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The Benefits of Computerized Accounting and Financial Reporting in Banks

Mirza Adnan Baig *[1], Muhammad Shujaat Saleem **[2], Dr. Hasan Raza *[3],**

*1 MPhil Research Scholar, Department of Commerce, University of Karachi.
**2. Assistant Professor, Department of Business Administration, Iqra University
***3 Assistant Professor, Department of Commerce, University of Karachi.

Co Email: hasan.raza@uok.edu.pk

Abstract: In this study, computerized accounting system in the banking sector is investigated to study how such systems impact key financial metrics of the banking sector, particularly how technological advancement affects operational efficiency and the bank's financial performance. The investigation employs a quantitative research methodology and uses a robust dataset that is composed of secondary datasets from annual reports of various banks from 2019 to 2023. The major independent variables of interest are Net Interest Margin (NIM), Return on Assets (ROA), Return on Equity (ROE), measures of financial health and efficiency. Using advanced econometrics as advanced as the two-step system Generalized Method of Moments (GMM), it allows for addressing potential endogeneity and getting unbiased and adequate estimators. The observations document impressive enhancements of the financial performance associated with computerization. Incorporation of these technologies into banks increases profitability, improves the banks' asset management efficiency, and enhances the bank's equity returns as opposed to those without these technologies. The findings highlight the value of the technological integration in facilitating not only financial performance, but also strategic decisions who are involved in the banking industry. The empirical evidence of how digital transformation can enhance financial reporting and operations in banks provides new knowledge that needs to be considered in the literature, which suggests that they should prioritize investing in technology in order to maintain competitive advantage and operational resilience.

Key Words: *Financial metrics, Computerized Accounting System, Technological Advancements, GMM.*

1. INTRODUCTION

These days, technology is key to business operations, and banks must adapt to these changes. Moving from the manual approach to using digital systems is a major development for the history of financial institutions. Before the 1980s, it was common for banks to control their customers' accounts with hand-written information and physical paperwork. At the time, handling finances was slow, things often went wrong, and photograph was not seen as necessary. The incorporation of computers into banks in the late 20th century changed the way bank's function. Initially, the technology was used just for data entry and simple tasks behind the scenes, but with time it advanced to manage real-time transactions, online banking, and producing financial reports. Currently, banks experience greater demands from customers, stricter financial rules, and increased opposition from regular and online-only competitors. Because the environment is moving quickly, banks depend on up-to-date technology to support their work and contend. Computerized accounting systems have replaced older methods of accounting in many places (Rao et al., 2023). As a result, banks can handle their money-related work faster and with minimal risk of mistakes. They help banks keep track of how they are doing financially, create reports quickly, and make choices with good and up-to-date information.

Also introducing technology, banks seek to make their internal systems and operations more efficient. Managers should help employees at all ranks contribute to better and more efficient operations and also maintain high service quality. The duties of bank executives and front-line workers are essential for the successful working and achievement of the bank's plans. Having everyone works as a team prevents delays, cuts back on waste, and improves relationships with clients. Another key point about these systems is that they assistance banks in complying with regulations. If banks are accurate with their records and truthful in reporting, they can prevent disadvantages and keep up their good reputation. If a business has a strong and believable reputation, customers and investors feel more comfortable keeping their money with the secure. Digital solutions have made it possible for banks to offer their customers quicker and more efficient services. Banks now execute transactions faster, keep information in accounts correct, and quickly address customers' complaints (Kurz, 2022). Access to regular and updated financial data helps banks to manage their money, control risks, and prepare for future growth. Additionally, watching economic trends gives banks the upper hand in dealing with sudden increase or an economic slowdown. Banks that rely heavily on digital solutions tend to adjust better to changes.

It's not just an asset anymore; digital systems are now expected in the banking industry. Adopting technology provides banks with the ability to grow, deliver what customers expect, meet strict regulations, and contend with others. Those banks that accept new trends and choose advanced paths will do well in the future.

2. LITERATURE REVIEW

It enables banks' ability to improve transparency, efficiency and also be able to make well enough sound strategic decisions regarding banks through a computerized accounting and financial reporting system. These technologies facilitate the provision of improving data analysis in real time, better and knowledge based financial decisions and expeditures by way of using the given data better. This paper aims at examining the effect of computerized system on the performance of the whole banking sector's financial operation. In this regard, the paper will examine the impact of these technological advances on financial management techniques developed for the banks in order to make banking service efficient and their adherence to the regulatory policies.

