

Effect Of Financial Innovations on Profitability of Private Commercial Banks in Ethiopia

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ABSTRACT

Purpose – The purpose of this study was to examine the effect of financial innovations on the profitability of private Commercial Banks in Ethiopia.

Methodology – An explanatory study was carried out on commercial banks, to examine the effect of financial innovation on profitability. Secondary data were used and purposive sampling technique was used to select sixteen private commercial banks operating in Ethiopia covering the periods from 2016 to 2020. Key explanatory variables were identified to disclose their relationship and influence on profitability. Data was analyzed using both descriptive and inferential statistics. Multiple regressions were used to examine the effect of independent variables on return on asset.

Findings – Random effect model regression exhibited that five and three variables are having a positive and negative effect on the dependent variable. Generally, financial innovation has positive effect on financial performance of private commercial banks in Ethiopia.

Implications – This study recommends for enhancing return on asset, commercial banks should exert more on awareness creation about financial innovation service and keep up on introducing and implementing financial innovations across the country.

Originality – This study examines the effect of financial innovations on profitability of private Commercial Banks in Ethiopia. It tested the effect of various independent variables on profitability by accounting more recent data. It is among the first studies that consider agency banking as one of the unique independent variable having effect on profitability of Ethiopian banks.

Key Words: Financial innovation; Private Commercial banks; Profitability, Return on asset

1. Introduction

For a commercial bank to remain competitive there is need to design, develop and adopt new processes, products and technology. Such products include utilization of technology i.e. internet banking, mobile phone banking, agency banking, electronic fund transfer, ATM, debit cards and the like (De Young, Lang, & Noelle, 2018). Since the commercial banks are profit seeking financial industry, the profitability of commercial banks depends heavily on the net of income generating activities and the related activities expense. Due to the problem of profitability and stiff competition in the banking industry, commercial banks have changed their behavior of income sources by engaging in different technologies, to boost the

shareholders wealth, to attract the potential customers and maintain competitive advantage.

According to Arthur (2017), financial innovation is the process of creating new financial products, services, or processes. Financial innovation has come via advances over time in financial instruments and payment systems used in the lending and borrowing of funds. The financial innovations affect societies on global and intergenerational levels compels us to ask how we can ensure their responsible emergence in society.

As it was reported by Batiz-Lazo and Woldesenbet (2006), financial innovations need may arise due to many reasons. Gorton and Metrick (2010) and Batiz-Lazo and Woldesenbet (2006) stated the reasons for the growth of modern bank innovation

as reduction in bankruptcy costs, tax advantages, reduction in moral hazard, reduced regulatory costs, transparency and customization. A highly complicated and dynamic environment leads to successful innovation creating, a unique competitive position and competitive advantage and leads to a superior success and makes those banks that are engaged in creation of new bank innovations more profitable.

The Ethiopian banking sector has experienced tremendous dynamism in adoption of bank innovation over time. A great deal of changes have been embraced in the area that have prompted expansion of money related items, exercises and hierarchical structures that have

In developing countries, the lack of electronic banking infrastructure block impacts of the expected cost effectiveness and profitability. In some developing countries, there is no strong influence on the ROA of bank innovation activities because of inadequate information technology infrastructure of the branch and ATM network are limited. The same is true for other bank innovation activities. Information technology infrastructures based on relatively old technology hinder the achievement of expected financial performance of banks in developing countries (Alam et al., 2007; Gutu, 2014).

As it was stated by different previous bank innovation literature, some of the problems associated with utilization of bank innovation in Ethiopia were: Low level of internet penetration, poorly developed telecommunication infrastructure, lack of legal framework regarding bank innovation system at national level, lack of competition among local & foreign banks and social awareness on the E-banking system in Ethiopia made the banking industry not to achieve the intended goal (Ayana, 2012).

