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Table of Contents

Content Details:

Elena Korol(Author) *Tver State Agricultural Academy* **Sofiya Korol(Co-Author)** *Miami Dade College*	**Why Roll-Ups Fail: Strategic Pitfalls and Pathways to Responsible Consolidation**

Abstract:

The time when roll-ups were made with the sole economic goal of maximum profit is coming to an end, and today's instigators of roll-ups need to pivot toward responsible consolidation, or face negative legal, political, and social consequences. This article explores roll-up strategies (as serial acquisitions in fragmented industries) in the context of recent and historical business trends, high-profile failures, and the potential for a more responsible approach to consolidation. We draw on Carroll's and Mui's (2008) "Seven Ways to Fail Big" framework and recent Patel (2025) analysis to highlight the risks of roll-ups, such as strategic blunders, flawed synergies, excessive leverage, cultural clashes, and stakeholder backlash, that have often led to corporate meltdowns. We then provide a series of cautionary, real-world examples from various industries, including healthcare and ed-tech, to illustrate what failures like Valeant Pharmaceuticals or Byju's can look like on a smaller scale. We then shift to more positive roll-up examples, like Waste Management and the Danaher Corporation, to draw on their commonalities and develop a framework that helps define responsible roll-ups, which modern businesses could put into practice today.

We argue and provide supporting case studies that responsible consolidation is more likely to avoid Carroll's and Mui's (2008) pitfalls (as well as support or complement the ESG and the UN's Sustainable Development Goals (SDGs)) through governance discipline, stakeholder engagement, and sustainability alignment. This is our main contribution — a unique three-dimensional framework that aims to identify the principles of responsible consolidation.

The article supports the 92nd GCBME Conference theme of connecting management research and practice by contributing relevant and up-to-date research on responsible and ethical roll-ups and principles on putting them into practice.

Key Words: roll-ups, responsible consolidation, operational synergies, ethical acquisitions, corporate governance, innovative business strategies.

Tarikua Markos Haile *Awash Bank*	**Determinants of Bank Deposits in Ethiopia: The Case of Awash Bank**

Abstract

Identifying the factors that influence bank deposits and exploring the relationship between exogenous and endogenous variables is crucial. This study aims to analyze the determinants of Awash Bank deposits over a span of twenty-nine years. Utilizing an explanatory research design and a quantitative approach, the research highlights both bank-specific factors (such as profitability technological advancement and loan-to-deposit ratio) and macroeconomic variables (including deposit interest rates and unemployment rates) as key determinants within the time series data from 1995 to 2023 and interviews with respective personnels.

To address the research questions, secondary data were gathered from the bank's financial statements, the National Bank of Ethiopia, and the Central Statistical Agency of Ethiopia. The analysis employed descriptive statistics and multiple linear regression techniques, including OLS using STATA software and interviewed employees of the bank. The findings revealed that the overall regression model is significant, with loan-to-deposit ratio, deposit interest rate, unemployment rate, and profitability showing significance at the 1% level.

Keywords: Awash Bank, Deposit, Determinants

CHAPTER ONE
INTRODUCTION

This chapter includes a comprehensive overview of a research study, including the background information, organizational context, problem statement, research questions, study objectives, hypothesis, significance of the study, scope of the study, and limitations of the study. This section typically sets the foundation for the research and provides a clear understanding of the study's purpose and boundaries.

1.2 Background of the Study

Banks play a critical role in the financial stability and economic growth of any country. They act as intermediaries between savers and borrowers, facilitating financial transactions and providing a safe haven for deposits. Deposits are the primary source of funds for banks, enabling them to extend loans and generate income through interest rate differentials. Consequently, understanding the factors that influence bank deposits is essential for effective bank management and policy formulation.

Deposit mobilization is a crucial function of commercial banks, serving as a vital source of funds and encouraging saving habits among individuals. Deposits are fundamental for banks, providing working capital and supporting the banking industry. Commercial banks are tasked with mobilizing savings in both rural and urban areas to benefit themselves and the country. This concept is highlighted by Ketema (2017).

The function of bank as financial mediator is well recognized facts in the economy of different countries. Without enough deposits banks and financial institutions might fail to attain their business target as well as economic growth enhancement Viswanadham, Yirgalem, & Medanit(2013). Bank is the most essential intermediaries among those with surplus income (depositors) and those persons and businesses with possible projects but requiring money for their investment

(creditors). Consequently, banks play a significant role in the economy of every country, and commercial banks usually acted as a back bone of the country's economy.

The development of financial institutions, particularly in developing countries like Ethiopia, as highlighted by Gebeyew (2013), plays a crucial role in economic growth. However, past studies,

1

such as Woldegiorgis (2010) and Garedachew (2008), have shown that the Ethiopian banking system is underdeveloped, with limited outreach and underdeveloped private commercial banks. This lack of financial development results in low levels of savings and deposit mobilization, hindering economic growth and investment opportunities in the country.

The presence and operation of commercial banks rely on bank deposits, as deposit mobilization is a fundamental activity for these institutions. Therefore, the issue of banks deposit and its determinant factors is serious to the financial industry of developing country. Deposit is the crucial task of commercial banks since their successful depends on the amount of funds they collected Shemsu(2015).

In Ethiopia, banks play a crucial role as the primary financial intermediaries driving economic growth. They bridge the gap between borrowers and lenders by facilitating a market with securities for both parties. The effectiveness of this role hinges on the financial sector's development level and the public's banking knowledge and deposit habits (Bahiredin, 2016). Deposits are fundamental for banks' survival and profitability, distinguishing them from other businesses. The ability of a bank's management and staff to attract deposits from businesses and individuals is a key indicator of community trust. Deposits enable banks to offer loans, generate interest income, and support future activities for depositors seeking cash protection, easy access, and risk avoidance (Fisseha, 2017).

In Ethiopia, the banking sector has experienced significant growth and transformation over the past few decades. With the liberalization of the financial sector, private banks have emerged and expanded rapidly, contributing to increased competition and innovation in banking services. Awash Bank, one of the leading private banks in Ethiopia, has played a pivotal role in this transformation. Established in 1995, Awash Bank has grown to become one of the largest and most profitable banks in the country, with a wide network of branches and a diverse range of banking products and services.

Despite the growth and development of the banking sector, there remains a gap in the literature regarding the determinants of bank deposits, particularly in the context of private banks like Awash Bank. Most existing studies have focused on public banks or the banking sector as a whole, leaving out the unique factors that may influence deposits in private banks. Given the importance of deposits for the liquidity and operational stability of banks, it is crucial to investigate the determinants of deposits specifically for private banks.

1.3 Statement of the Problem

Deposit mobilization involves commercial banks attracting deposits from customers to fund loans and support economic activities. This process is vital for banks as it enhances their liquidity, fulfills customer credit needs, and stimulates economic development.

Deposits serve as a vital cornerstone for the operations of commercial banks. They are funds provided by depositors who entrust their resources to the bank. Deposit mobilization is a key function of the banking industry, serving as a significant source of working capital for banks. These deposits are gathered from individuals through various types of accounts such as savings, current, fixed deposits, and other specialized schemes, enabling banks to utilize these funds for lending and other financial activities Yirgalem, & Medanit (2013). Mobilizing deposits is impossible without considering and governing the factors determining it. Nowadays, more than ever before, Commercial bank of Ethiopia aggressively stretched its business in end to end of the country. Even if private commercial banks in the country were profitable, commercial bank of Ethiopia has taken large market share Shemsu (2015).

While numerous studies abroad have examined the determinants of commercial bank deposits, limited research exists in Ethiopia on this topic. Most recent studies in other countries primarily focus on macroeconomic factors rather than exploring both micro (bank-specific) and macro (beyond the bank) determinants of bank deposits. For example, studies by Tenaye (2019),

Nathanael (2014), Hassan (2016), Mashamba & Gumbo (2014), Mohammad & Mansur (2014), Simon-Oke & Jolaosho (2013) analyze the impact of macroeconomic indicators on bank deposits. Variables commonly cited globally as determinants of deposit amounts include deposit interest rates and gross domestic product. However, findings vary, as seen in studies like Mashamba & Gumbo (2014) showing a positive relationship between deposit rates and deposits

in Zimbabwe, while Hassan (2016) found a negative association. Given the diverse social, economic, and legal contexts, there is no universal conclusion on bank deposit determinants applicable across countries like Ethiopia. This study aims to assess the impact of these macroeconomic variables on Awash Bank deposits.

To the best of the researcher‟s knowledge, in Ethiopia some empirical works were done by different researchers like Mamo (2017) and Shemsu (2015). But both studies were done on analyzing the determinants of public commercial banks, which is Commercial Bank of Ethiopia. There are not enough studies specifically dedicated to the factors determining private commercial bank deposit in Ethiopia particularly in private commercial bank. With respect to Ethiopia, studies relating to bank deposit, a study made by Bahiredin (2016) by using 15 years‟ time series data showed that loan to deposit ratio has negative significant influence on the commercial banks deposit. Contradictory of this, finding by Fisseha (2017) stated that loan to deposit ratio have a positive and significant influence on bank deposit.

Most of the studies done in Ethiopia have mostly focused on public commercial bank, which is Commercial Bank of Ethiopia. However, this research is basically different in its study area selection. A few studies were undertaken with this thesis was that; the research conducted by Andinet (2016) on factors determining private commercial banks of Ethiopia from year 2005 to 2015. The researcher had considered the following explanatory variables, those were deposit interest rate, inflation, and net interest margin. In the study conducted by Argan Defar (2021) on the factors influencing bank deposits in Ethiopia, specifically focusing on Awash Bank and using data from 1995 to 2020, independent variables such as interest rate, profitability of the bank, loan- to-deposit ratio, and unemployment rate were considered. The above stated all studies conducted in Ethiopian commercial banks have not incorporated unemployment rate and profit as a variable in identifying factors that determine commercial banks deposit. However, it is noted that technological advancement now has a greater impact on bank deposits, a variable that was not previously included in the studies.

Therefore, this study investigates the determinants of awash banks incorporates technological advancement gap and profit variables to fills the gap of previous study.

1.4 Research questions

The research conducted under this title will aim to address the following questions:

1. What is the effect of deposit interest rate on Awash Bank deposits?
2. What is the effect of profitability on Awash Bank deposits?
3. What is the effect of loan-to-deposit ratio on Awash Bank deposits?
4. What is the effect of unemployment rate on Awash Bank deposits?
5. What is the effect of technological advancement on awash bank deposit?

1.5 Objectives of the Study

1.5.1 General Objective

Given the significant role of these determinants, this study aims to examine the factors influencing the deposits of Awash Bank. The primary objective is to identify and analyze the impact of deposit interest rates, profitability, loan-to-deposit ratios, and unemployment rates on the deposit levels at Awash Bank from 1995 to 2023. By understanding these relationships, the study seeks to provide valuable insights for bank management and policymakers to enhance the bank's deposit mobilization strategies.

1.5.2 Specific Objective

Specifically, the study has the following objectives:

1. To investigate the impact of deposit interest rates on deposits at Awash Bank.
2. To assess the impact of profitability on Awash Bank deposits.
3. To evaluate the impact of loan-to-deposit ratio on Awash Bank deposits.
4. To determine the impact of the unemployment rate on deposit levels at Awash Bank.
5. To determine the impact of technological advancement on deposit level at awash bank.

1.6 Hypothesis of the Study

Research hypotheses are predictions about the outcome of the results or a statement created by the researcher to guess the outcome of a research. Therefore, after reviewing the theoretical and empirical studies that will concern on determinants of banks deposit, this study have identified and formed the following four hypotheses:

Hypothesis 1: Deposit interest rate has a significant and positive effect on deposits of Awash Bank.

Hypothesis 2: Profit has a significant and positive effect on deposits of Awash Bank.

Hypothesis 3: Loan to deposit ratio has a significant and positive effect on deposits of Awash Bank.

Hypothesis 4: unemployment rate has a significant and negative effect on deposits of Awash Bank.

Hypothesis 5: technological advancement has a significant and positive effect on deposit of awash bank.

1.7 Significance of the Study

The research has examined the determinants that affect Awash bank deposit as well as evaluate the relationship between those determinants and total deposits of bank. The importance of the study has been seen in two dimensions: theoretical contributions and practical implications. Theoretically, the study has filled an essential gap in the literature relate to investigate the most important factors that have determined bank deposit and it has to be expected to serve as an input for future researchers interested in the study area.