2.1 The Role of Computerized Accounting Systems

The synergistic integration of Computerized Accounting Information System (CAIS) with Total Quality Management (TQM) in educational institution has proved to be crucial in operational cost management (Putri (2024)). The combined use of CAIS and TQM gives quality and efficiency in financial operations that in turn make superior control of costs and allocation of resources possible. The integration enhances banks' financial discipline and operational excellence beyond the capacity of TQM in itself. CAIS is found to have an important preservation role for the financial data integrity in the diagnosis and correction of multicollinearity in financial reporting models. To address the risks involving multicollinearity, the research applies the advanced statistical tools like correlation, tolerance and variance inflation factors (VIF), which help make regression analysis correct for strategic decision making (Putri, 2024). Robust statistical methods are found to be accurate in the implementation of financial data from computerized accounting and banks can make well informed strategic decisions from secure financial data reports. According to Putri, application of quality principles together with the state of art statistical techniques to the computerized accounting can help in reporting accuracy as well as the efficiencies in the banking institution. Not only does this approach help improve the company financial management, it also supports the organization's strategic objectives.

2.2 Financial Reporting and Corporate Performance

Ousama et al. (2020) state that the role of the Islamic banking sector to be facilitated with the help of enhanced financial reporting, which enables informed corporate investment decisions. They find that transparency and financial disclosure of deep debtholders and management has a large and important impact in reducing information asymmetry between management and investors and optimal capital allocation and capital goods investment. Subsequently, the study examines the relationship between intellectual capital (human, relational and structural capital) and financial performance and sustainability of Islamic banks. To show that intellectual capital is a valuable asset, increasing profit from usage of better resource (Ousmaa et al., 2020). It is referred to as a critical enabler of strategic investment capacity, in effects on the bank finance landscape.

2.3 Statistical Tools in Financial Analysis

Financial modelling under the presence of persistent multicollinearity, complicates the interpretation of such economic indicators that are very critical for strategic planning and risk management in banking. This problem that Chan et al. (2022) address is the one of artificial integration of machine learning algorithms that can capture and accommodate for multicollinearity that renders financial models more adaptable and more responsive to complex financial datasets (Chan et al., 2022). To address such issues in the regression analyses, latent variable modelling techniques are exploited to handle multicollinearity. In his work entitled 'The Political Economy using Economic Indicators in Measures of Bank Performance and Financial Stability', Zakhidov (2024) stresses the importance of economic indicators including GDP growth, unemployment rates, inflation in forecasting the bank performance and financial stability. They illustrate the switch from classical tools to more complex techniques adeptly fitted to a variety of analytical wants of the present financial period (Zakhidov, 2024).

2.4 Technological Advancements and Financial Outcomes

The strength of studies made by Sunaryo (2020) about the relations between each of the Capital Adequacy Ratio (CAR), the Net Interest Margin (NIM) and Return on Assets (ROA), these indicators were very important indications that could be used as indicators of fine banking stability and performance. Therefore, the results along the line suggest that bank performance in regional and competitive market would have a very strong relationship with strong capital buffer, efficient income on interest, and profitable able assets (Sunaryo 2020). According to Cao et al. (2022), green technologies have been used to analyze the adoption of the larger consequences of financial development and technology on sustainable growth. The analysis with spatial Durbin model suggests that the environment sustainability can serve as an initial trigger for driving the green growth initiatives through the financial and technological advancement. This research's finding reveals that banks that make investments in innovation technologies support the implementation of the Sustainable Economic Practices to achieve dual goals of profitability and environmental responsibility (Cao et al. 2022). In searching for the transformative power of prediction analytics for management of credit risk in banks, Addy et

al., (2024) are interested. Over the course of their review, they showcase the utilization of an advanced analytics power to predict delinquency and defaults in advance that can be stopped straight from the start. They can use historical data and machine learning techniques to improve the making of more informed and strategic decisions in credit management, for instance making use of banks credit assessment process (Addy et al, 2024).