There is shallow literature on issue of financial innovation in Ethiopia because few studies have been done on the topic underlying. For instance, Assefa (2013), Abenet (2010), Gemechu (2014); Gardachew (2010), Ayana, (2012) and Worku (2016) evaluated the adoption of e-banking in the context of banks perception. Previous studies in Ethiopian e-banking focused on the assessment study and the correlation between e-banking and customer satisfaction. In addition to that, the research conducted on the effect of electronic banking on financial performance of commercial

banks in Ethiopia (Tilahun, 2016) focused only on three variables namely ATM, debit card and mobile banking. Also, they considered about 10 oldest banks such as Awash International Bank (AIB), Dashen Bank (DB), Bank of Abyssinia (BoA), Wegagen Bank (WB), United Bank S.C (UB), Nib international bank (NIB), Cooperative bank of Oromia (CBO), Lion International Bank S.C (LIB), and Oromia International Bank S.C (OIB) and ignored six recently established commercial banks. This means, prior empirical studies only addressed the issue with limited institutions which is gap of study population. This study filled the study population gap by incorporating all 16 private commercial banks officially registered and has five consecutive years audited financial data from 2016 to 2020.

Hence, the researchers were intended to conduct the study by incorporating the 16 private commercial banks and 10 explanatory variables like bank innovations (Automatic Teller Machines, Debit cards, mobile banking, internet banking, and agent banking); new saving account and four control variables such as management efficiency, bank liquidity, inflation and, gross domestic product on financial performance of the private commercial banks measured through the return on asset (ROA). Surprisingly, no studies have adopted the variable like agency banking so far in Ethiopian context as per the knowledge of the researchers. Therefore, this study sought to fill the existing research gaps having a main research question of “what is the effect of banks’ innovation on financial performance (ROA)?

2. Theoretical Overview and Hypothesis Development

Automated Teller Machine and Financial Performance

An automated teller machine (ATM) is an electronic banking outlet that allows customers to complete basic transactions without the aid of a branch representative or teller using a credit card or debit card can access cash at most ATMs. Empirical studies such as Lee, Wang and Ho (2020), Githii & Mwangi (2018); Muia (2017); Temam (2018); Mwawasaa & Ali (2020); Odhiambo & Ngaba (2019); Nekesa & Olweny (2018) found out that numbers of ATM terminals have a negative and

significant effect on financial performance of commercial banks due to high initial investment as compared to income generated.

H1: Number of ATM terminals installed by the banks has statistically significant and negative effect on financial performance.

Mobile Banking and Financial Performance

Mobile Banking refers to provision and ailment of banking- and financial services with the help of mobile telecommunication devices Lee, Wang and Ho (2020); Githii & Mwangi (2018); Muia (2017); Mbevi (2015); and Masika (2019) were found that Number of mobile banking users positive effect on Financial performance. So that the researchers hypothesized that

H2: Number of mobile banking users has statistically significant and positive effect on financial performance.

An agent bank and Financial Performance

An agent bank is a bank that performs services in some capacity on behalf of an entity. ... These banks generally act on behalf of another bank or group of banks, but they can act on behalf of a person or business. Empirical studies such as Makur (2014); Nyaga (2015); Nyambariga (2013). Lee et al., (2020), Mbevi (2015); Simboley (2017) were found that Number of agent banking users positive effect on Financial performance. So that the researchers hypothesized that:

H3: Number of agent banking users has statistically significant and positive effect on financial performance.

Point of sales terminals and Financial Performance

A point of sale terminal (POS terminal) is an electronic device used to process card payments at retail locations. A POS terminal generally does the following: Reads the information off a customer's credit or debit card. Checks whether the funds in a customer's bank account are sufficient. Empirical studies such as Makur (2014); Lee, Wang and Ho (2020); Githii & Mwangi (2018); Muia (2017); Temam (2018); Nekesa & Olweny (2018); Odhiambo & Ngaba (2019); and Mbevi (2015) were found that Number of agent banking users positive effect on Financial performance. So that the researchers hypothesized that:

H4: Number of debit cardholders' has statistically significant and positive effect on financial performance.

Internet Banking and Financial Performance

Online banking, also known as internet banking, web banking or home banking, is an electronic payment system that enables customers of a bank or other financial institution to conduct a range of financial transactions through the financial institution's website. The prior studies finding revealed that Nyaga (2015); Nyambariga (2013); Lee, Wang and Ho (2020), Githii & Mwangi (2018); Muia (2017); Nekesa & Olweny (2018); and Masika (2019) were found that Number of agent banking users positive effect on Financial performance. So that the researchers hypothesized that:

H5: Number of internet banking users has statistically significant and positive effect on financial performance.

