity. Furthermore, deprived sector lending has a negative effect on return on assets and return on equity. It implies that higher the deprived sector lending of a bank, lower would be the return on assets and return on equity.

Keywords: return on assets, return on equity, number of branches, credit to deposit ratio, deposit to assets ratio, credit to assets ratio, deprived sector lending

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1. Introduction

The revolution of information technology has influenced almost every facet of life including banking sector. The introduction of electronic banking has revolutionized and redefined the way banks were operating. Banks have radically shifted from traditional banking to branchless mode of banking. Adoption of latest technology has enabled banks to extend their customer base. Banking industry is driven by the technological innovation, market uncertainty and competition. There has been a rapid shift from traditional banking to electronic banking. Competitive banks make significant investments in adopting new technology to align business strategies, enable innovative functional operations and provide extended customer services. Technology is now considered as the main contribution for the organizations' success as their core competencies. An appropriate banking environment is considered a key pillar as well as enabler of economic growth (Nimbalkar and Deodhar, 2015). Financial technology (FT) refers to any business that uses technology to enhance or automate financial services and processes. The term refers to a broad and rapidly growing industry serving both consumers and businesses. It represents digitizing and modeling data in order to become the primary source of income and have economic value (Leong et al., 2018). Banks have largely implemented service delivery technology as a way of enlarging the services traditionally provided by bank personnel. Financial inclusion is defined as the availability and equality of opportunities to access financial services. It refers to a process by which individuals and businesses can access appropriate, affordable, and timely financial products and services (Chen et al. 2018). It is evident that financial inclusion plays an important role in economic development and the stability of the financial system (Ahamed and Mallick 2019). More importantly, the emergence of smartphones and the Internet has led to increased financial inclusion and increased opportunities for accessing digital financial services. Banks' strategies place a greater emphasis on resource investment to improve services or the introduction of new services to meet the needs of customers and achieve higher returns for optimal performance. Opening new bank branches, installing more ATMs, or implementing new e-facilities are examples of strategies that can have a major impact on profit, especially if the costs are unrelated to sales revenues (Shihadeh et al., 2018).

Chauvet and Jacolin (2017) analyzed the impact of financial inclusion and bank concentration on the performance of firms in developing and emerging countries. The results showed that financial inclusion, measured as the distribution of financial services across firms, has a positive impact on

firm growth. In another study, Grohmann et al. (2018) explained that financial literacy has an impact on improving financial inclusion. Ndhine et al. (2020) examined the effect of debit cards on financial performance of listed commercial banks in Kenya using panel data from 2009 to 2019 of 11 commercial banks. The study observed that increased use of debit cards significantly reduced transaction costs and enhanced convenience, ultimately leading to an increase in ROA and ROE. Aduda and Kingoo (2012) assessed the relationship between electronic banking and financial performance among commercial banks in Kenya from 2007 to 2010. Specifically, the study established whether there is relationship between the dependent variable i.e., performance measured by return on assets and the independent variables: investments in e-banking, number of ATMS and number of debits cards issued to customers as proxy for e-banking. The study found that there exists a positive relationship between e-banking and bank performance. The electronic banking has made banking transaction to be easier by bringing services closer to its customers hence improving banking industry performance.

Awan and Parveen (2023) analyzed the impact of financial innovations on the financial performance of commercial Banks in Pakistan using six years' data from 2012 to 2019. The study revealed that the number of ATMs, number of credit card users, number of debit card users and internet banking have positive and significant relationship with banking profitability in Pakistan. Sedera et.al. (2022) investigated the effect of financial inclusion on bank profitability in the Indonesian context between 2015 to 2020. The study found that financial inclusion positively affects bank profitability in three different dimensions of financial inclusion: access, availability, and usage. The study found strong evidence of the link between financial inclusion and bank profitability. Sujud and Hashem (2017) assessed the effect of bank innovations on profitability and return on assets (ROA) of commercial banks in Lebanon. The study observed that there is a significant positive impact of bank innovations on profitability and return on assets of Lebanese commercial banks. The study concluded that bank innovations affect profitability and return on assets (ROA) of commercial banks in Lebanon positively. Le and Ngo (2020) investigated the determinants of bank profitability in 23 countries from 2002 to 2016 using the system generalized method of moments. The findings indicated that the number of bank cards issued, the number of automated teller machines (ATMs) and the number of point of sale (POS) terminals can improve bank profitability. The study suggests a need for further expansion of these delivery channels. Also, the findings showed the negative impact of market power on bank profitability, implying that competition improves bank

profitability. Further, the study showed that there is a positive relationship between capital market development and bank profitability.