On the practical side, the study has helped a bank beneficiary party, government body of the country, management body of a bank and depositors of bank to identify the most important factors that may determine bank deposit and enables them to take proper remedial action to alleviate problems related to Bank deposit

1.8 Scope of the study

The scope of the study was limited to the internal (loan to deposit ratio, profit and technological advancement) and external (deposit interest rate and unemployment rate) determinant factors those have determined the deposit of awash bank over the years of 1995 to 2023. To fill the gap of study area, the data was collected through started from the foundation of the company. For this study purpose, the researcher has adopted a quantitative research approach primary and secondary data source.

1.9 Limitations of the study

The study is limited to the selected variables and mainly from secondary data sources. Other potential determinants not included in this research could also affect bank deposits.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter provides an extensive review of the existing literature on the determinants of bank deposits, focusing on both theoretical and empirical studies. The review is structured into several sections: the theoretical foundation, empirical evidence, and the identification of research gaps. This literature review aims to provide a comprehensive understanding of the factors influencing bank deposits, with a specific focus on the context of Ethiopia and other developing economies.

2.2 Theoretical Review

2.2.1 Bank Deposits

Bank deposits represent funds placed into banking institutions by depositors, which the banks then use to conduct their business, primarily lending. According to Mansour (2012), deposits are a crucial liability for banks, serving as a primary source of funds. Kelvin (2001) emphasizes that these deposits are liabilities to the bank but are essential for generating income through loans. Deposits can be categorized into various types, such as savings accounts, demand accounts, and checking accounts, all of which play a critical role in the banking sector's liquidity and operational capacity.

2.2.2 Deposit Mobilization

Deposit mobilization refers to the efforts of banks to attract and retain deposits from the public. This process is vital for the banks' ability to lend and thus generate income. Effective deposit mobilization strategies ensure a stable and substantial base of funds, enabling banks to support their lending activities and maintain liquidity. This concept is fundamental in understanding the dynamics of bank deposits and their determinants.

2.2.3 Determinants of Bank Deposits

Various factors influence the amount of deposits that banks can mobilize. These determinants can be broadly categorized into internal and external factors. Internal factors include the bank's interest rates, branch network, and overall financial health. External factors encompass macroeconomic variables such as GDP growth, inflation rates, and unemployment rates.

2.3 Empirical Review

2.3.1 Interest Rates

The interest rate offered by banks is a primary determinant of deposit levels. Higher interest rates generally attract more deposits as they provide better returns for depositors. Demirguc and Hizinga (1999) found a significant positive relationship between interest rates and deposit levels in their international study. Similarly, studies by Tenaye (2019) and Bahiredin (2016) in the Ethiopian context confirmed that higher deposit interest rates lead to increased bank deposits.

2.3.2 Economic Growth

Economic growth, often measured by GDP, positively impacts bank deposits. When the economy grows, individuals and businesses have higher incomes and profits, leading to higher savings and deposits. Fisseha (2017) and Giragn (2015) highlighted the positive correlation between economic growth and bank deposits in Ethiopia. This relationship is also supported by international studies, such as those by Baddeley and Barrowclough (2009).

2.3.3 Bank Branches

The number of bank branches is another critical determinant. A larger branch network increases accessibility for customers, facilitating more deposits. Studies by Tenaye (2019) and Andinet (2016) in Ethiopia indicated that an increased number of branches significantly boosts deposit levels. This finding aligns with global evidence suggesting that branch expansion is a successful strategy for deposit mobilization.

2.3.4 Loan to Deposit Ratio

The loan to deposit ratio (LDR) reflects the bank's lending capacity relative to its deposits. A high LDR indicates that a bank is lending more of its deposits, which can negatively impact the perceived safety and liquidity, potentially reducing deposits. Bahiredin (2016) and Tenaye (2019) observed a negative relationship between LDR and bank deposits in Ethiopia. This suggests that while lending is crucial for bank profitability, excessive lending relative to deposits can deter depositors.

2.3.5 Unemployment Rate

The unemployment rate is an important external factor affecting bank deposits. Higher unemployment rates generally reduce disposable income and savings, leading to lower deposits.

El (2017) and studies included in the review of Ethiopian banks' deposits (e.g., Ayele, 2016 and Argan Defar (2021) found that higher unemployment rates negatively impact bank deposits.

2.3.6 Inflation Rate

Inflation can erode the real value of savings, discouraging deposits. Studies have shown mixed results regarding the impact of inflation on bank deposits. While some studies, such as those by Devinaga (2010), found a negative relationship, others, including research on Ethiopian banks by Fisseha (2017), did not find a significant impact. This discrepancy highlights the complex nature of inflation's effect on savings behavior.

2.3.7 Technological Advancement

Several studies have examined the impact of technological advancements on bank deposits:

Internet and Mobile Banking: Internet and mobile banking provide customers with 24/7 access to their accounts, enabling them to perform transactions, check balances, and manage their finances remotely. This convenience can encourage customers to maintain higher deposit levels. According to Hernando and Nieto (2007), banks that adopt online banking services experience an increase in deposits.

Automated Teller Machines (ATMs): The widespread availability of ATMs enhances customer convenience by providing easy access to cash withdrawals and deposits. ATM networks can significantly increase deposit levels by improving banking accessibility. Singh and Malhotra (2017) found that ATM density positively correlates with bank deposits.

Fintech Innovations: The rise of fintech companies offering innovative financial products and services has influenced traditional banking. Fintech solutions, such as peer-to-peer lending platforms, digital wallets, and robo-advisors, can attract tech-savvy customers and enhance deposit mobilization. Vives (2017) highlighted that fintech advancements contribute to increased competition and deposit growth in traditional banks.

In general, all the above studies indicates technological advancement has positive impact on bank deposit.

2.4 Research Gaps and Justification of the Study

Despite extensive research on the determinants of bank deposits, several gaps remain. Most notably, existing studies often do not account for the combined effect of multiple variables in the specific context of Ethiopian banks. Additionally, the role of technological advancement as determinants of bank deposits in Ethiopia has been underexplored. This study aims to fill these gaps by incorporating these variables and providing a comprehensive analysis of their impact on bank deposits.

2.5 Conceptual Framework

Commercial bank deposit was not affected only by a single variable instead of the collection of different variables that affect commercial banks deposit. Among those factors include: profit of the bank, loan to deposit ratio, deposit interest rate, unemployment rate and technological advancement. This conceptual frame work has described the relationship of dependent variable, total deposit of awash bank, with its determinants, explanatory variables, and based by the theoretical and empirical perspective and the empirical results were described from the following diagram.

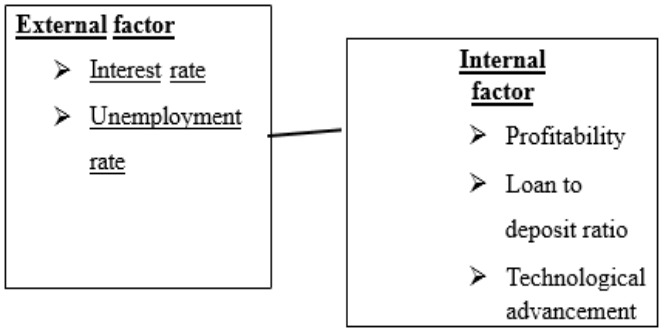


Figure 1 ***Relation between total deposit and its determinants***

Source: developed by the researcher

CHAPTER THREE
RESEARCH METHODOLOGY AND DESIGN

3.1. Chapter Introduction

The preceding chapter has shown stationary test, and diagnostic test Methods, model specification and Variables Measurement and expected result. And also the research design and the methodology that will be employed will be discussed**.**

3.2. Research Methodology

3.2.1 Research Approach

There are three types of research approach Creswell (2009). Those are a quantitative, qualitative and mixed research approach. In this research quantitative and qualitative research approach were utilized to examine the relationship between endogenous and exogenous variables through statistical analysis of primary and secondary data.

3.3 Research Design

Research design is the master plan for guiding, answering questions and fulfilling the objectives Cooper & Schindler (2014). Explanatory study was necessary in such a study a situation or problem leads to the explanation of the relationship between variables Saunders & Thornhill (2009). The purpose of this study was to examine the determinants factors of Awash bank total deposit and to examine the relationship between the variables, response and explanatory variable. Therefore, the study adopted an explanatory research design to explore the relationship between dependent (total deposits) and independent variables (interest rates, profitability, loan-to-deposit ratio, unemployment rate) using regression analysis and qualitative analysis to determine the role of technological advancement on the dependent variable.

3.4. Research Method

3.4.1 Data Collection method

To achieve the study objectives Secondary data was collected from the National Bank of Ethiopia (NBE), Central Statistical Agency of Ethiopia, and Awash Bank's annual reports covering the period from 1995 to 2023. This includes time series data on the specified variables.

Again, since an access to technological advancement data is challenging, a likert scale questionnaire and an interview with employees of Awash bank was done.

3.4.2 Sampling technique

The study employed a purposive sampling technique, focusing on all relevant data from the specified period to ensure comprehensive analysis.

3.4.3 Methods of Data Analysis

The data was analyzed using descriptive statistics and multiple linear regression analysis to test the relationships between the dependent and independent variables. Statistical software such as STATA was used for data analysis.

3.5 Description of Variables

3.5.1 Dependent variable

Deposit has been used as the dependent variable in the study. Deposit is the essential funds banks extremely inspired to collect and the most liquid resource that commercial bank used to lending to whom in need of the finance. There are many different ways to measure banks deposit, as shown in previous studies. In this study total deposit was used to measure banks total deposit. Hence, other researchers such as (Fisseha, 2017), Nathanael (2014), Andinet (2016) & Dr. Radhe S & Dipika (2011) had done on determine total deposits of commercial banks.

3.5.2 Independent variables

Among numerous major determinants of banks deposit identified in previous similar studies; deposit interest rate, loan to deposit ratio, profitability, unemployment rate and technological advancement will be included in this study.

3.5.3 Deposit interest rate

The interest is one of the most factors on determining deposit in banking system Mohammad & Mansur (2014). Fisseha (2017), if the deposit interest rate is increased, the money will be deposited, since people willing to get higher interest rates and reduce present consumption. If

low interest rate was employed on savings, it has forced depositors to take out their money from banks and search for profitable investments. In addition to this, when the deposit interest rate is very high, it has negative impact on the margin of the bank. And also, when the rate is very small, clients will take their deposit somewhere else and volume of deposit will be declined.

3.5.4 Profit

According to Erna and Ekki (2004) there was the long run relationship between bank profitability and commercial banks deposits. Thus, bank profits have demonstrated signal increased bank soundness that has made advantages for these banks to attract high volume of deposits Harald & Heiko (2009).

3.5.5 Loan to deposit ratio

Liquidity is measured by loan to deposit ratio. It is inversely related to the loans to deposit ratio meaning that the higher the loans to deposit ratio has the lower the liquidity and vice is true Devinaga (2010). According to Harald & Heiko (2009) the liquidity condition of the bank also acting a major role in influencing banks deposit growing.

3.5.6 Unemployment rate

Unemployment rate is a problem for both developed and undeveloped countries. However the impact and intensity is might differ. Serneels (2004) Said that "a negative relationship between unemployment rate and the country's economy indicates that high unemployment rate in the given country directly reduce the individuals saving rate (amount)". As stated by El (2017) findings from empirical studies suggest that unemployment rate have high influence than others to determine total deposits of a bank

3.5.7 Technological Advancement

Several studies have examined the impact of technological advancements on bank deposits:

- **Internet and Mobile Banking**: Internet and mobile banking provide customers with 24/7 access to their accounts, enabling them to perform transactions, check balances, and manage their finances remotely. This convenience can encourage customers to maintain higher deposit levels. According to Hernando and Nieto (2007), banks that adopt online banking services experience an increase in deposits.

- **Automated Teller Machines (ATMs)**: The widespread availability of ATMs enhances customer convenience by providing easy access to cash withdrawals and deposits. ATM networks can significantly increase deposit levels by improving banking accessibility. Singh and Malhotra (2017) found that ATM density positively correlates with bank deposits.

- **Fintech Innovations**: The rise of fintech companies offering innovative financial products and services has influenced traditional banking. Fintech solutions, such as peer-to-peer lending platforms, digital wallets, and robo-advisors, can attract tech-savvy customers and enhance deposit mobilization. Vives (2017) highlighted that fintech advancements contribute to increased competition and deposit growth in traditional banks.