Debit card and Financial Performance

A debit card is a payment card that deducts money directly from a consumer's checking account when it is used. Also called "check cards" or "bank cards," they can be used to buy goods or services; or to get cash from an automated teller machine or a merchant who'll let you add an extra amount onto a purchase. Prior studies such as Nyaga (2015); Githii & Mwangi (2018); Mwawasaa & Ali (2020); Muia (2017); Nekesa & Olweny (2018) and Odhiambo & Ngaba (2019) were concluded that agent banking users' positive effect on financial performance. So that the researchers hypothesized that:

H6: Debit card account has statistically significant and positive effect on Financial performance

Managerial Efficiency and Financial Performance

The expense management variable, which is defined as the ratio of operating expenses to total income, provides information on variations in operating costs and it used as a proxy to measure the Management quality of the bank. The total cost of a bank, excluding interest expense, includes operating cost and other expenses such as depreciation and taxes. From these only operating expenses can be viewed as the outcome of the bank management decision. Therefore, expense management is captured by the ratio of these

operating expenses to total assets. The empirical studies by Makur (2014); Nyaga (2015); Nyambariga (2013), Nekesa & Olweny (2018); Odhiambo & Ngaba (2019); and Mbevi (2015) were evidenced that management efficiency has positive effect on ROA.

H7: Managerial Efficiency has statistically significant and positive effect on financial performance.

Liquidity of the bank (LM) and Financial Performance

Liquidity is another factor that determines the level of banks performance. Liquidity refers to the ability of the bank fulfil its obligations, mainly of deposit. In line with theory of agency costs empirical studies conducted in Ethiopia by Kasa (2013); Deyganto & Kumari (2019); Ayele (2012) and Altaseb (2020) on deterrents of Ethiopian banks profitability found that the liquidity management has negative influence on banks financial performance.

H8: Liquidity has Statistically Significant Negative Impact on Financial Performance.

Inflation and Financial Performance

Another control factor that can affect the financial performance of banks in Ethiopia is inflation. According to regression result of studies conducted in Ethiopia by Ayele (2012) and Altaseb (2020) there is the negative effects of the inflation on profitability of bank. As general principle, increase in inflation leads to decrease profitability of business firms. Hence, the researchers hypothesized that:

H9: Inflation has statistically significant positive effect on profitability.

Performance of the economy (GDP) and Financial Performance

Empirical study by Kanwal & Nadeem (2013); Chipeta & Muthinja (2018) finds out a significant positive relationship between performance of the economy, as measured by GDP growth, and firm financial performance. The implication of this finding is that the economic environment where commercial banks operate is critical in driving their financial performance. This is because when the economy is performing well, the uptake of development loans increases and default rates on

such loans fall with positive implications on profitability.

H10: Gross domestic product has positive and statistically significant effect on profitability