Rauf et al. (2014) examined the electronic debit card usage and their impact on profitability of Pakistani banking sector over the period of 2004 to 2013. The study found that increase in debit card usage enhance the profitability of banking industry in form of ROA quarterly. Shihadeh et.al (2018) investigated the relationship between financial inclusion (FI) and banks' performance in the economy of Jordan using annual data of 13 commercial banks from 2009 to 2014. The study found a significant impact of FI on performance when measured by gross income, and ROA. Giordani and Floros (2015) investigated the effect of automated teller machines (ATMs), information technology (IT) investments and other determinants on the efficiency and profitability of Greek commercial banks. The study reported that banks' size, capitalization, IT investments and ATMs do not have any effect on the ROAA or the ROAE but they have a positive effect on the fees and commissions. However, the study found that ATMs have a negative effect on the net interest income. Saluja and Wadhe (2015) investigated the impact of e-banking on profitability of Indian scheduled commercial banks for the period of 2006 – 2014. The study found that increase in number of ATMs affects the profitability positively. However, in case of Branch banking, insignificant relationship exists between number of branches and profitability of banks. Kondo (2010) investigated whether the ATMs play an important role in increasing ROA on Japanese Banks. It was observed that ATMs do not have any influence on the ROA of Japanese banks. The study concluded that in Japan, ATMs do not influence ROA, which includes the overall profits of bank transactions, but do contribute to particular businesses in that they can make the most of their abilities. Alshehadeh and Al-Khawaja (2022) investigated the impact of financial technology (FinTech) on financial inclusion and profitability in the commercial banking sector. The findings suggested that FinTech has a positive and significant impact on financial inclusion, as measured by the number of financial accounts and the value of transactions. The study also found that the impact of FinTech on profitability is stronger for banks that adopt more innovative FinTech solutions.

In the context of Nepal, Wagle (2023) investigated the impact of e-banking services on the profitability of Nepalese commercial banks. The findings suggested that e-banking services have a positive and significant impact on profitability, as measured by return on assets (ROA) and return on equity (ROE). The study also found that the impact of e-banking services on profitability is stronger for larger banks than for smaller banks. Sah (2020)

revealed that internet banking, ATM banking, mobile banking, credit card services, SMS banking and POS banking have positive impact on return on assets and return on equity of Nepalese commercial banks. Similarly, Lama (2020) concluded that electronic fund transfer followed by the mobile banking is the most influencing factor that explains the changes in the performance of Nepalese commercial banks.

The above discussion shows that empirical evidence varies greatly across the studies on financial technology as a basis for financial inclusion and its impact on profitability. Though there are above mentioned empirical evidence 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 main purpose of the study is to analyze the impact of financial technology as a basis for financial inclusion on profitability in Nepalese commercial banks. Specifically, it examines the impact of number of ATMs, number of branches, debt to assets ratio, credit to assets ratio, credit to deposit ratio and deprived sector lending on return on assets and return on equity in the context 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 sections draws the conclusion.

2. Methodological aspects

The study is based on the secondary data which were gathered from 16 Nepalese commercial banks for the study period from 2015/16 to 2021/22, leading to a total of 112 observations. The study has employed purposive sampling method. The main sources of data include Banking and Financial Statistics published by Nepal Rastra Bank, reports published by Ministry of Finance and the annual report of respective banks. This study is based on descriptive as well as causal comparative research designs. Table 1 shows the list of commercial banks selected for the study along with the study period and number of observations.