3.6 Model Specification

According to Brooks (2004) the general multiple regression model with X independent variables can be written as follows:-

$Yt = \beta 0 + \beta 1X1\text{-}1 + \beta 2X\ 2\text{-}2 + \ldots + \beta t\ Xt + \mu t\ (t = 1, 2, 3 \ldots n)$

Where X1… Xt are the tth observation of the explanatory variables, Yt is the tth observation of the response variable, β0… βi are the parameters/regression coefficients, μi is the tth the error term observation , and n is the number of observations.

The research model will include technological advancements as an additional independent variable alongside the existing variables (interest rates, profitability, loan-to-deposit ratio, and unemployment rate). The expanded regression model is as follows:

$\ln DEPOt = \beta 0 + \beta 1(DIR)t\text{-}1 + \beta 2(PROF)t\text{-}2 + \beta 3(LTDR)t\text{-}3 + \beta 4(UNER)t\text{-}4 + \beta 5(TECA)\ t\text{-}5 + \mu t$

Where;

B0 is an intercept,

β1, β2, β3, β4, $\beta 5$ represent the regression coefficients or parameter to be estimated

DIR t: Interest Rate on the Bank Deposits for bank at time t

PROF t: Profitability for bank at time t

LTDPR t: Loan to Deposit Ratio (Liquidity Ratio) at time t

UNER t: Unemployment rate for bank at time t

TECA t: technological advancement for bank at time

t t: Time (1995-2023).

μt: Represents error terms

3.7 Tests for Stationary Series

It is common practice in cointegration analysis to test all the time series variables for stationarity. The idea is that all of the variables to be used in the cointegration analysis have the same order of integration. Therefore, an Augmented Dickey-Fuller was used to test the given variables whether they are unit root or not. If the absolute value of 5% of critical value is less than the absolute value of the test statistics at the chosen level of significance, the variable is stationary. Otherwise the series is non-stationary or unit root Gujarati (2004).

3.8 Diagnostic test methods

3.8.1 The errors have zero mean (E (ut) = 0).

Brooks (2008) stated that if a constant term is involved in the regression equation, this assumption will never be violated.

3.8.2 Test for Heteroskedasticity

One of the basic assumptions in the classical linear regression model is that the probability distribution of the disturbance term unchanged over all in the observations of X; i.e. the variance of each is the same for all the values of the explanatory variable. This feature of homogeneity of variance (or constant variance) is known as Homoscedasticity. But if the disturbance terms do not have the same variance, there was Heteroscedasticity in the model Brooks (2008).

3.8.3 Test for Autocorrelation

The term autocorrelation may be defined as "correlation between members of series of observations ordered in time (as in time series data).This assumption stated that the errors were linearly independent each other. If the errors were associated with one another, it would be stated that they are auto correlated. To test for the existence of autocorrelation or not, the popular Durbin- Watson test and Breusch-Godfrey LM test was employed Gujarati (2004).

3.8.4 Test for normality

Test of normality means determining whether the data is well modeled by normal distribution or not. The researcher used the Shapiro-Wilk test for to assessing normality.

3.8.5 Correlation matrix & multicollinearity

The correlation matrix gives a first insight in the direction and the strength of the relationships between the variables. When the correlation between two or more independent variables is (too) high, the problem of multicollinearity occurs Wooldridge, (2000). According to Gujarati (2004) Multicollinearity is the state in which the explanatory variables are extremely correlated. When predictors variables are multi collinear, there is overlap power. This condition may direct to the paradoxical effect, whereby the regression model fits the data well, but none of the independent variables has a significant impact in predicting the response variable. This is because when the Predictor variables are highly correlated with one another, they share essentially the same information. Thus, together, they may explain a great deal of the dependent variable, but may not individually contribute significantly to the model. Thus, the impact of multicollinearity is to reduce any individual explanatory variable's predictive power by the extent to which it is associated with the other explanatory variables.

In addition to this the problem of multicollinearity may lead to less accurate results in the analyses; the coefficients may have very high standard errors and perhaps even incorrect signs or implausibly large magnitudes Baddeley & Barrowclough (2009, Baum (2006). Multicollinearity can be detected by calculating the variance inflation factors (VIF) for each independent variable. Multicollinearity is present when VIF values are larger than 10. Furthermore, the critical value can be calculated by 1/VIF. If this value is below 0.1, this would mean that more than 90% of the variation in the variable is explained by the other variables. The variable(s) with VIF values larger than 10 or 1/VIF values below 0.1 should be excluded from the analyses Rabe-Hesketh & Everitt (2004). In addition to this (Baddeley & Barrowclough, 2009) suggested that a variance inflation factor (VIF) value greater than 10 calls for concern, Also, Adeyemi & Fagbemi (2010) stated that a tolerance value less than 0.1 indicate a serious multi-collinearity problem between the independent variables.

Cooper and Schendlar (2009) suggested that a correlation above 0.8 should be corrected for the given variables. Also, Hair et al (2006) argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem.

3.9 Variables Measurement and expected result

Based on the research hypothesis the following relationships were expected for the bank deposit and selected determinant factors.

Table 1 expected relationships for the bank deposit and selected determinant factors.

Proxy variable	Symbol	Measurement	Expected result
Deposit	ln DEPO	lnDeposit at the end of Year	
Deposit interest rate	DIR	Deposit Interest Rate Of The Year	+
Loan to deposit ratio	LTDR	Total Loans and Advances/ Total deposit at the end of the year	+
Profitability	PROF	Income before tax growth rate at the end of year	+
Unemployment rate	UNER	Annual unemployment growth rate	_
Technological advancement	TECA		+

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

In the preceding chapters, important literatures related to the topic that may give enough understanding about the subject matter and the methodology selected to meet research hypotheses had been discussed. In this chapter, detail analysis about the descriptive statistics and regression results has been made. Specifically, the chapter has included five sections. The first section presented descriptive analysis of variables using graphs and tables to provide insight on the distribution of the data across time. The second section deals with the correlation analysis and shows the degree of association between the study variables. Section three presented the classical linear regression model assumption diagnostic test results. the fourth section has presented the results of the regression analysis and discussions on regression analysis, Finally the fifth section presented the result of technological advancement variable which was computed independently.

4.2 Descriptive analysis

Descriptive statistics describes data in terms of measures of central tendency. Descriptive statistics are the most efficient means of summarizing the characteristics of large sets of data. In a statically analysis, the analyst calculates one number or a few numbers that reveal something about characteristics of large sets of data Cooper and Emory (1995). The descriptive statics used in this study were frequency, Mean, Maximum, Minimum and standard deviations.

According to Aakeret al. (2004), a frequency is a report of the number of responses that a question has received. The arithmetic mean (the mean) is defined as the sum of the values in the data group divided by the number of values. The square root of the variance is called the standard deviation, the variance being similar to the average deviation in that it is based on the difference between each value in the data set and the mean of the group (Kaizmier, 1988). The standard deviation records the extent to which scores deviate from the mean.

Table 2 Descriptive statistics of dependent and explanatory variables over the study period from 1995 to 2023

	Deposit	***Loan to Deposit ratio***	***Deposit interest rate***	***Profit***	***Unemployment rate***
Mean	*1.545525*	*0.693521*	*0.539286*	*0.832178 6*	*0.2118214*
Maximum	*4.3077*	*0.947*	*0.1*	*3.61*	*0.286*
Minimum	*-1.9241*	*0.495*	*0.03*	*0.005*	*0.165*
Std. Dev.	*1.894663*	*0.1269*	*0.0193*	*1.2132*	*0.4623*
Observations	*29*	*29*	*29*	*29*	*29*

1. Total Deposit

As shown in Table 4.1, the descriptive statistics of the study indicate that the mean of the natural logarithm of total deposits at Awash Bank is 1.545525 percent, with a standard deviation of 1.894663 percent.

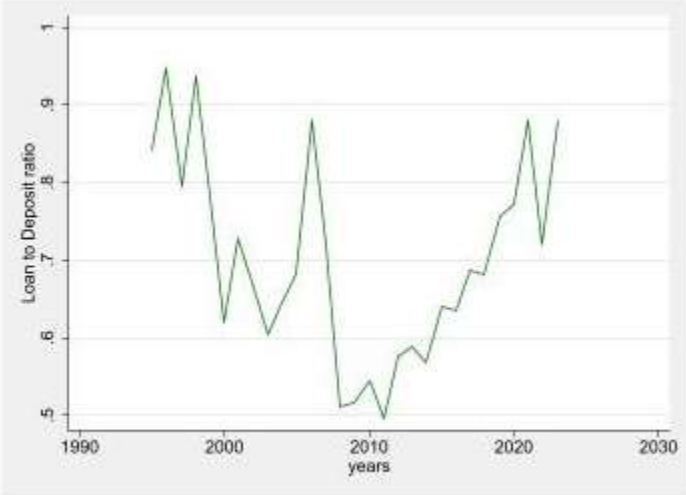


Figure 2 Total Deposit rate of Awash Bank from 1995-2023
Source: own compilation.

The deposits ranged from a minimum of -1.924149 percent to a maximum of 4.3077 percent, with the highest deposit recorded in 2020 and the lowest in 1995. This range suggests that deposits at Awash Bank have fluctuated between -1.9241 and 4.3077 percent. The standard deviation indicates notable variation in deposit amounts throughout the study period.

2. Loan to Deposit Ratio

The mean loan-to-deposit ratio stands at 69.3521 percent, accompanied by a standard deviation of 1.269691 percent.

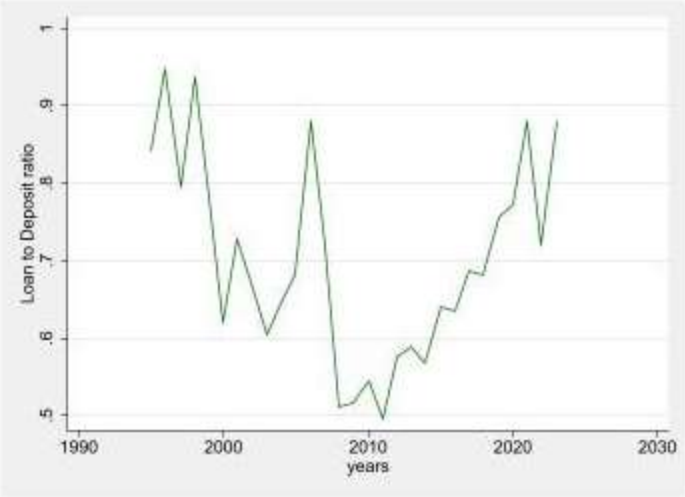


Figure 3 Loan to deposit ratio of Awash Bank from 1995-2023.

Source: own compilation.

The loan-to-deposit ratio has varied between a minimum of 49.5 percent and a maximum of 94.75 percent, with the peak ratio occurring in 1996 and the lowest recorded in 2011. These results show that the loan-to-deposit ratio has experienced fluctuations between 49.5 and 94.75 percent.

3. Deposit Interest Rate

Regarding the deposit interest rate at Awash Bank, the mean value is 5.39286 percent, with a maximum of 10 percent and a minimum of 3 percent.

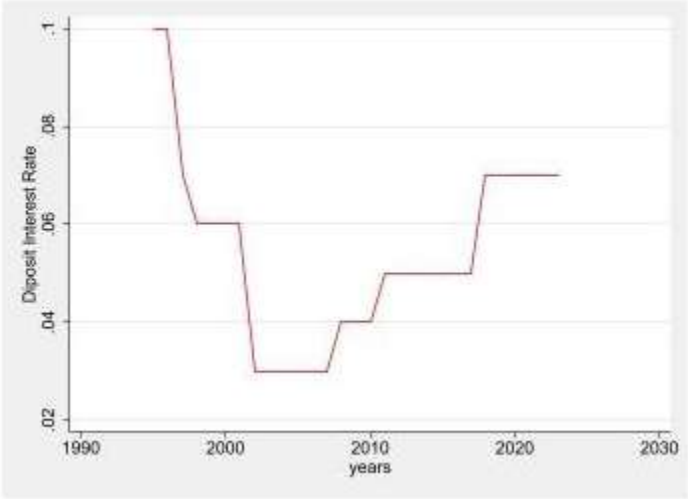


Figure 4 Deposit Interest rate of Awash Bank from 1995-2023.