3. Methodology

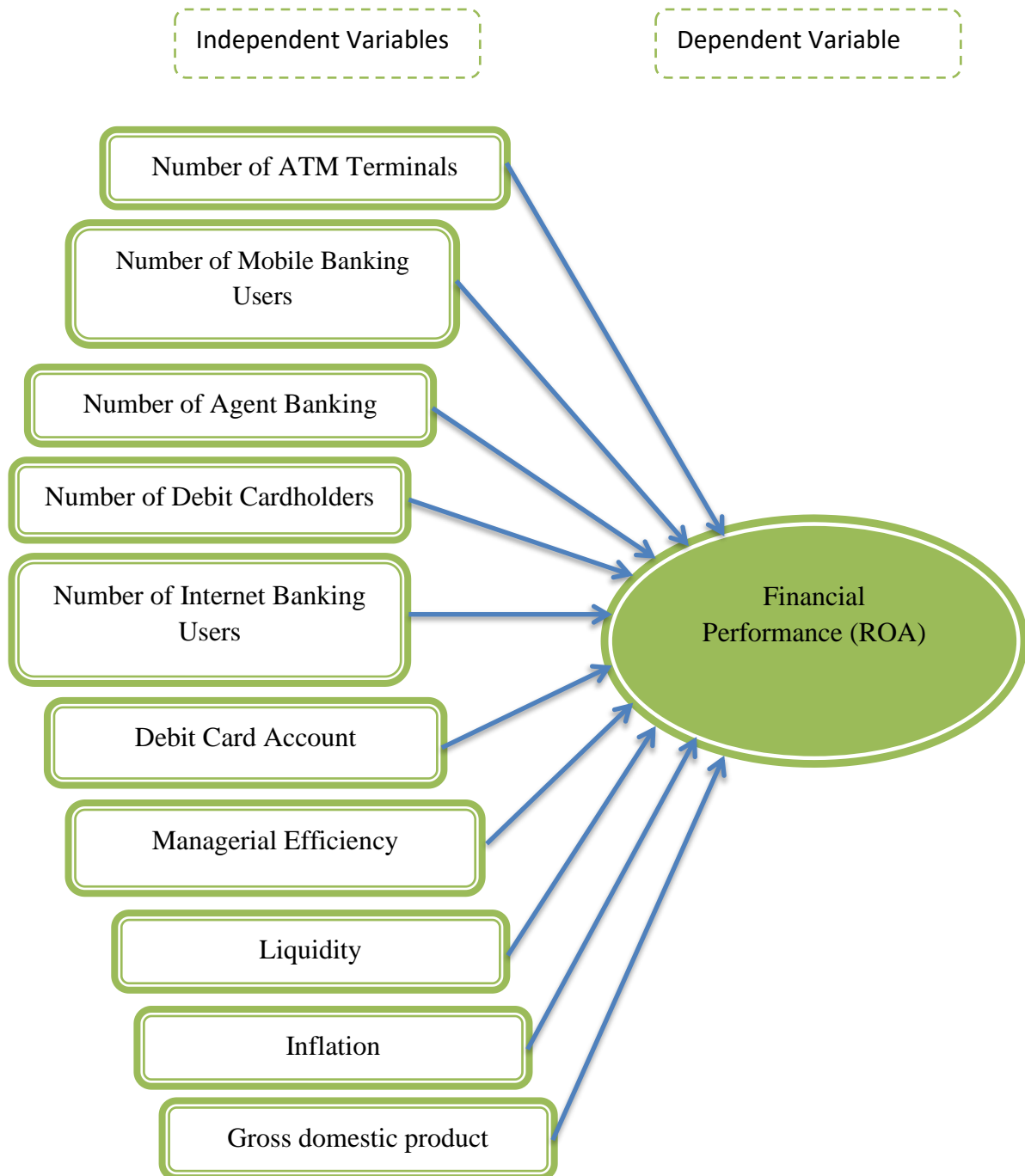
To attain the study objectives causal research design was adopted. The justification for the adoption of this design is that it enables the study to examine the cause and effect relationships among the variables. The study utilized secondary data collected from National Bank of Ethiopia (NBE). The study employed a panel data covering a period of 5 years (2016 to 2020) because it was the period that bank innovation was highly developing. The target

population for this study is 16 private commercial banks in Ethiopia that are registered by National bank of Ethiopia and under operation in the country currently; namely Abay bank, Addis International Bank, Awash International bank, Bank of Abyssinia, Berhan International bank, Buna International bank, Cooperative bank of Oromia, Dashen bank, Debu global bank, Enat bank, Lion International bank, Nib international bank, Oromia International bank, united bank, Wegagen bank, and Zemen bank.

The study adopted a census method which is a statistical method that studies all the units or members of a population. Therefore the study investigated all 16 private commercial banks to make the present study more comprehensive.

After that, the gathered data was rearranged, edited and calculated in order to be complete data that is needed for the study. Next, the collected panel data was analyzed using descriptive statistics, inferential statistics and multiple linear regression analysis. The descriptive statistics (Mean, maximum and minimum values and standard deviations) were used to analyze the general trends of the data from 2015 to 2020. The study adopted fixed effect model by using hausman test. The inferential test regression analysis was used to test the relationship between the variables (See figure 1). The multiple linear regression models were used to determine the relative importance of each explanatory variable in explaining the variation financial performance of commercial banks in Ethiopia. The multiple linear regression models were conducted using E-views 10 econometric software package.