Table 1

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

S.N.	Name of the banks	Study period	Observations
1	NIC Asia Bank Limited	2015/16-2021/22	7
2	Global IME Bank Limited	2015/16-2021/22	7
3	Kumari Bank Limited	2015/16-2021/22	7
4	Nabil Bank Limited	2015/16-2021/22	7
5	Standard Chartered Bank Nepal Limited	2015/16-2021/22	7
6	Siddhartha Bank Limited	2015/16-2021/22	7
7	Everest Bank Limited	2015/16-2021/22	7
8	Nepal SBI Bank Limited	2015/16-2021/22	7
9	Himalayan Bank Limited	2015/16-2021/22	7
10	Laxmi Bank Limited	2015/16-2021/22	7
11	Sanima Bank Limited	2015/16-2021/22	7
12	NMB Bank Limited	2015/16-2021/22	7
13	Machhapuchchhre Bank Limited	2015/16-2021/22	7
14	Prime Commercial Bank Limited	2015/16-2021/22	7
15	Citizens Bank International Limited	2015/16-2021/22	7
16	Nepal Bank Limited	2015/16-2021/22	7
Total number of observations			**112**

Thus, this study is based on 112 observations.

The model

The model in this study assumes that firm profitability depends on different financial inclusion variables and financial technology. The dependent variables selected for the study are return on assets (ROA) and return on equity (ROE). Similarly, the selected independent variables in this study are number of ATMs, number of branches, debt to assets ratio, credit to assets ratio, credit to deposit ratio and deprived sector lending. The following model equations are designed to test the hypothesis.

$$ROA = \beta_0 + ß_1\ NOA + ß_2 NOB + ß_3\ DTA + ß_4\ CD + ß_5\ CTA + ß_6\ DSL + \varepsilon_{it}$$

$$ROE = \beta_0 + ß_1\ NOA + ß_2 NOB + ß_3\ DTA + ß_4\ CD + ß_5\ CTA + ß_6\ DSL + \varepsilon_{it}$$

Where,

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

ROE= Return on equity as measured by the ratio of net income to total shareholders' equity, in percent.

NOA = Number of active ATMs of the bank.

NOB = Number of active branches of the banks.

DTA = Debt to assets ratio as measured by the ratio of total debt to total

assets, in percent.

CD = Credit to deposit ratio as measured by the ratio of total loans to total bank's deposits, in percent.

CTA = Credit to asset ratio as measured by the ratio of total loans to total assets, in percent.

DSL = Deprived sector lending made by the bank, Rs. in million.

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

Number of ATMs

Automated Teller Machine (ATM) is also known as an automated banking machine (ABM) or cash machine and is a computerized telecommunications device that provides the clients of a financial institution with access to financial transaction in a public space without the assistance of bank's cashier or bank teller. Ajayi and Enitilo (2016) revealed that ATM has a positive role in the financial performance of commercial banks. Similarly, Abdullai and Nyaoga (2017) found that the adoption of automated teller machines has a positive influence on operational performance of banks. Likewise, Odhiambo and Ngaba (2019) indicated a positive and significant relationship between ATM and financial performance of commercial banks. Moreover, Njoroge and Mugambi (2018) concluded that there is a positive relationship between ATM and bank performance. Based on it, this study develops the following hypothesis:

H_1: There is positive relationship between number of ATMs and bank profitability.

Number of branches

Almaqtari et al. (2018) found that the number of branches have a positive impact on bank profitability measured by return on assets. Similarly, Sufian (2009) found that the numbers of branches have a positive and significant association with bank profitability in the context of China banking sector. Moreover, Al-Omar and Al-Mutairi (2008) found that number of branches has a significantly positive effect on return on assets and return on equity of commercial banks in Kuwait. Furthermore, Almazari (2014) found that the number of branches has a positive and significant impact on the profitability. Based on it, the study develops the following hypothesis:

H_2: There is a positive relationship between number of branches and bank profitability.