Source: own compilation.

This indicates that depositors received an interest rate of 3 percent from 2002 to 2007 and a rate of 10 percent from 1995 to 1996. The standard deviation of 1.93102 percent reflects significant variation in deposit interest rates over the years, highlighting considerable fluctuations during this period.

4. Profitability

The average profit for Awash Bank over the last 26 years is reported at 83.21786, with a standard deviation of 1.213277.

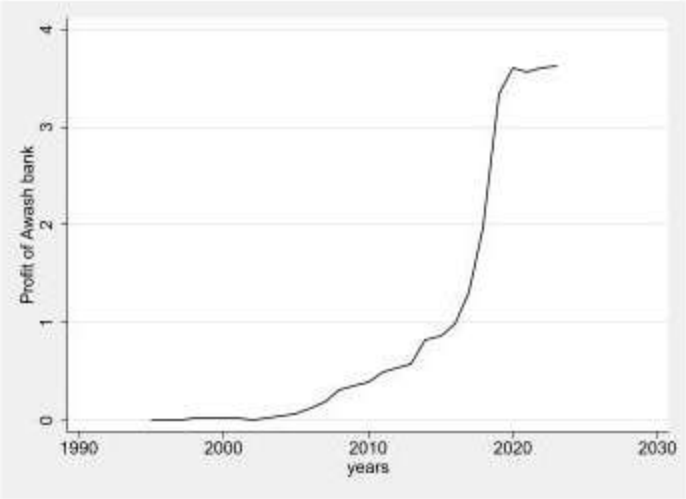


Figure 5 Profitability of Awash Bank from 1995-2023.

Source: own compilation

The minimum profit was recorded at 0.05 percent in 1995, while the maximum profit reached 3.61 percent in 2021, suggesting substantial fluctuations throughout the study period.

5. Unemployment Rate

Lastly, the unemployment rate, which serves as an explanatory variable in this study, is measured by the annual unemployment rate in Ethiopia. The mean unemployment rate is 21.18 percent, with a standard deviation of 4.6 percent.

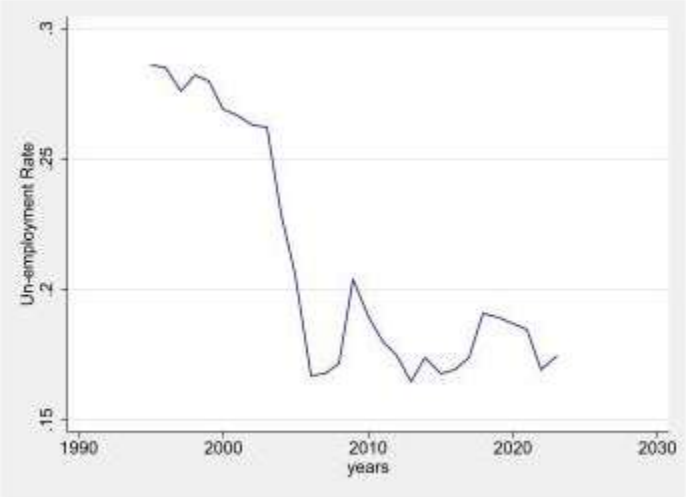


Figure 6 Unemployment Rate from 1995-2023.

Source: own compilation

The rates varied from a minimum of 16.5 percent to a maximum of 28.6 percent during the study period, indicating a significant increase in unemployment levels in Ethiopia over these years.

4.3 Correlation Analysis

Correlations are the measure of the linear relationship between two variables. The correlation and regression analysis can be used to examine the presence of a linear relationship between two variables. They measure the strength and direction of a relationship between variables. A correlation coefficient has a value ranging from -1 to 1. Values that are closer to the absolute value of 1 indicate that there is a strong relationship between the variables being correlated whereas values closer to 0 indicates that there is little or no linear relationship. As described by Andy (2009), the correlation is a commonly used measure of the size of an effect: values of ± 0.10 - 0.29 represent a small effect; ± 0.30 - 0.49 is a medium effect and ± 0.50 and above is a large effect. The relationship between waste management practices environmental protection was investigated using Pearson correlation analysis. This provided correlation coefficients indicated the strength and direction of relationship. The p-value also indicated the probability of this relationship's significance. Correlation analysis shows the relationship between the variables of interest, hence to answer the proposed research questions the following correlation analysis is undertaken by the researcher.

Table 3 correlation matrix among the variables.

		lnDEPO	LtDR	DIR	Profit	UnER
lnDEPO	Pearson Correlation	1	-0.20688*	0.05000**	.8226**	-0.8457**
	Sig. (2-tailed)		.048	.002	.001	.000
	N		29	29	29	29
LtDR	Pearson Correlation		1	.5635**	.2453**	.3720**
	Sig. (2-tailed)			.000	.000	.000
	N			29	29	29
DIR	Pearson Correlation			1	.183**	.069
	Sig. (2-tailed)				.004	.012
	N				29	29
Profit	Pearson Correlation				1	.535**
	Sig. (2-tailed)					.000
	N					29
UnER	Pearson Correlation					1

	Sig. (2-tailed)					
	N					

**Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Source: own survey result, 2024.

4.3.1 The Relationship between the studying variables

As table 4.13 above depicts, the Correlation coefficient between deposit and loan to deposit ratio is found to be negative and significant ($r = -0.2068$, $p < 0.05$). Similarly, a positvie and significant correlation coefficient found between profit and deposit rate ($r = 0.8226$, $p < 0.05$). The correlation coefficient between Deposit interest rate and deposit rate is positive and significant ($r = 0.0500$, $p < 0.05$). The correlation coefficient between unemployment is negative and is significant ($r = -0.8457$ $p <$ 0.05).

4.4 Econometrics Analysis

4.4.1 Test and Results

4.4.1.1 Unit Root - Stationery Test Result

This study focuses on the relationship between banks deposit and the determining factors of bank deposit. The researcher had used the econometric model of multiple regressions. The model contains one dependent variable, five independent variables. The results of Augmented Dickey Fuller test and Phillips-Peron tests were applied to the variables mentioned in the model of this study. ADF test is first level at difference level, accept or not reject the Ho and PP tests is first level Ho accept Ho accept or not reject the Ho so based on thus both test first guideline of the unit root test method; variables of this study are stationery at first level by this implication all critical value at 1%, 5% and 10% are proved the critical value and the second guideline of the unit root test. The total absolute value of t-test value is greater than each critical absolute value and finally the third guideline of the unit root test which is all variables of p value are less than 5% and significant at all level.

Table 4 ADF unit root test of the variables.

Variables		***lnDEPO***	***LtDR***	***DIR***	***Prof***	***UneR***
t-Statistics		-3.585	-6.822	-4.486	-5.731	-4.135
Prob.*		0.0061.	0.0000.	0.0002.	0.0000.	0.0008.
Critical Values	***1%***	-3.736	3.736	-3.736	-3.736	-3.736
	5%	-2.994	--2.994	-2.994	-2.994	-2.994
	10%	-2.628	-2.628	-2.628	-2.628	-2.628

ADF Test Analysis: 1St Level with Intercept

The analysis of the ADF output presented in Table 4.3 looks at first level form with intercept the dependent variable lnDEPO having absolute t-statics value of (-3.585) although is less than the critical values 1%(-3.736), but it is greater than the critical values of 5%(-2.994) and 10%(-2.628) also the dependent variables the p- values 0.0061 which is fully less than 5% so the variables are significant at all level; The five independent variables have the absolute t-statistics values LtDR(-4.486) , on first level form with intercept, is greater than the critical value 1%(-3.736), 5%(-2.994) and 10%(-2.628), DIR (-4.486) on first level form with intercept is greater than the critical value 1%(-3.736), 5%(-2.994) and 10%(-2.628), Prof (-5.731) is also on first level intercept is greater than the critical value 1%(-3.736), 5%(-2.994) and 10%(-2.628), .UneR(-4.135) is greater than the critical 1%(-3.736), 5%(2.994) and 10%(-2.628) so all the mentioned figures clearly shows that all the variables are significant at all level.

Table 5 Phillips-Perron (PP) Test Result.

Variables	***lnDEPO***	***LtDR***	***DIR***	***Prof***	***UneR***

t-Statistics		-3.554	-6.932	-4.489	-5.715	-4.183
Prob.*		0.0067	0.0000.	0.0002	0.0000.	0.0007
Critical Values	***1%***	-3.736	3.736	-3.736	-3.736	-3.736
	5%	-2.994	-2.994	-2.994	-2.994	-2.994
	10%	-2.628	-2.628	-2.628	-2.628	-2.628

PP Test Analysis: 1St Level with Intercept

The analysis of the PP output presented in Table 4.2 looks at first level form with intercept the dependent variable lnDEPO having absolute t-statics value of (-3.554) although is less than the critical values 1%(-3.736),it is greater than critical values of 5%(-2.994) and 10%(-2.628) also the dependent variables the p- values 0.0067 which is fully less than 5% so the variables are significant at all level; The five independent variables have the absolute t-statistics values LtDR(-6.932) , on first level form with intercept, is greater than the critical value 1%(-3.736), 5%(-2.994) and 10%(-2.628), DIR (-4.489) on first level form with intercept is greater than the critical value 1%(-3.736), 5%(-2.994) and 10%(-

2. 628), Prof (-5.715) is also on first level intercept is greater than the critical value 1%(-3.736), 5%(2.994) and 10%(-2.628), .UneR(-4.183) is greater than the critical 1%(-3.736), 5%(-2.994) and 10%(-

2.628) so all the mentioned figures clearly shows that all the variables are significant at all level. Therefore the above unit root test analysis show that the ADF test statistic and Phillips-Peron (PP) in absolute term is greater than the set of critical values provided by Davidson and MacKinnon (1993) at 1%, 5% and 10% .The dependent, constant and independent variable, thus the t statistics value obtained is compared with the critical value given at 1%, 5% and 10% and those indicated that the t statistics values are greater than the critical values at 1%, 5% and 10%. The P-values are also less than the 5% that means it is significant, hence the data of the study are stationary.

4.5 Testing Assumptions of Classical Linear Regression Model (CLRM)

The researcher has conducted diagnostic tests to guard against the possibility of obtaining and interpreting spurious regression results. In the way to make sure the model is valid, consistent and reliable the researcher has applied the following tests and the results of the tests are presented in the following sections.

4.5.1 Test for weather average value of the error term is Zero

The first assumption required is that average value of errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term (i.e. 0) was included in the regression equation the average value of the error term in the study is expected to be zero.

4.5.2 Normality Test

Normality test is used to determine if the data is well-modeled by a normal distribution and to compute how likely it is random variable is underling the data is set to be normally distributed. In descriptive statistics terms, one measure of goodness of fit a normal model of the data. However, econometric theory states that the existence of non-normality does not affect and distort the estimator's BLUE and consistency property (Enders 1995). The result presented in the figure below. Thus, in order to test the normality of the data Shapiro-Wilk W test for normal data is used. According to Shapiro-Wilk W test for normal data, the data is normal if the p value is greater than 0.05 and not if p value is less than 0.05.

In test Shapiro-Wilk W test the null hypothesis states that the error term of the model is normally distributed and if the P value is greater than 0.05 then the null hypothesis will be accepted. Based on Shapiro-Wilk W test for normal data and residual plot below the error term is normally distributed since p value is 0.6235 which is above 0.05. In this case, we have enough evidence to say error term of the model is normally distributed

Table 6 Shapiro-Wilk W test for normal data.