Figure 1: Conceptual Framework



Source: Researchers' own construction based on literatures, 2021
 The study utilized a multiple regression model to establish the relationship between the independent variables and the dependent

variable. The multiple regression analysis has been used because there is more than one independent variable. The model will take the following equation:

$$ROA_{it} = \beta_0 + \beta_1 * NATM_{it} + \beta_2 * NMBU_{it} + \beta_3 * NAB_{it} + \beta_4 * NPOS_{it} + \beta_5 * NIB_{it} + \beta_6 * NCDU_{it} + \beta_7 * ME_{it} + \beta_8 * BI_{it} + \beta_9 * IN_{it} + \beta_{10} * GDP + U_{it}$$

Where: ROA-Return on Asset that measures financial performance

NATM= Number of ATM machine terminals

NMBU = Number of Mobile banking users

NAB = Number of agent banking

NPOS= Point of sales terminals

NMBU = Number of Mobile banking users

NIBU= Number of Internet banking users

NDC= Number of Debit card holder

ME= Management efficiency

BL= Bank Liquidity

IN= Inflation

GDP = Gross Domestic product

B₀-constant term

B₁, B₂, B₃, B₄ B₁₀ are coefficients to be estimated

E- Error term

i- Commercial banks i=1....16

t- index of time periods t=1-5(2015-2020)

The variables were measured according to the following table;

Table 1: Variables Definition and variable measurement

Variables Definition	Symbol	Measurement
Dependent variable		
Profitability: Return on assets is a profitability ratio that provides how much profit a company is able to generate from its assets. In other words, return on assets (ROA) measures how efficient a company's management is in generating earnings from their economic resources or assets on their balance sheet.	ROA	$ROA = \frac{\text{Net income}}{\text{Total Asset}}$
Independent variables		
Automated Teller Machine: An automated teller machine (ATM) is an electronic banking outlet that allows customers to complete basic transactions without the aid of a branch representative or teller using a credit card or debit card can access cash at most ATMs.	ATM	Natural log of Number of ATM terminals installed by the banks
Mobile Banking: Mobile Banking refers to provision and ailment of banking- and financial services with the help of mobile telecommunication devices	MB	Natural log of Number of mobile banking users
An agent bank: An agent bank is a bank that performs services in some capacity on behalf of an entity. ... These banks generally act on behalf of another bank or group of banks, but they can act on behalf of a person or business	NAB	Natural log of Number of agent banking
A point of sale terminal (POS terminal) is an electronic device used to process card payments at retail locations. A POS terminal generally does the following: Reads the information off a customer's credit or debit card. Checks whether the funds in a customer's bank account are sufficient.	POS	Natural log of Number of A point of sale terminal banking
Internet banking: Online banking, also known as internet banking, web banking or home banking, is an electronic payment system that enables customers of a bank or other financial institution to conduct a range of financial transactions through the financial institution's website.	IB	Natural log of Number of Internet banking users
Debit Card: A debit card is a payment card that deducts money directly from a consumer's checking account when it is used. Also called "check cards" or "bank cards," they can be used to buy goods or services; or to get cash from an automated teller machine or a merchant who'll let you add an extra amount onto a purchase.	DCR	Natural log of Number of debit card holders

Management efficiency (ME): Measuring management system efficiency is one of major factors that affect the performance of any business especially managers of banks. It measured through quantitative measurement of management system efficiency which would allow the owner to understand what kind of effect hired managers produce: positive or negative. The criteria of management entropy are presented in the paper, and this criterion is used for estimating real costs of management system performance. Henceforth efficiency of company management performance can be estimated as a ratio of operating expense to operating income to measure managerial efficiency.	ME	Managerial efficiency = $\frac{\text{Operating Expense}}{\text{Operating Income}}$
Bank Liquidity: is another factor that determines the level of banks performance. Liquidity refers to the ability of the bank fulfil its obligations, mainly of deposit. It is the ratio of current asset to current liability.	BL	LR = $\frac{\text{Current Assetc}}{\text{Current liability}}$
Inflation is the rate at which the value of a currency is falling and, consequently, the general level of prices for goods and services is rising. The most commonly used inflation indexes are the Consumer Price Index (CPI) and the Wholesale Price Index (WPI)	BS	Measured as the natural logarithm of total assets at year-end
Economic growth: The economic growth of nation is measured using the annual growth rate in gross domestic product (GDP)	GDP	GDP = Consumption + Investment + Government Spending + Net Exports

Source: Developed by the researchers, 2021

4. Result and Discussions

4.1. Introduction

Based on the potential of the researcher's best effort, important theoretical and empirical literature relating to the topic were reviewed and used to identify knowledge gap on the study area. To meet the broad objective of the research and to test research hypotheses and the research design used also discussed in the preceding chapter. This chapter analyzes and presents the effect of financial innovation on financial performance of 16 private commercial banks

using the annual balanced panel data, where all the variables were observed for each cross-section and each time period. The study has a time series segment spanning from the period 2016 up to 2020 and a cross section segment which considered 16 private commercial banks in Ethiopia. The results are presented in the form of summary tables. Descriptive statistics, Correlation and Regression analysis are used to analyses the data to achieve the research objective and the findings were discussed.