Debt to assets ratio

Sritharan (2015) examined the influence of firm's size on profitability of Sri Lankan hotels and travels sector firms. The study revealed that total debt ratio has a negative relationship with firm's profitability. Okoye (2019) analyzed the relationship between financial leverage and financial performance of financial institutions in Nigeria with specific reference to selected deposit money banks in Nigeria, spanning for the period 2005 to 2017.The study concluded that the relationship between ROE and debt ratio is negative but insignificant while size, proxies by total assets of the selected banks, was significantly positive. Moreover, Shaikh et al. (2016) analyzed the significance of financial leverage on financial performance in manufacturing sector of Pakistan. The study found a negative effect of leverage and the size of a company on its profitability. Based on it, this study develops the following hypothesis:

H_3: There is a negative relationship between debt to assets ratio and bank profitability.

Credit to deposit ratio

Suroso (2022) showed that loan to deposit ratio has a negative effect on ROA and ROE. Similarly, Vellanita et al. (2019) revealed a negative relationship between loan to deposit ratio and return on equity. Likewise, Golubeva et al. (2019) showed that loan to deposit ratio has a negative relationship with return on equity. In addition, Mohanty and Krishnankutty (2018) showed that return on asset has a negative and significant relationship with loan to deposit ratio. Moreover, Mehta and Bhavani (2017) concluded that loan to deposit ratio is negatively related to return on assets and return on equity. Based on it, this study develops the following hypothesis:

H_4: There is negative relationship between credit to deposit ratio and bank profitability.

Credit to assets ratio

Anbar and Alper (2011) bank-specific and macroeconomic determinants of the bank's profitability in Turkey over the time period from 2002 to 2010. The results suggested that banks can improve their profitability through increasing bank size and non-interest income, decreasing credit/asset ratio. It implies that credit to assets ratio has a negative relationship with profitability. Ali (2019) investigated the internal and external determinants of the Pakistan banking sector, specifically after the financial crisis of 2008. The study found that credit to total assets has a negative impact on profitability of Pakistani banks. Berrios (2013) revealed that there is a negative relationship between credit to asset ratio and bank profitability. Based on it, this study develops the

following hypothesis:

H_5: There is negative relationship between credit to asset ratio and bank profitability.

Deprived sector lending

Deprived sector lending refers to credit extended to sections of the economy that would not otherwise receive timely and enough credit. The lending in the priority sector has been a positive for public banks however the transaction costs should be reduced in order to increase the profits (Wadhwa et al., 2020). According to Gaur and Mohapatra (2020), loans in deprived sectors have positive impact on banks' financial performance. Martinez-Campillo et al. (2020) assessed how efficient are public banks in supporting priority and non-priority sectors in India. The results suggested that Indian public banks performed relatively well in both activities, although social efficiency was slightly greater than financial efficiency. Desai (2021) analyzed the profitability of Indian banks and how it is affected by lending in the priority sector. The study concluded that agricultural lending has a significant negative impact on bank profitability whereas the service sector lending adds positive value towards financial profitability of banks. Industrial and personal credit were found to be insignificant factors affecting profitability. Oli (2021) showed a direct effect of deprived sector lending on financial sector performance. Based on it, this study develops the following hypothesis:

H_6: There is a positive relationship between deprived sector loan and bank profitability.

3. Results and discussion

Descriptive statistics

Table 2 presents the descriptive statistics of selected dependent and independent variables during the period 2015/16 to 2021/22.

Table 2

Descriptive statistics

This table shows the descriptive statistics of dependent and independent variables of 16 Nepalese commercial banks for the study period of 2015/16 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percent) and ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percent). The independent variables are CD (Credit to deposit ratio as measured by the ratio of total loans to total bank's deposits, in percent), CTA (Credit to asset ratio as measured by the ratio of total loans to total assets, in percent), DSL (Deprived sector lending made by the bank, Rs. in million), NOB (Number of active branches of the banks), NOA (Number of active ATMs of the bank) and DTA (Debt to assets ratio as measured

by the ratio of total debt to total assets, in percent).