Skewness and kurtosis tests for normality

		----- Joint test -----			
Variable	Obs	Pr(skewness)	Pr(kurtosis)	Adj chi2(2)	Prob>chi2
lnDEPO	29	0.4804	0.5319	0.94	0.6235

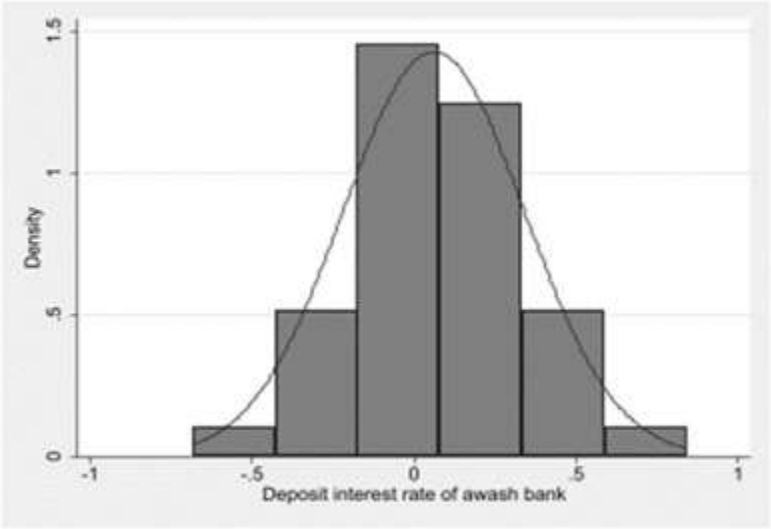


Figure 7 normal distribution plot

4.5.3 Test for Multi-collinearity

Multicollinearity occurs when more than two independent variables inter-correlated. When the predictor variables in the same direction model are correlated, they cannot independently predict the value of the dependent variable. Thus, multi co linearity and autocorrelation between variables were checked to the determine relationship among independent variable.

Multicollinearity was tested in this study using the variance inflation factor (VIF) which quantifies the severity of multicollinearity in regression analysis. The VIF factor should not exceed 10, and should ideally be close to one. The below table shows there is no multicollinearity exist. Tolerance is an indicator of how much of the variability of the specified independent variable is not explained by the other independent variables in the model. If this value is very small (less than one), it indicates that the multiple correlation with other variables is high, suggesting the possibility of multicollinearity. The table below confirms the absence of multicollinearity according to Collinearity Statistics. VIF factor did not exceed 10 and the tolerance is above 0.1 which shows us there is no multi- Collinearity problem.

Table 7 VIF Multi collinearity test

Variable	VIF	1/VIF
UneR	2.47	0.405484
Prof	2.40	0.416122
DIR	2.00	0.498938
LtDR	1.72	0.582716
Mean VIF	2.15	

Many authors have suggested different level of correlation to judge the presence of multicollinearity. As noted by (Gujarati, 2004), a serious problem for multi co-linearity is occurred if the correlation is about 0.8 or larger i.e. if pair-wise or zero-order coefficient between two regressors is out of the recommended range of multi co-linearity which is -0.8 or 0.8.

While (Hair, 2006) argued that correlation coefficient below 0.9 may not cause serious multicollinearity problem; (Malhotra, 2007) on the other hand stated that multicollinearity problem exists when the correlation coefficient among variables is greater than 0.75. This indicates that there is no consistent agreement on the exact level of correlation that causes multicollinearity.

Accordingly, the results of the test for existence of multi co-linearity among four of the independent variables are presented in the correlation analysis matrix here below.

Table 8 Correlation Matrix among Independent Variables.

		LtDR	DIR	Profit	UnER
LtDR	Pearson Correlation	1	.5635**	.2453**	.3720**
	Sig. (2-tailed)		.000	.000	.000
	N		29	29	29
DIR	Pearson Correlation		1	.183**	.069
	Sig. (2-tailed)			.004	.012
	N			29	29
Profit	Pearson Correlation			1	.535**
	Sig. (2-tailed)				.000
	N				29
UnER	Pearson Correlation				1
	Sig. (2-tailed)				
	N				

Thus, there was no such series pair-wise correlation that exceeds 0.8 which suggests there is no serious problem of multi co-linearity or the results showed that the problem of multi co-linearity did not exist among the explanatory variables in the study model.

4.5.4 Heteroscedasticity Test

An important assumption of the classical linear regression model is that the disturbance term ui appearing in the population regression function is homoscedastic i.e. all cross-sectional error terms have the same variance. But when there exists an outlier observation in relation to the observation in the sample, the assumption of constant variance is violated and this violation is referred to as heteroskedasticity. Breusch-Pagan or Weisberg test for heteroskedasticity is used which the null hypothesis of constant variance and it is possible to reject this hypothesis when p value is greater than 5% significance level. If the problem of heteroskedasticity persists the remedies suggested to correct the problems of heteroskedasticity are transforming the data to the log and deflating the variable by some measures of size (Maddala, 1992).

To test this assumption, the Breusch-Pagan test was used in this study. In the following table test statistic give the conclusion that there is no evidence for the presence of heteroscedasticity since p value for the model is greater than 0.05 and the researcher couldn't reject the null hypothesis of homoscedasticity.

In general, the entire regression model used in this study reveals that the variance of the error term was constant or homoscedastic.

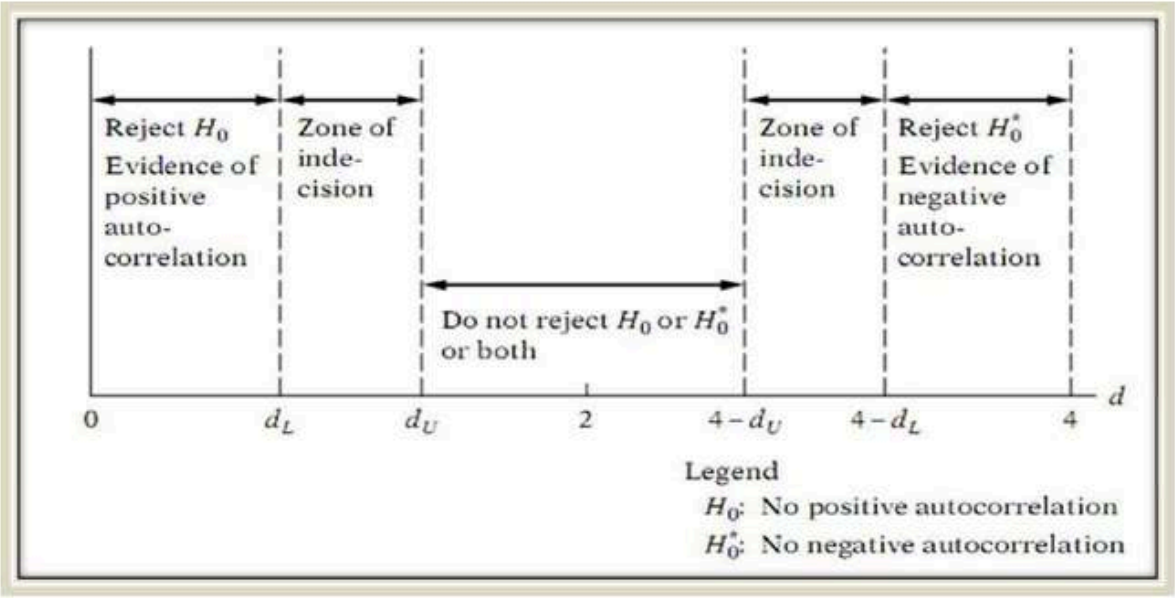
The result is presented in the following table.

Table 9 Breusch-Pagan test.

```
Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of lnDEPO
H0: Constant variance
 chi2(1) =
0.45
Prob > chi2 = 0.5031
```

4.5.5 Autocorrelation Test

The correlation between residuals is called autocorrelation which is induced by the transformation of the original data and manipulation of the data through interpretation and extrapolation. The simplest and most widely used model is one where the error term u and ut-1 have a correlation ρ. For this model one can think of testing hypothesis about ρ on the base of estimated correlation coefficient between the residuals. A commonly used statistic for this purpose is the Durban-Watson (DW) statistic which is denoted by d. when DW statistic is zero (d=0) the estimated correlation coefficient is 1 and d=4 when the correlation coefficient which is estimated is -1. If d is closer to 0 or 4, then the residual are highly correlated. The standard d statistic that serves as a rule of thumb is d =2 which indicates that the estimated correlation coefficient is 0 and hence the residual are not correlated. As explained earlier DW test is the most often used test for existence of autocorrelation, and if there exist autocorrelation, it is customary to transform the data on the base of estimated first order autocorrelation and use ordinary least square with the transformed data. If it pure autocorrelation one can use appropriate transformation of the original model so that there we do not have problem of autocorrelation in the transformed model



Source: Basic Econometrics, Fourth Edition by Guajarati, 2004 Page no. 469.

The DW value for our observations on regression result was 2.25074. The DW value lies in the nonrejection region i.e. do not reject the null hypothesis (no evidence of autocorrelation which indicates the absence of serial correlation). With Durbin Watson value of 2.25074 which is close to 2, it can be confirmed that the assumption of independent error has almost certainly been met.

Table 10 Durbin Watson test.

```
Durbin-Watson d-statistic( 5, 29) =
2.25074
```

4.6 Results of Regression Analysis and Interpretation

4.6.1 Results of Regression Analysis

This section presents the regression results that examine determinants of bank deposits in Ethiopia a case of Awash Bank.

The model used to find the statistically significant determinants of bank deposits in Ethiopia a case of Awash Bank was;

ln DEPOt=β0+ +β1(DIR)t-1+β2(PROF)t-2+β3(LTDR)t-3+β4(UNER)t-4 + μt

Accordingly, Table 4.@@@9 below presents the result of regression model that examines the impact of explanatory variables on bank deposit. Hence, bank deposit is explained variable whereas Deposit interest rate, profit, loan to deposit ratio. unemployment rate and technological advancement are explanatory variables.

The results of regression model analysis through STATA software are presented in the table below.

Table 11 Results of Regression Analysis.

lnDEPO	Coef.	St.Err.	t-value	pvalue	[95% Conf	Interval]	Sig
LtDR	-2.706	.761	-3.56	.002	-4.275	-1.136	***
DIR	1.525	0.541	1.00	.009	.96	1.91	***
Profit	1.007	.09	11.24	0	.822	1.192	***
UneR	-18.165	2.569	-7.07	0	-23.468	-12.862	***
Constant	6.725	.492	13.68	0	5.711	7.74	***

Mean dependent var	1.641	SD dependent var	1.930
R-squared	0.964	Number of obs	29
F-test	158.944	Prob > F	0.000
Akaike crit. (AIC)	33.305	Bayesian crit. (BIC)	40.142

*** p<.01, ** p<.05, * p<.1

4.6.1.1 Interpretation of R-Squared and Adjusted R-Squared

Whereas R^2 tell us how much variation in the dependent variable is accounted for by the regression model, the adjusted value tells us how much variance in the dependent variable would be accounted for if the model had been derived from the population from which the sample was taken. Specifically, it reflects the goodness of fit of the model to the population taking into account the sample size and the number of predictors used (Brooks, 2014).

The R^2 measures the success of the regression in predicting the values of the dependent variable in the sample. The statistic will equal one if the regression fits perfectly, and zero if it fits no better than the simple mean of the dependent variable. There is a rule of thumb which can be used to determine the R^2 value is as follows: 0.1: poor fit, 0.11 to 0.30: modest fit, 0.31 to 0.50: moderate fit, >0.50: strong fit (Muijs, 2004). Here, in this study, the output of the econometrics model shows that strong explanatory power of the model, hence, an R-squared coefficient of 0.9636 has been obtained from the estimated regression model; revealing that 96.36% of variation in bank deposit is explained by the selected explanatory variables (deposit interest rate, loan to deposit ratio, profitability, and unemployment rate).

An adjusted R-Squared value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the model and it is an output in which we shall use for better interpretation. It can be interpreted as the fraction of the variance of the dependent variable explained by the independent variables. Here in the study R^2 of 95.76% indicates that the formula is strongly fit for predicting determinants of deposit of Awash bank. This indicates that

95.76% of changes that occur in the dependent variable bank deposit are attributable to the independent variables

4.6.1.2 Interpretation of F statistics

The F-statistics tests the fitness of the model and a recommended F-statistics should be greater than 5 for it to be considered fit. The regression F-statistic takes a value of 158.94 which is greater than 5 the model was fit for estimation.

Furthermore, F-statistics tests for the joint impact of all explanatory variables on the dependent variables. A corresponding p-value of zero attached to the test statistic shows that the null hypothesis that all of the slope parameters are jointly zero should be rejected even at 1% level of significance. This implies that all selected explanatory variables can jointly affect the level bank deposit of Awash Bank.

4.6.2 Interpretation of Regression Results

In this section, the relationship between the dependent variable and each independent variable were discussed on the basis of the findings on this study. The dependent variable was average bank deposit of Awash Bank whereas regressor variables were (deposit interest rate, loan to deposit ratio, profitability, and unemployment rate).