4.2. Results of Regression Analysis

Table 2: Random effect regression results on ROA model

Dependent Variable: ROA				
Method: Panel EGLS (Cross-section random effects)				
Date: 09/12/21 Time: 01:46				
Sample: 2016 2020				
Periods included: 5				
Cross-sections included: 16				
Total panel (balanced) observations: 80				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATM	-0.003919	0.001233	-3.179450	0.0022***

MB	0.006638	0.001499	4.427432	0.0000***
AB	0.007899	0.002113	3.738423	0.0004***
POS	0.004276	0.001327	3.221173	0.0019***
IB	0.002814	0.001270	2.216154	0.0300**
DC	0.002481	0.001529	1.622470	0.1093
ME	-0.002282	0.001593	-1.432394	0.1565
BL	-0.009165	0.002194	-4.177722	0.0001***
INF	-0.002301	0.001066	-2.158582	0.0344**
GDP	0.005066	0.001850	2.738689	0.0078***
C	0.007334	0.009436	0.777262	0.4397
R-squared	0.629441	Mean dependent var		0.032278
Adjusted R-squared	0.575737	S.D. dependent var		0.026544
S.E. of regression	0.017289	Akaike info criterion		-5.150368
Sum squared resid	0.020626	Schwarz criterion		-4.822839
Log likelihood	217.0147	Hannan-Quinn criter.		-5.019052
F-statistic	11.72054	Durbin-Watson stat		2.035650
Prob(F-statistic)	0.000000***			

The Analysis made based on 1(***), 5(**) & 10(*) percent significant level.

Source: Computed from E-views 9 result (2021)

The estimation result of the operational panel regression model used in this study was presented in table 2 above. R-squared was used to measure the goodness of fit of the explanatory variables in explaining the variations in financial performance of private commercial banks measured by ROA. As shown in the table above, R-squared value was 62.94. The result indicates that 62.94 percent variation in the dependent variable was explained by the explanatory variables in the model. That means the explanatory variables (i.e. automatic teller machine terminals, mobile banking, agent banking, post of sale terminals, bank liquidity, inflation and, gross demotic product are jointly explain about 62.94 percent of the variation in the return on asset. The remaining 37.06 percent of the variation in the financial performance (as measured by return on asset) explained by other variables which are not included in the model. For panel data R² greater than 20 percent is still large enough for reliable conclusion (Cameron, 2009 and Hsiao, 2009) cited in (Nyamsogoro, 2010). Since the R² and Adjusted-R² of the model was more than 20 percent, these variables jointly have more explanatory power of the variation in the financial performance of commercial banks in the study period. From table 2 above, the researchers found the following estimated regression equation:

$$ROA = 0.007334 - 0.003919*ATM +$$

$$0.006638*MB + 0.007899*AB + 0.004276*POS + 0.002814*IB + 0.002481*DC - 0.002282*ME - 0.009165*BL - 0.002301*INF + 0.005066*GDP$$

Beside this, F- statistics (11.72054) which is used to test the overall significance of the model was presented, and null hypothesis can be clearly rejected at 1 percent level of significant, since the p-value was (0.0000) which was sufficiently low, indicates the reliability and validity of the model at 1 percent level of significance. The coefficients of mobile banking (0.006638), agent banking (0.007899), post of sale (0.004276), internet banking (0.002814) and GDP (0.005066) indicates that they had a positive effect on ROA and the relationship is significant at 1% level of significance. The coefficient of debit card (0.002481) shows that it has a positive effect on ROA but its relationship with ROA is insignificant. On the other hand, the coefficients of ATM (-0.003919), management efficiency (-0.002282), bank liquidity (-0.009165) and inflation (-0.002301) shows that these variables affects financial performance of commercial banks negatively which means the one unit of change in ATM, management efficiency, liquidity and inflation have a -0.0039189, -0.002282, -0.009165 and -0.002301 unit change on financial performance to the opposite direction.