Variables	Minimum	Maximum	Mean	Std. Deviation
ROA	0.70	2.97	1.58	0.44
ROE	6.26	54.68	14.94	5.59
NOA	23.00	473.00	130.11	86.05
NOB	12.00	359.00	120.25	73.76
DTA	0.68	0.89	0.79	0.04
CD	63.20	89.79	76.74	5.34
CTA	0.42	0.77	0.69	0.06
DSL	1.39	18.19	5.98	3.68

Source: SPSS output

Correlation analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed and the results are presented in Table 3.

Table 3

Pearson's correlation coefficients matrix

This table shows the bivariate Pearson's correlation coefficients of dependent and independent variables of 16 Nepalese commercial banks for the study period of 2015/16 to 2021/22. The dependent variables are ROA (Return on assets as measured by the ratio of net income to total assets, in percent) and ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percent). The independent variables are CD (Credit to deposit ratio as measured by the ratio of total loans to total bank's deposits, in percent), CTA (Credit to asset ratio as measured by the ratio of total loans to total assets, in percent), DSL (Deprived sector lending made by the bank, Rs. in million), NOB (Number of active branches of the banks), NOA (Number of active ATMs of the bank) and DTA (Debt to assets ratio as measured by the ratio of total debt to total assets, in percent).

Variables	ROA	ROE	NOA	NOB	DTA	CD	CTA	DSL
ROA	1							
ROE	0.700**	1						
NOA	0.444**	0.086	1					
NOB	0.472**	0.172	0.863**	1				
DTA	0.277**	0.491**	-0.104	-0.248**	1			
CD	-0.332**	-0.225*	0.221*	0.234*	-0.100	1		
CTA	-0.293**	-0.174	0.214*	0.215*	0.158	0.477**	1	
DSL	-0.445**	-0.237*	0.760**	0.792**	-0.336**	0.377**	0.106	1

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

Table 3 shows that number of ATMs of a bank is positively correlated to return on assets. This implies that increase in the number of ATMs of the

bank leads to increase in return on assets. Likewise, number of branches of a bank is positively correlated to return on assets. This implies that increase in the number of branches of the bank leads to increase in the return on assets. Similarly, debt to assets ratio is positively correlated to return on assets. This indicates that higher the debt to assets ratio, higher would be the return on assets. Likewise, credit to deposit ratio is negatively correlated to return on assets. This indicates that higher the credit to deposit ratio, lower would be the return on assets. Similarly, credit to asset ratio is negatively correlated to return on assets. This indicates that higher the credit to asset ratio, lower would be the return on assets. Furthermore, deprived sector lending is negatively correlated to return on assets. It implies that higher the deprived sector lending of a bank, lower would be the return on assets.

In addition, the result shows that number of ATMs of a bank is positively correlated to return on equity. This implies that increase in the number of ATMs of the bank leads to increase in return on equity. Likewise, number of branches of a bank is positively correlated to return on equity. This implies that increase in the number of branches of the bank leads to increase in the return on equity. Similarly, debt to assets ratio is positively correlated to return on equity. This indicates that higher the debt to assets ratio, higher would be the return on equity. Likewise, credit to deposit ratio is negatively correlated to return on equity. This indicates that higher the credit to deposit ratio, lower would be the return on equity. Similarly, credit to asset ratio is negatively correlated to return on equity. This indicates that higher the credit to asset ratio, lower would be the return on equity. Furthermore, deprived sector lending is negatively correlated to return on equity. It implies that higher the deprived sector lending of a bank, lower would be the return on equity.

Regression analysis

Having indicated the Pearson's correlation coefficients, the regression analysis has been carried out and the results are presented in Table 4 and Table 5. More specifically, Table 4 shows the regression results of number of ATMs, number of branches, debt to assets ratio, credit to deposit ratio, credit to assets ratio, and deprived sector lending on return on assets in Nepalese commercial banks.