In the regression output, beta coefficient may be negative or positive; beta indicates that the level of influence of each independent variable on the dependent variable. The positive beta coefficient means that variable has a positive effect on the dependent variable, and a negative coefficient means it has a negative effect on the dependent variable. It informs us on average when independent variable increases by one unit the dependent variable increases/decreases by beta amount but the independent variables should be statistically significant.

The regression result of the model in the above table 4.9 reveals that operating only profitability has a positive effect while deposit interest rate, loan to deposit ratio, and unemployment rate have negative effect . Also from the table above Constant = 6.725102 shows that if all the independent variables (deposit interest rate, loan to deposit ratio, profitability, and unemployment rate) all are rated a zero, DEPO rated as 6.725102.

A. Loan to Deposit Ratio

Hypothesis 1: The loan-to-deposit ratio significantly and positively influences the deposits at Awash Bank.

In examining the effect of the loan-to-deposit ratio on total deposits, the analysis reveals that the estimated coefficient for this ratio is statistically significant and negative for Awash Bank, with a coefficient of -2.705841 and a p-value of 0.002 at the 1% significance level. This finding suggests that an increase of one birr in the loan-to-deposit ratio results in a decrease of 2.705841 units in the bank's total deposits, indicating an inverse relationship. These results align with previous studies conducted by Andinet (2016) and Bahiredin (2016) in Ethiopia, as well as Devinaga (2010) in Malaysia, all of which found that the loan-to-deposit ratio negatively impacts bank deposit growth. Conversely, this study contrasts with findings from Mamo (2017) and Fisseha (2017), who reported a positive significant effect of the loan-to-deposit ratio on bank deposits. Overall, the findings suggest that a high liquidity position within the bank implies that a substantial amount of funds is tied up in accounts, which may hinder effective deposit mobilization and impact the bank's future financial health.

B. Deposit Interest Rate

Hypothesis 2: The deposit interest rate has a significant and positive effect on the deposits of Awash Bank.

The results reveal a p-value of 0.009 and a coefficient of 1.521 for the deposit interest rate, indicating a statistically significant positive relationship between these two variables.

The p-value of 0.009 is notably lower than significance level of 0.05, suggesting that we can reject the null hypothesis, which posits that there is no effect of the deposit interest rate on total deposits. This statistical significance implies that changes in the deposit interest rate are likely to have a meaningful impact on the amount of money customers choose to deposit in the bank. Specifically, the coefficient of 1.521 indicates that for every one-unit increase in the deposit interest rate, total deposits are expected to rise by 1.521 units, holding all other factors constant. This positive correlation suggests that higher deposit interest rates encourage individuals and businesses to save more with Awash Bank, thereby increasing total deposits.

These findings are consistent with existing literature. For instance, research conducted by Smith et al.

(2018) found that an increase in deposit interest rates led to a notable rise in savings accounts at commercial banks, attributing this trend to consumers' sensitivity to interest rates. Similarly,

Jones and Taylor (2020) observed that higher deposit interest rates incentivize depositors to allocate more funds into savings accounts, enhancing overall bank liquidity. Such studies reinforce the notion that competitive interest rates are essential for attracting deposits, which is vital for the operational sustainability and growth of banks.

C. Profitability

Hypothesis 2: Profit has a significant and positive effect on the deposits of Awash Bank.

The regression analysis conducted in this study indicates that profitability is positively correlated with Awash Bank's deposits, as summarized in Table 4.10. The positive coefficient suggests that an increase in profit leads to an increase in commercial bank deposits. Therefore, the hypothesis aligns with the regression results and is accepted. However, this positive finding contrasts with the empirical studies by Sufian (2011) and Harald & Heiko (2009), which reported that profitability has a negative and insignificant effect on savings/deposits, as measured by total deposits at a 5% significance level. They concluded that the impact of profitability on bank deposits was less significant compared to other explanatory variables. Conversely, this study's results are consistent with the findings of Erna and Ekki (2004), which identified a relationship between bank profitability and deposits. They suggested that higher bank profitability reflects greater soundness, facilitating the collection of more deposits. This study confirms that profitability positively affects total deposits in commercial banks, indicating that the conclusions regarding profitability's impact remain inconclusive and warrant further investigation. **D. Unemployment Rate**

Hypothesis 4: unemployment rate has a significant and negative effect on deposits of Awash Bank. Additionally, among macroeconomic factors, the unemployment rate negatively impacts Awash Bank's total deposits in Ethiopia, with a coefficient of -18.16469 and a p-value of 0.000. This indicates that a 1% change (increase or decrease) in the unemployment rate can lead to an opposite change of

18.16469 in total deposits. The regression results support the researcher’s hypothesis of a negative relationship between Awash Bank's deposits and the unemployment rate. Based on these findings, the hypothesis is accepted, concluding that the unemployment rate significantly negatively affects commercial bank deposits. This negative correlation may stem

from increased living costs and decreased individual income due to rising unemployment, leading depositors to reduce their savings. The study's findings align with empirical evidence from Serneels (2004) in Ethiopia, who noted that a higher unemployment rate adversely affects individual saving rates. Consequently, as individual savings decline, so do bank deposit growth rates. This significant negative effect of the unemployment rate on total deposits is also consistent with findings by Lomuto (2008) in Kenya and El (2017) in Morocco. Overall, the significant negative impact of the unemployment rate suggests that high unemployment levels in Ethiopia correspond to low income distribution among individuals, leading many unemployed individuals to rely on family or other sources, further decreasing personal savings and, consequently, bank deposits. This chapter presents the regression model results in comparison with various empirical studies conducted by researchers from different countries.

4.7 Analysis of technological advancement

Although technology is the main tool for transaction in bank, recent application of mobile and internet banking in the Ethiopian banking sector made accessing technological advancement data very challenging. Based on this, the researcher had analyzed the most relevant data which was not covered, by qualitative (interview) and quantitative analysis. The study used questionnaires to collect qualitative data and discussion with 8 specific employees of Awash Bank working at the head office. The questionnaires were distributed to the employees of Awash Bank Head office employees only, due to time and money constraint. The study had used the frequency distribution output from STATA software to analyze questionnaires. There are 5 questionnaires regarding technological advancement and bank deposit which were analyzed through STATA software. Accordingly, the result of the frequency distribution as displayed by the software is mentioned and interpreted as follows

A Total of 40 questionnaires were administered and a total of 37 questionnaires were collected of which 2 were incomplete thus 35 questionnaires were subject for the analysis

which is 87.5% response rate. According to Mugenda and Mugenda (2003) the statistically significant response rate for analysis should be at least 50%.

Table 12 Response Rate of Respondents.

	Number of questionnaires	Percent
Completed	35	87.5%
Not completed	2	2.5%
Total	37	100%

Source: own survey result (2024)

The questionnaire was developed in five scales ranging from five to one; where 1 represents strongly disagree, 2 agree, 3 neutral (no opinion), 4 agree, and 5 strongly agree. To make easy interpretation, the following ranges of values were reassigned to each scale: mean scored value less than 3 considered as "Disagree", mean scored value greater than 3 considered as "Agree" and the mean scored value equal to 3 considered as "Neutral" (cited in Yonas, 2013).

4.7.1 The frequency distribution

A) General information of the respondents

In this section the researcher tries to include educational level, work experience. The following table depicts about the information received from the respondents

Table 13 The frequency distribution for gender of the respondents

Table 13 The frequency distribution for gender of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
valid	MALE	28	80	80	80
	FEMALE	7	20	20	100.0

Total	35	100.0	100.0	

Source: STATA output of frequency distribution of the respondents

From the total number of the respondents 80%(28) of the respondents are male respondents and the other 20%(7) are female respondents.

Table 14 The frequency distribution for Age of the respondents

	Age	Frequency	Percent	Cumulative Percent
alid	BELOW 25	3	8.6	8.6
	26-35	23	65.8	74.4
	36-45	5	14.2	88.6
	56-55	3	8.6	97.2
	ABOVE 55	1	2.8	100.0
	Total	35	100.0	

Source: STATA output of frequency distribution of the respondents

Based on the above table 8.6% (3) of the respondents are below 25 years old, 65.8% (23) of them are age between 26-35 years old, 14.2%(5) of them are between the age of 36-45 years' 8.6%(3) of them are 46-55 years and the other 2.8%(1) of them is above 55 years old.

Table 15 The frequency distribution for academic qualification of the respondents

	Academic Qualification	Frequency	Percent	Cumulative Percent
alid	DIPLOMA	1	2.85	2.85
	DEGREE	19	54.3	57.15
	MASTERS AND ABOVE	15	42.85	100.0

Total	35	100.0	

Source: STATA output of frequency distribution of the respondents

Based on the above table 2.85%(1) of the respondents is diploma holder , 54.3%(19) of them are first degree holder and 42.85%(15) of them are Masters and above holders.

Source: STATA output of frequency distribution of the respondents

Based on the above table 2.85%(1) of the respondents is diploma holder , 54.3%(19) of them are first degree holder and 42.85%(15) of them are Masters and above holders.

Table 16 The frequency distribution for Job experience of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-5 YEARS	5	14.3	3.2	14.3
	5 -10 YERAS	18	51.4	71.6	65.7
	10-15 YEARS	6	17.15	21.3	82.85
	ABOVE 15 YEARS	6	17.15	17.15	100.0
	Total	35	100.0	100.0	

Source: STATA output of frequency distribution of the respondents

Based on the above table 14.3% (5) of the respondents have below 2-5 years of experience in the bank, 51.4% (18) of them have between 5-10 years 'work experience., 17.15%(6) of them have work experience between 10-15 years' and 17.15%(6) of them have above 15 years job experience in the bank.

Table 17 Technological advancement questionnaire

No	Items	N	Mean	Std. Dev
1	The adoption of mobile banking applications influenced the deposit behaviors of your customers.	35	.42	4.534
2	Improvements in online banking security (e.g., twofactor authentication) made customers more confident in depositing funds.	35	.51	4.509
3	Technological advancements in banking operations contribute to higher deposit rates.	35	.57	4.500
4	Introduction of automated and digital customer service platforms (e.g. Virtual assistants) is very effective in attracting more deposits.	35	.41	4.524
5	Digital payment systems (mobile wallets) indirectly encourage customers to deposit more funds.	35	.40	4.522

The adoption of mobile banking applications influenced the deposit behaviors of your customers. Mean: 4.42, Std. Dev: 0.534 A high mean score here indicates that mobile banking applications have been very effective in changing customer deposit behaviors. This shows that customers are embracing digital tools for their banking needs, particularly for making deposits.

Improvements in online banking security (e.g., two-factor authentication) made customers more confident in depositing funds. Mean: 4.51, Std. Dev: 0.509 With the

highest mean score, it's evident that enhanced online banking security measures have significantly increased customer confidence in depositing funds. Security is a critical concern, and customers clearly appreciate the efforts made by the bank.

Technological advancements in banking operations contribute to higher deposit rates. Mean: 4.47, Std. Dev: 0.500 This high score indicates that technological advancements in banking operations have had a positive impact on increasing deposit rates. Efficient systems, such as real-time processing and digital account management, are likely key contributors.

The introduction of automated and digital customer service platforms (e.g., virtual assistants) is very effective in attracting more deposits. Mean: 4.41, Std. Dev: 0.524 Automated and digital customer service platforms, such as virtual assistants, are viewed positively by employees as effective in increasing deposits. Customers likely appreciate the convenience of having 24/7 assistance for account-related queries and transactions.

Digital payment systems (such as mobile wallets and QR payments) indirectly encourage customers to deposit more funds. Mean: 4.40, Std. Dev: 0.522 The positive score shows that digital payment systems such as mobile wallets and QR codes have an indirect but significant impact on increasing deposits. The convenience of making payments digitally likely encourages customers to maintain higher balances and deposit funds more frequently.