Based on the results shown in table 2 above, all

explanatory variables except debit card and management efficiency had statistically significant impact on financial performance measured by return on asset. Whereas variables Automatic teller machine terminals, mobile banking, agent banking, post of sale terminals, bank liquidity, inflation and gross demotic product were statistically significant at 1 percent significance level. Internet banking (0.03) and Inflation (0.034) were statistically significant at 5 percent significance level.

4.3. Hypotheses Testing

By considering the research hypotheses that are stated above, the researchers discussed the findings of this study as follow:

The result in table 2 shows that there is negative and significant relationship between number of ATM and ROA. An increase in investment on ATM machine leads to a decrease in bank profitability (ROA). The p-value is less than 0.05; therefore, number ATM has a significant effect on the profitability of commercial banks. The regression results as shown in the table 2 confirmed that the variable has negative and statistically significant effect on ROA with regression coefficient of ($\beta = -0.003919$) and the p-value is 0.0022 at 1% significance level. So, the researchers accepted H₁. Even though still now there is controversial evidence on the effect of ATM on ROA. This finding is consistent with findings of studies by empirical studies such as Mbevi (2015); Mahilet (2018); Nyambariga (2013); Temam (2018); Mwawasaa & Ali (2020); Odhiambo & Ngaba (2019); Nekesa & Olweny (2018). They found out that numbers of ATM terminals have a negative and significant effect on financial performance of commercial banks due to high initial investment as compared to income generated.

Concerning mobile banking, the regression result of this study showed that it has positive and statistically significant effect on ROA with ($\beta = 0.006638$) and significant at 1% level of significance because the p-value of $0.0000 < 0.01$. Therefore, the researchers accepted H₂. This finding is supported by other researchers such as Makur (2014); Nyaga (2015); Githii & Mwangi (2018); Muia (2017) and Masika (2019) who found that mobile banking has positive effect on ROA. This findings was also supported by ideas of Schumpeter theory of innovation, transaction cost

innovation theory, constraint-induced financial innovation theory, and task-technology fit theory are supports that financial innovation has positive influence on profitability of commercial banks.

Agent banking has positive and statistically significant effects on financial performance of the private commercial banks in Ethiopia with regression coefficient ($\beta = 0.007899$) at 1% significance level since p-value of (0.000) < 0.01 . Therefore, the researchers accepted H₃. This finding is consistent with findings of empirical studies such as Lee, Wang and Ho (2020), Mwawasaa & Ali (2020); Nekesa & Olweny (2018); Odhiambo & Ngaba (2019); Simboley (2017) who concluded that increase in agent banking improves profitability. This findings was consistent by ideas of Schumpeter theory of innovation, transaction cost innovation theory, constraint-induced financial innovation theory, and task-technology fit theory are supports that financial innovation has positive influence on profitability of commercial banks.

When it comes post of sales terminals, the regression result of this study showed that it has positive and statistically significant effect on ROA with ($\beta = 0.004276$) and significant at 1% level of significance because the p-value of $0.0004 < 0.01$. Therefore, the researchers accepted H₄. This finding is consistent with regression result of Makur (2014); Nyaga (2015); Nyambariga (2013); Lee et al., (2020), Githii & Mwangi (2018); Muia (2017); Temam (2018); Mwawasaa & Ali (2020); Nekesa & Olweny (2018) and Yasin (2018). This findings was also similar with ideas of schumpeter theory of innovation, transaction cost innovation theory, constraint-induced financial innovation theory, and task-technology fit theory are supports that financial innovation has positive influence on profitability of commercial banks.

This supports the researchers expectation (H₄) which is there is positive relationship between post sale terminals and financial performance (ROA) of private commercial banks in Ethiopia.

Additionally, this study confirmed that internet banking with regression coefficient of ($\beta = 0.002814$) has positive and statistically significant effect on financial performance of private commercial at 5% level of significance because p-value of $0.030 < 0.05$. Hence, the researchers accepted H₅. This finding is supported by Nyaga

(2015); Nyambariga (2013); Githii & Mwangi (2018); Muia (2017); Temam (2018) and Nekesa & Olweny (2018). It can be concluded that the internet banking has its own role on financial performance. In addition, this finding was also supported by ideas of Schumpeter theory of innovation, transaction cost innovation theory, constraint-induced financial innovation theory and task-technology fit theory. These theories confirmed that financial innovation has positive influence on profitability of commercial banks. The researchers found that it has a positive relationship with financial performance when the banks have internet banking.