Table 4

Estimated regression results of number of ATMs, number of branches, debt to assets ratio, credit to deposit ratio, credit to assets ratio, and deprived sector lending on return on assets in Nepalese commercial banks

The results are based on panel data of 16 Nepalese commercial banks with 112 observations for period 2015/16 to 2021/22by using linear regression model. The model is $ROA = \beta_0 + \beta_1$

$NOA + \beta_2 NOB + \beta_3 DTA + \beta_4 CD + \beta_5 CTA + \beta_6 DSL + \varepsilon_{it}$ where the dependent variables is ROA (Return on assets as measured by the ratio of net income to total assets, in percent). The independent variables are CD (Credit to deposit ratio as measured by the ratio of total loans to total bank's deposits, in percent), CTA (Credit to asset ratio as measured by the ratio of total loans to total assets, in percent), DSL (Deprived sector lending made by the bank, Rs. in million), NOB (Number of active branches of the banks), NOA (Number of active ATMs of the bank) and DTA (Debt to assets ratio as measured by the ratio of total debt to total assets, in percent).

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		NOA	NOB	DTA	CD	CTA	DSL			
1	1.441 (5.291)**	0.275 (2.172)*						0.102	0.488	11.373
2	1.571 (6.137)**		0.037 (0.606)					0.084	0.489	2.368
3	1.483 (5.408)**			0.357 (3.883)**				0.211	0.489	17.78
4	1.880 (7.606)**				-0.039 (0.643)			0.044	0.489	0.413
5	1.715 (6.815)**					-0.002 (0.032)		0.017	0.491	0.001
6	2.341 (3.566)**						-0.211 (2.196)*	0.096	0.482	9.725
7	1.451 (5.284)**	0.131 (2.174)*	0.065 (0.616)					0.102	0.489	6.873
8	1.493 (5.294)**		0.015 (0.151)	0.069 (3.657)**				0.108	0.491	9.399
9	1.641 (4.514)**			0.057 (3.896)**	-0.04 (0.662)			0.095	0.49	9.608
10	1.882 (5.185)**		0.041 (0.824)		-0.239 (2.640)**	-0.094 (0.008)		0.111	0.491	4.205
11	1.415 (4.901)**	0.176 (2.166)*		0.002 (3.016)**	-0.044 (0.723)	-0.083 (1.053)	-0.194 (2.048)*	0.314	0.489	21.682

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 asset is the dependent variable.

Table 4 shows that the beta coefficients for number of branches are positive with return on assets. It means that number of branches has a positive impact on return on assets. This finding is similar to the findings of Sufian (2009). Further, the beta coefficients for number of ATMs are positive with return on assets. It indicates that number of ATMs has a positive impact on return on assets. This finding is consistent with the findings of Abdullai and Nyaoga (2017). Similarly, the beta coefficients for credit to deposit ratio are negative with return on assets. It indicates that the credit to deposit ratio has a negative impact on return on assets. This finding is similar to the findings of Mohanty and Krishnankutty (2018). Further, this study shows that the beta coefficients for debt to asset ratio are positive with return on assets. It indicates that the debt to asset ratio has a positive impact on return on assets. This finding is inconsistent with the findings of Shaikh et al. (2016). Likewise, the

beta coefficients for deprived sector lending are also negative with return on assets. It indicates that deprived sector lending has negative impact on return on assets. This finding is consistent with the findings of Gaur and Mohapatra (2020).

Table 5 shows the regression results of number of ATMs, number of branches, debt to assets ratio, credit to deposit ratio, credit to assets ratio, and deprived sector lending on return on equity in Nepalese commercial banks.

Table 5

Estimated regression results of number of ATMs, number of branches, debt to assets ratio, credit to deposit ratio, credit to assets ratio, and deprived sector lending on return on equity

The results are based on panel data of 16 Nepalese commercial banks with 112 observations for period 2015/16 to 2021/22by using linear regression model. The model is $ROE = \beta_0 + \beta_1 NOA + \beta_2 NOB + \beta_3 DTA + \beta_4 CD + \beta_5 CTA + \beta_6 DSL + \varepsilon_{it}$ *where the dependent variables is ROE (Return on equity as measured by the ratio of net income to total shareholders' equity, in percent). The independent variables are CD (Credit to deposit ratio as measured by the ratio of total loans to total bank's deposits, in percent), CTA (Credit to asset ratio as measured by the ratio of total loans to total assets, in percent), DSL (Deprived sector lending made by the bank, Rs. in million), NOB (Number of active branches of the banks), NOA (Number of active ATMs of the bank) and DTA (Debt to assets ratio as measured by the ratio of total debt to total assets, in percent).*