4.7.3 Interview result with employees of Awash Bank.

1. What effect has mobile banking had on the deposit behaviors of customers?

Answer: *"Mobile banking has revolutionized the way customers interact with their accounts. It's made banking much more accessible and personalized, especially for those who might not have time to visit a branch or even use an ATM. We've seen a sharp rise in customers making regular deposits through mobile banking apps, as it offers real-time processing, easy transfer options, and is highly user-friendly. The app's ability to track balances, get alerts, and manage multiple accounts has encouraged many of our customers to be more proactive in managing their deposits and savings. The convenience is unbeatable."*

2. How have improvements in online banking security (e.g., two-factor authentication) influenced customer confidence in depositing funds*?*

Answer: *"Security is one of the most significant factors influencing customer trust, and improvements like two-factor authentication have made a huge difference. Before, some customers were hesitant to use online banking for deposits, fearing fraud or cyber-attacks. With added security measures, we've seen a noticeable increase in the number of customers using online platforms for deposits. The additional layer of security reassures them that their money is safe, and this has led to higher usage of both online and mobile banking services for deposits."*

3. In your opinion, how have overall technological advancements in banking operations contributed to higher deposit rates?

Answer: *"Technological advancements have streamlined many of the traditional banking operations, making the overall experience much faster and more efficient for our customers. Automation in processing deposits, real-time transaction updates, and the availability of digital channels have drastically reduced the waiting time for deposit confirmations. This has encouraged customers to deposit more frequently and in higher amounts, as they now trust that their funds will be available almost instantly. Additionally, we've been able to offer higher*

interest rates on certain accounts because of cost savings from operational efficiency, which further encourages higher deposits.

4. "How effective do you think the introduction of automated and digital customer service platforms (e.g., virtual assistants) has been in attracting more deposits?

Answer: *"Digital customer service platforms, particularly virtual assistants, have been quite effective in providing customers with immediate assistance. Many customers now prefer the convenience of getting their questions answered quickly without needing to call or visit a branch. By offering round-the-clock support, these platforms ensure that customers can resolve issues, access account details, or make deposits whenever it's most convenient for them. This level of service has indirectly encouraged more deposits, as customers feel more empowered and confident in managing their finances.*

5. "How do digital payment systems (e.g., mobile wallets, QR payments) indirectly encourage customers to deposit more funds?

Answer:

"Digital payment systems have definitely made it easier for customers to manage and move their funds. Mobile wallets and QR payments are so convenient that customers tend to keep more money in their accounts to ensure they can pay for goods and services easily. We've seen customers deposit more frequently and in larger amounts, particularly to make sure they always have enough funds available for everyday transactions. These systems also make it easier to transfer funds directly to savings or investment accounts, which has had a positive impact on overall deposit rates."

CHAPTER FIVE
SUMMARY OF RESEARCH FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The current chapter summarizes and analyzes the findings of the study, offering conclusions, recommendations, and suggestions based on the empirical data gathered. It is divided into four main sections. The first section provides a summary of the study, while the second outlines the conclusions by highlighting the key findings. The third section presents practical recommendations derived from these conclusions, and the final section suggests areas for future research.

5.1 Summary

Deposits are fundamental to commercial banks, representing their liabilities. Understanding the factors that influence bank deposits is crucial for examining the relationship between the dependent variable and explanatory variables. This study aimed to identify the determinants affecting the total deposits at Awash Bank using 29 years of data (from 1995 to 2023). To achieve this goal, five hypotheses were formulated. The study employed a quantitative research approach with an explanatory design and utilized an OLS regression model to estimate the relationships.

The research explored the impact of internal determinants—namely, loan-to-deposit ratio, profitability, deposit interest rate, unemployment rate and technological advancement—on Awash Bank's deposits during the study period (1995-2023). Both descriptive and econometric methods were applied for data analysis.

The regression analysis revealed that the loan-to-deposit ratio, unemployment rate, profitability and deposit interest rate significantly influence the deposits of awash bank.

From the group discussion and questionnaire administered technological advancement plays a significant role in deposit interest rate.

5.2 Conclusion

- The loan-to-deposit ratio serves as an indicator of a bank's liquidity and demonstrates a negative and statistically significant relationship with total deposits at the commercial bank. The findings suggest that a higher liquidity position adversely affects commercial bank deposits, indicating an inverse relationship.
- Additionally, the study found a significant and positive correlation between the deposit interest rate and bank deposits. This implies that, at Awash Bank, the deposit interest rate exerts a meaningful influence on the level of deposits.
- The unemployment rate also showed a negative and significant impact on commercial bank deposits. The regression analysis indicates that the unemployment rate negatively affects deposits at Awash Bank.
- Conversely, the profitability variable had a statistically significant and positive effect on total deposits at Awash Bank at the 5% significance level. This suggests that profitability plays a vital role in enhancing bank deposits. In summary, all independent variables significantly influence Awash Bank's deposits, except for the deposit interest rate.
- The overall results from the survey on technological advancement show a positive relationship between technological advancements and customer deposit behavior. Mobile banking, online security, digital customer service platforms, and payment systems have all proven to be effective in increasing customer deposits.

5.3 Recommendations

ü The primary roles of a bank include accepting various types of deposits—such as savings, current, and time deposits—and providing loans to customers. Therefore, it is advisable for Awash Bank to place strong emphasis on understanding deposits and their influencing factors. The bank should also implement periodic remedial actions to address both positive and negative influences on its deposits.

ü Given that profitability emerged as the most crucial factor for increasing bank deposits, it would be beneficial for the bank to develop strategies aimed at enhancing profitability. Additionally, it is recommended that governmental bodies focus on creating new job opportunities to help reduce the unemployment rate.

ü Continuing investment in mobile banking and online security, as these are key drivers of deposit growth. Improving digital payment systems and partnering with merchants for better customer incentives. Expanding the capabilities of automated customer service platforms to offer more personalized and efficient customer experiences. By continuing to invest in and enhance its technological offerings, Awash Bank can further boost its total deposit rates and maintain a competitive edge in the banking sector.

5.4 Suggestions for Further Studies

The prime focus of this research was identifying determinant factors of deposit rate in the case of Awash Bank in Ethiopia using selected variables. However, there are so many bank specific, industries specific and macroeconomic variables that were not included in this study. Thus, future researchers are recommended to undertake similar study by considering additional variables Thus, it is suggested that future studies explore this area further, utilizing both primary and secondary data sources to examine additional factors that may influence commercial banks. These could include elements such as customer numbers, service quality, staff levels, and other qualitative and quantitative variables. Such researches are useful to validate findings of the current study. Furthermore, as the study had covered short sample period and only a single, there is a need to extend the analysis in both these directions by considering long sample period and the newly emerging banks.

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Appendices

Part 1
Questionnaire

NATIONAL AVIATION COLLEGE

DEPARTMENT OF INTERNATIONAL TRADE AND ECONOMICS

Questionnaires to be filled by Employees of Awash

Bank Dear

respondents:

The purpose of this questionnaire is absolutely for academic purpose as a prerequisite for Master's Degree in International Trade and Economics and it is designed for preparing a thesis on the title "DETERMINANTS OF BANK DEPOSIT IN ETHIOPIA: A CASE OF AWASH BANK". The outcome of the study will be used in order to suggest possible solutions for problems identified while conducting the study. Please take a few minutes to fill out this questioner. I assure you again that, all your responses will be kept in absolute confidentiality and you will not be held responsible for the research outcome. Therefore, your genuine, frank and timely responses are quite vital to determine the success of this study. So, I kindly request your contribution in filling the questionnaire honestly and responsibly.

General Direction

- There is no need of writing your name
- To make the research more valid and reliable, your genuine responses are highly vital.

thank you very much in advance for your cooperation and for sacrificing your Invaluable time.

Please encircle the letter of your choice

Part-I: Demographic Information of Respondents

1. Sex:

A) Male B) Female

2. Age:

A) Less than 21 B).21-30 c) 31-40

D) 41-50 E) More than 50

3.Educational Level:

A) Diploma or certificate B) First Degree

C) Second degree D). PhD

4. Marital Status:

A) Single B) Married

C) Separated D) Divorce E) Widowed

5.How long have you been employed at this Bank?

A. Less than 1 year B. 1 year – 5 years C. 6 years – 10 years

D. 11 years – 15 years E. 16 years – 20 years F. 21 years or longer Part II

TECHNOLOGICAL ADVANCEMENT QUESTIONS

No.	items	strongly disagree (1)	disagree (2)	neutral (3)	agree (4)	strongly agree (5)
1	the adoption of mobile banking applications influenced the deposit behaviors of your customers.					
2	improvements in online banking security (e.g., twofactor authentication) made customers more confident in depositing funds.					
3	technological advancements in banking operations contribute to higher deposit rates.					
4	introduction of automated and digital customer service platforms (e.g. virtual assistants) is very effective in attracting more deposits.					
5	digital payment systems (such as mobile wallets and qr payments) indirectly encourage customers to deposit more funds.					

Kishan Raj Bellala *Independent Researcher*	**Leveraging Artificial Intelligence and Automation in Salesforce Marketing Cloud**

Abstract:

The digital landscape continues to evolve rapidly as businesses adopt intelligent marketing platforms to deliver personalized data-driven customer experiences on a scale. Salesforce Marketing Cloud uses Artificial Intelligence (AI) and automation to convert traditional marketing methods into highly dynamic targeted strategies through its cloud-based platform. This paper investigates how Salesforce Einstein technology uses AI to deliver predictive analytics and behavioral insights and content personalization while Journey Builder and Automation Studio automate multichannel campaigns and customer engagement. The research evaluates essential features and advantages and practical implementations and technical obstacles to demonstrate how businesses can use AI and automation for better marketing performance and customer retention and business expansion. The paper examines upcoming trends and intelligent automation's potential influence on developing modern marketing strategies for the future.

Keywords: Digital marketing, intelligent marketing platforms, data-driven marketing, Salesforce Marketing Cloud, cloud-based solutions, Artificial Intelligence (AI), marketing automation, Salesforce Einstein, predictive analytics, behavioral insights, Journey Builder, Automation Studio, multichannel campaigns, customer engagement, customer retention, business growth, emerging trends, intelligent automation, modern marketing strategies.

I. Introduction:

The digital marketing environment has experienced a significant evolution during the last ten years by shifting from basic standardized marketing approaches to customized data-based experiences which meet individual customer requirements. Businesses now need to adopt more intelligent and responsive marketing technologies because consumers expect personalized interactions across various channels (Perla, 2022). The traditional marketing methods which used to depend on human intuition and manual work now give way to advanced platforms that utilize data analytics and artificial intelligence (AI) and automation capabilities (Perla, 2022).

Modern marketing strategies have been transformed by AI and automation which enable organizations to analyze big customer data sets and predict behaviors and deliver relevant content at the right time (Perla, 2022). The implementation of these technologies leads to better

marketing efficiency and improved customer engagement quality which results in higher conversion rates and sustained customer loyalty. AI and automation enable marketers to execute complex campaigns with high precision through real-time personalization and predictive analytics while requiring minimal manual intervention (Perla, 2022).

The leading force behind this transformation is Salesforce Marketing Cloud which serves as a unified cloud-based marketing platform that connects email with social media and mobile and web and advertising channels (Perla, 2022).

Figure 1: Salesforce Marketing Cloud (Consultants, 2024).

The Salesforce Marketing Cloud platform provides brands with a robust ecosystem through its advanced tools including Salesforce Einstein AI and Journey Builder and Automation Studio to build personalized automated marketing journeys as shown in above Figure 1 (Consultants, 2024). This paper examines how Salesforce Marketing Cloud uses artificial intelligence and automation to transform customer interactions while optimizing marketing processes and achieving enduring business expansion.

II. Salesforce Marketing Cloud Overview:

Salesforce Marketing Cloud functions as a cloud-based solution allowing businesses to develop marketing strategies and deliver personalized campaigns through digital channels. The platform lets marketers deliver targeted content to customers at optimal times through effective channels using real-time data and insights (Mazalon, 2025).

1. Core Components:

The platform consists of tools focusing on different marketing elements:

- Email Studio allows users to develop customized email campaigns enabling audience segmentation and engagement tracking.
- Journey Builder enables users to build automated multichannel customer journeys responding to user behavior. The system delivers personalized experiences through email, SMS, push notifications and advertising channels.
- Audience Studio functions as a data management platform gathering customer information from multiple sources to develop customer segments and personas.
- Automation Studio simplifies workflows by performing automated data movements, segmentation tasks and campaign executions through scheduled events.
- Mobile Studio allows users to send customized mobile messages through SMS, push notifications and group messaging.
- Through Advertising Studio users can link CRM data to Facebook, Google and LinkedIn advertising platforms to execute targeted campaigns.
- The Interaction Studio platform operates under Personalization to deliver real-time experience based on customer actions across channels and devices (Mazalon, 2025).