Concerning debit card, the regression result of this study evidenced that the variable has no effect on the financial performance at 5% significance level. Because p-value of 0.1093 is more 5% or 10, the researchers did not accept H7.

Concerning management efficiency, the regression result of this study evidenced that the variable has no effect on the ROA at 5% significance level. Because p-value of 0.1565 is more 5%, the researchers rejected H8.

The regression result concerning bank liquidity with regression coefficient of ($\beta = -0.009165$) showed that bank liquidity has negative effect on financial performance of private commercial banks. So the researchers accepted H8. The researchers findings supported Tadesse (2014), has founded that there is significant and negative effects of cost per loan on bank performance (ROA) and the hypotheses is supported.

The regression result concerning inflation rate with regression coefficient of ($\beta = 0.005066$) showed that bank liquidity has negative effect on financial performance of private commercial banks. So the researchers accepted H8. The researchers findings supported by Tadesse (2014), has founded that there is significant and negative effects of cost per loan on bank performance (ROA) and the hypotheses is supported.

Additionally, this study confirmed that GDP with regression coefficient of ($\beta = 0.005066$) has positive and statistically significant effect on financial performance of private commercial at 1% level of significance because p-value of $0.0078 < 0.01$. Hence, the researchers accepted H10. This finding is supported by empirical study by Kanwal & Nadeem (2013); Chipeta &

Muthinja (2018) finds out a significant positive relationship between performance of the economy, as measured by GDP growth, and firm financial performance. The implication of this finding is that the economic environment where commercial banks operate is critical in driving their financial performance. This is because when the economy is performing well, the uptake of development loans increases and default rates on such loans fall with positive implications on profitability. The researchers found that, it has a positive relationship with financial performance when the banks have internet banking.

5. Conclusions

The conclusion that can be drawn from the findings in the first hypothesis is that investment in ATM has negative and statistically significant impact on ROA; which means an increase on the value of this variable leads to a decreases on financial performance of private commercial banks measured by ROA

Based on the findings related to the second hypothesis, under the summary of the findings was, mobile banking and statistically significant impact on ROA; which shows that an increase on the value of this variable leads to increase on financial performance commercial banks.

The conclusion that can be drawn from the findings of the third hypothesis it can be conclude that loan to agent banking has positive and statistically significant impact on ROA; which means an increase on the value of this variable leads to an increase on financial performance of commercial banks in Ethiopia measured by ROA.

Based on the findings related to the fourth hypothesis, it can be conclude that internet banking has positive and statistically significant impact on ROA. Which mean that increase in one value of this variable leads to an increase by ROA.

Based on the findings related to the fifth hypothesis, it can be conclude that debit card has positive and statistically insignificant impact on ROA. Which mean that increase on the value of this variable leads to an increase by ROA.

Based on the findings related to the sixth hypothesis, it can be conclude that management efficiency has no statistically significant impact on ROA.

Based on the findings related to eight hypotheses, it can be conclude that bank liquidity has negative and

statistically significant impact on ROA; which indicates that decrease on the value of this variable leads to an increase on financial performance.

Finally, based on the findings related to ninth hypotheses, it can be concluded that inflation has negative and statistically significant impact on ROA; which indicates that decrease on the value of this variable leads to an increase on financial performance (ROA).

Finally, based on the findings related to 10th hypotheses, it can be conclude that GDP has positive and statistically significant impact on ROA; which indicates that decrease on the value of this variable leads to an increase on financial performance of banks measured by ROA

6. Managerial implications

The financial performance measured by ROA was affected by the credit risk related factor included in this study. Since the management of the private commercial banks has control over the innovation related factors, it was possible to improve the performance of banks by giving more attention on the identified factors particularly; ATM, mobile banking, agent banking, internet banking, and post of sale terminals. Also, the study indicated that macro-economic factors like inflation and GDP were also significantly affect ROA. One internal factor which is bank liquidity has negative effect on ROA. Since, they were found to be the most significant variables that affect financial performances privet commercial banks in Ethiopia measured by ROA.

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