Model	Intercept	Regression coefficients of						Adj. R_bar^2	SEE	F-value
		NOA	NOB	DTA	CD	CTA	DSL			
1	11.714 (5.930)**	0.316 (2.672)**						0.144	3.609	14.451
2	12.094 (6.412)**		0.222 (2.500)*					0.112	3.612	10.251
3	12.499 (6.168)**			0.124 (0.262)				0.036	3.614	1.069
4	13.07 (7.165)**				-0.011 (0.025)			0.027	3.615	0.001
5	13.782 (7.435)**					-0.177 (0.413)		0.076	3.613	2.171
6	14.162 (6.293)**						-0.417 (3.016)**	0.172	3.443	14.729
7	11.754 (5.781)**	0.376 (2.455)*	0.169 (2.089)*					0.201	3.621	19.228
8	12.02 (5.634)**	0.532 (2.728)**		0.284 (0.387)				0.109	3.62	10.299
9	11.83 (4.556)**	0.318 (2.672)**			-0.031 (0.069)			0.101	3.621	11.266
10	12.522 (6.007)**	0.843 (3.309)**		0.201 (0.394)		-0.701 (1.197)	-0.381 (2.899)**	0.121	3.604	16.943
11	12.283 (5.901)**	0.338 (3.182)**	0.349 (2.477)*	0.17 (0.218)	-0.021 (0.048)	-0.182 (0.115)	-0.361 (2.691)*	0.111	3.624	10.148

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 equity is the dependent variable.

Table 5 shows that the beta coefficients for number of branches are

positive with return on equity. It means that number of branches has a positive impact on return on equity. This finding is similar to the findings of Al-Omar and Al-Mutairi (2008). Further, the beta coefficients for number of ATMs are positive with return on equity. It indicates that number of ATMs has a positive impact on return on equity. This finding is consistent with the findings of Ajayi and Enitilo (2016). Similarly, the beta coefficients for credit to deposit ratio are negative with return on equity. It indicates that the credit to deposit ratio has a negative impact on return on equity. This finding is similar to the findings of Anbar and Alper (2011). Further, this study shows that the beta coefficients for debt to asset ratio are positive with return on equity. It indicates that the debt to asset ratio has a positive impact on return on equity. This finding is inconsistent with the findings of Sritharan (2015). Likewise, the beta coefficients for deprived sector lending are also negative with return on equity. It indicates that deprived sector lending has negative impact on return on equity. This finding is consistent with the findings of Desai (2021).

4. Summary and conclusion

Financial technology can help reach unbanked and underbanked populations through mobile wallets, digital microloans, and other innovative products. This expands the bank's potential customer base and generates new revenue streams. It can eliminate the need for physical branches and reduce operational costs associated with traditional banking methods. This can improve profitability, especially for reaching geographically dispersed or underserved populations.

This study attempts to analyze the impact of financial technology on bank profitability in Nepalese commercial banks. The study is based on secondary data of 16 commercial banks with 112 observations for the period to 2015/16 to 2021/22.

The study showed that number of ATMs, number of branches and debt to assets ratio have positive impact on return on assets and return on equity. However, credit to deposit ratio, credit to assets ratio, and deprived sector lending have negative impact on return on asset and return on equity. The study also showed that more branches can lead to wider customer acquisition and retention, expanding the bank's market share and potentially boosting revenue from fees, interest income, and other financial services. The study concluded that the financial technology enables convenient and accessible financial services through mobile apps, online banking platforms, and other digital channels. This improves customer satisfaction and loyalty, potentially leading to higher customer retention and cross-selling opportunities. The study also concluded that number of ATMs is the most significant factor that

determines the changes in bank profitability in Nepalese commercial banks.

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