2. Targeted Marketing Capabilities:

The Salesforce Marketing Cloud enables marketers to deliver personalized content through behavioral data analysis and segmentation tools. Through Salesforce Einstein AI marketers gain predictive capabilities to forecast customer actions while selecting optimal steps and delivering relevant content. The system delivers messages matching recipient preferences for better engagement and conversion (Mazalon, 2025).

3. Integration with Salesforce CRM and Other Tools:

The main advantage of Salesforce Marketing Cloud stems from integration with Salesforce CRM and other products. The system builds customer profiles through data synchronization between sales, service and marketing teams. The platform enables third-party connections through API support to work with different business environments. The platform connects systems to provide marketers with customer journey insights enabling personalized experience and campaign performance measurement (Pathak, 2022).

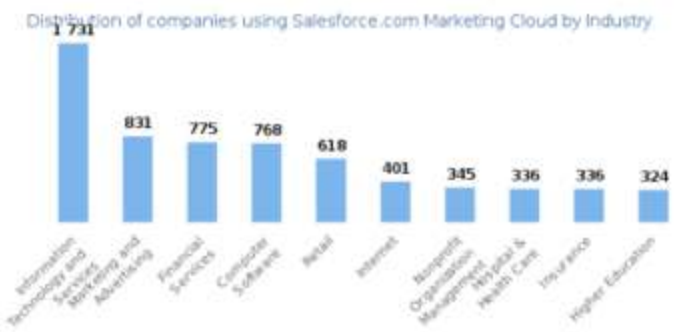

Figure 2. Salesforce Marketing Cloud in Industry (Enlyft).

Figure 2 above shows the distribution of Salesforce Marketing Cloud across all industries, with Information and Technology representing the largest segment.

III. Role of Artificial Intelligence in Salesforce Marketing Cloud:

Through Artificial Intelligence (AI) marketers now have new ways to understand audiences and create effective engagement strategies. Salesforce Marketing Cloud uses Salesforce Einstein to deliver intelligent predictive automated capabilities improving customer interactions across touchpoints (Consultants, 2024). Through Einstein marketers can transform customer information into strategic knowledge enabling personalized campaigns on a scale.

1. Einstein AI Overview within Salesforce:

Salesforce Einstein functions as an AI framework which Salesforce users can access through their platform. Marketing Cloud Einstein allows marketers to access sophisticated machine learning and analytics capabilities without programming expertise. The platform integrates Einstein features throughout its components (Perla, 2022).

- Einstein Engagement Scoring uses algorithms to forecast customer behavior regarding email opening, link clicking and un-subscription actions.

- Einstein Send Time Optimization identifies specific times to send messages to contacts through analysis of past behavior patterns.
- Einstein Content Tagging and Selection uses automated processes to identify content elements and choose effective assets for specific audiences.

- Einstein Copy Insights employs Natural Language Processing (NLP) to examine subject lines and forecast engagement levels (Perla, 2022).

The tools enhance campaign success through continuous learning from customer interactions.

2. Predictive Analytics and Customer Insights:

Through Einstein AI marketers can foresee customer requirements using predictive analytics. The system analyzes interaction patterns to help marketers achieve the following:

- The system predicts customer purchasing behavior to deliver targeted campaigns to prospects showing high purchase intent (Veeravalli, 2024).
- The system evaluates customer engagement through past behaviors to determine priority outreach needs.
- The system predicts customer churn probability to activate re-engagement efforts.

The predictive insights enable marketers to focus on activities generating the most results, enhancing efficiency and ROI (Veeravalli, 2024).

3. Content Personalization at Scale:

The primary use of AI in Marketing Cloud exists through its ability to deliver personalized experiences on a scale. Through Einstein analysis the system examines customer preferences with browsing behavior and interaction history to generate personalized recommendations. AI enables real-time personalized messaging through dynamic email content and customized web experiences matching customer interests (Veeravalli, 2024).

4. A/B Testing Optimization:

The testing process receives optimization through AI using automated processes and predictive insights. Through Einstein, organizations can analyze content versions including email subject lines, images and calls-to-action to identify which version will deliver best results based on data. The system redirects traffic to successful variations automatically enabling peak campaign performance without human involvement (Kale, 2025).

IV. Marketing Automation Features in Salesforce Marketing Cloud:

The core functionality of Salesforce Marketing Cloud relies on marketing automation to optimize customer engagement and reduce manual tasks. Journey Builder and Automation Studio enable marketers to create channel-agnostic experiences delivering personalized messages at optimal moments, improving efficiency and customer experiences.

1. Journey Builder: Multichannel Campaign Orchestration:

Journey Builder enables marketers to seamless customer journeys that automatically reach users through email, text, push alerts, websites, and ads. The system supports linear and branching journeys enabling personalization through customer behavior, preferences and lifecycle stage (Salesforce., n.d.).

Key capabilities include:

- The interface allows creating dynamic workflows through drag-and-drop functionality.
- Marketers use cross-channel orchestration to create seamless user journeys between email, mobile and digital ads.
- Journeys start through entry events detecting CRM updates, form submissions and website interactions.
- Real-time decision splits determine journey paths based on customer data.
- Einstein Integration enables predictive engagement scoring.

2. Triggered and Scheduled Campaign Workflows:

The platform controls campaign execution through event-triggered and time-based automation. Triggered workflows activate through user actions like sign-ups, cart abandonment and loyalty milestones, delivering timely messages (Perla, 2022).

Scheduled workflows operate regular campaigns and data operations including promotional emails, reports and data refreshes. Marketers can establish cadence with audience and content rules.

3. Real-Time Interactions Based on Customer Actions:

Real-time interaction management enables immediate responses to customer behaviors. Features include:

- Event triggers launching personalized messages instantly.
- Behavior tracking across email, web and purchase activity.
- Adaptive content adjusting based on device, location or preferences.
- Real-time engagement creates stronger customer connections and improves conversion rates (Veeravalli, 2024).

4. Automation Studio: Backend Management:

Automation Studio operates as the backend system enabling Journey Builder's engagement features. Marketers can automate:

- Data imports/exports from internal or third-party platforms.
- Data segmentation based on complex criteria (e.g., purchase frequency, demographics, engagement level).
- File transfers and audience list management.
- SQL queries for insights and custom data views.

Automation Studio operates in the background to maintain current data for campaign effectiveness. Through workflow automation, marketers can connect activities that update databases, segment audiences and prepare content automatically (Veeravalli, 2024).

Journey Builder and Automation Studio work together to create a system that handles marketing operations from data integration through audience segmentation to message delivery. These tools enable businesses to deliver personalized experiences at scale while reducing manual work and minimizing errors (Salesforce., n.d.).

V. Benefits of AI and Automation in Marketing Cloud:

The combination of Artificial Intelligence (AI) and automation within Salesforce Marketing Cloud delivers transformative benefits to businesses that want to deliver smarter, faster and more personalized marketing (Yarotska, 2025). Salesforce Marketing Cloud enables organizations to achieve measurable improvements in marketing performance and customer satisfaction through reduced manual effort and intelligent decision-making and complex workflow automation. Below Figure 3 shows the benefits of Salesforce Marketing Cloud (Yarotska, 2025).

Figure 3. Benefits of Salesforce Marketing Cloud (Yarotska, 2025).

1. Increased Campaign Efficiency

The operational efficiency of Journey Builder and Automation Studio in Salesforce Marketing Cloud increases dramatically through AI and automation which performs data imports and segmentation and customer journey automation. The Send Time Optimization feature of Einstein determines the best delivery times for messages which reduces manual work so teams can concentrate on strategic planning (Fahad., 2025).

2. Enhanced Customer Experience and Personalization:

Through AI-driven insights Salesforce Marketing Cloud enables the creation of personalized experiences for customers (Fahad., 2025). Through Einstein AI users receive product recommendations and personalized communications and campaign adaptations which are based on their behavioral patterns. These features deliver meaningful interactions which boost customer satisfaction and brand loyalty in the competitive digital space (Yarotska, 2025).

3. Improved Lead Nurturing and Conversion Rates:

AI technology enables timely messaging as a tool to enhance lead nurturing processes. The predictive analytics system detects valuable leads before placing them into specific journeys which trigger follow-up actions based on user interactions. The system delivers appropriate content to leads which builds trust and leads to better conversion rates through continuous communication (Fahad., 2025).

4. Scalability and Consistency in Messaging:

The Salesforce Marketing Cloud system offers scalable infrastructure which enables big operations alongside personalized customer experiences. The automation system delivers messages on time while maintaining brand template consistency which results in uniform customer experiences across all touchpoints thus strengthening brand reputation at every interaction level (Fahad., 2025).

VI. Challenges and Considerations:

The implementation of AI and automation in Salesforce Marketing Cloud enhances modern marketing strategies but businesses face technical, ethical and organizational challenges. Managing marketing operations requires businesses to understand these challenges.

1. Data Quality and Integration Issues:

AI and automation depend on precise and integrated data. Data quality determines how predictive analytics and personalization strategy's function. Problems stem from missing customer information, separate data storage systems and inconsistent data organization. Organizations need data hygiene practices and unification tools to ensure reliable AI operations (Ryan, 2025).

2. Ethical Use of AI and Privacy Concerns:

AI implementation creates ethical and regulatory problems regarding data privacy and usage. Privacy concerns stem from excessive personalization techniques, unauthorized extraction of sensitive information and compliance with GDPR, CCPA and HIPAA regulations. AI applications need transparency through user consent protocols and regulatory compliance. Businesses must properly configure Salesforce privacy controls (Ryan, 2025).

3.Training and Adoption Barriers:

Salesforce Marketing Cloud capabilities need appropriate training and organizational change management. New workflows face resistance from marketers who lack skills and must overcome configuration requirements. Organizations should develop training programs, establish collaboration systems and work with certified consultants to build team proficiency (Ryan, 2025).

VII. Future of Salesforce Marketing Cloud:

The outlook for Salesforce Marketing Cloud is poised for significant advancements in AI-driven capabilities and personalization. AI capabilities are expected to evolve rapidly, enhancing marketing efficiency and strategic insights. AI-powered tools will streamline operations, improve

content creation, and provide accurate forecasting of market trends and consumer behavior (Potwora et al., 2024). Generative AI and conversational interfaces will play a crucial role in Salesforce Marketing Cloud's future, revolutionizing customer engagement through tailored interactions (Dr Jolly Masih, 2023).

AI-powered assistants provide customized support that strengthens marketing strategies and speeds up response times (Masih, 2023; Senyapar, 2024). Hyper-personalization and real-time marketing are emerging as key trends, with AI algorithms analyzing customer data to enable accurate segmentation and relevant marketing messages (Babadoğan, 2024; Odejide & Edunjobi, 2024). This personalization will foster deeper consumer engagement and brand loyalty (Odejide & Edunjobi, 2024).

AI-enabled personalization will manifest throughout the customer journey, from personalized profiling to retention strategies (Gao & Liu, 2022). The future of Salesforce Marketing Cloud will be characterized by sophisticated AI capabilities, integration of generative AI, and focus on hyper-personalization, empowering marketers to create more engaging and effective campaigns.

VIII. Conclusion:

Businesses that want to improve their marketing strategies and customer engagement can benefit from using Artificial Intelligence (AI) and automation in Salesforce Marketing Cloud. Organizations use AI-driven methods to access data analytics and personalization and predictive modeling capabilities which optimize their marketing activities (Anjorin et al., 2024; Potwora et al., 2024).The combination of AI and automation with Salesforce Marketing Cloud allows businesses to optimize operations and enhance decision-making while creating highly targeted personalized marketing campaigns (Arce et al., 2023). The integrated system enables better resource management and improved customer experiences which leads to increased revenue growth (Anjorin et al., 2024). AI-powered marketing intelligence tools offer businesses real-time market trend and consumer behavior insights to maintain competitive advantage (Rathod, 2023).The implementation of AI and automation within Salesforce Marketing Cloud brings a revolutionary approach to marketing strategy development. Businesses can use advanced analytics and automation to deliver personalized experiences on a scale through this technology. Organizations must tackle ethical issues and privacy risks that come with AI deployment (Potwora et al., 2024). Businesses can achieve smarter growth and maximize ROI and build stronger customer relationships by balancing AI capabilities with ethical standards in the modern digital landscape (Potwora et al., 2024; Rathod, 2023).

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