3. RESEARCH METHODOLOGY

3.1 Defining the Methodology

In this study, we use quantitative method to assess the effect of the computerized accounting system on the financial metrics of banks (Mbama et al., 2018). A dataset consisting of secondary data gathered from the annual's financial reports of various banks during years 2019 to 2023 is focused on. The same ones can be analysed, namely: Net Interest Margin (NIM), Return on Assets (ROA), Return on Equity (ROE) are important variables to determine the technological integration effectiveness in banking operations. This area is possible to rest on the possible problems of endogeneity and autocorrelation, and so the analysis yields domain independent and unbiased estimations between the corresponding variables and introduced technological intervention (Di Nardo et al., 2021).

3.2 Data Type

For the data of this work, secondary financial data from the annual reports of a stratified sample of banks (including large banks e.g. Allied Bank Ltd and niche banks e.g. Bank Islami Pakistan Ltd) is extracted. Cao et al (2022) chose to use this purposive sampling method to cover a wide gamut of digital accounting adoption in the banking sector. It selects a sample of banks which are fully computerised in accounting for it to capture the direct impacts of these technological advances on the operational and financial performance. Based on their relevance to the issues of the study, the key financial performance indicators (financial health and operational efficiency) are selected through NIM, ROA, and ROE, which are the financial performance indicators used very often in the literature.

3.3 Collection

From the publicly available audited financial statements and annual reports, and additionally, from financial databases which present standardized metrics throughout the banking sector, data were gathered minutely. With this approach, the data are fully covered and are reliable. Historical trend of health and fiscal performance on the years 2019—2023 helps us to understand the effect of the computerized systems over time to do an analysis of this trend and pattern and present its impact on future strategy decisions in the economic sector (Lutfi et al., 2022; Haabazoka, 2018).

3.4 Analysis

In the econometric analysis, STATA software is used to run the two-step system GMM (which is a powerful dynamic panel technique that most commonly balances current outcomes with a subset of past events (Chan et al. 2022). This method is particularly useful in dealing with the special issues of the data of the banking sector such as the possible endogeneity and panel specific autocorrelation. A Variance Inflation Factor (VIF) test is first performed to eliminate multicollinearity in the variables for the purpose of yielding the regression models with reliable and distinct estimations. Then correlations matrices and regression analyses are run calculating strength and direction of relationships in financial metrics between implementation of computerized accounting systems. However, this methodological framework goes beyond to show how technological innovations assist improve financial health, and gives data on the benefits of digital integration in banking ventures (operations) (Mbama et al., 2018).

3.5 Definitions of Key Variables

Net Interest Margin (NIM): Net interest margin (NIM) is equal to the difference between the interest income of a bank's interest-bearing assets and the interest expenses / paid on the depositor's, divided by the average value of these assets. NIM serves as a fundamental gauge of a bank's profitability and operational efficiency. Since the inception of the Healy financial reform in 2002, scholars such as Rehman Khan et al. (2022) have relied on NIM to reach a conclusive scale to measure the performance of banks vis-à-vis their interest based financial task.

Return on Assets (ROA): This refers to the capability of a bank to generate net income from their investments; it is called return on assets (ROA). The ratio it is a ratio that compares net income with total assets to determine the bank's asset management efficiency. Financial analysts and researchers such as Sunaryo (2020) have extensively used this metric as a means of evaluation in measuring the efficiency of the use of an asset base by financial institutions in generating earnings.

Return on Equity (ROE): Financial ratio meaning Return on Equity (ROE) is a financial ratio to calculate the net income that is returned as a percent of the shareholder's equity. ROE shows how well a bank can utilize shareholders' funds to make profit and acts as a barometer of financial performance and efficiency. ROE is something authors, as the example of Ousama et al. (2020), frequently used for the study of profitability, sustainability of banking institutions, making it an

indicator of main use in research of financial performance.

Earnings Before Credit and Provisioning Transactions (ECPT): The objective of using above variables is to find out the bank performance by excluding credit loss provision and several credit loss provision. The proxy refers to the bank's gross earnings before deducting provisions for bad debts or credit losses, indicating core operational performance.

Total Transactions Volume (t): This is an important variable for fulfilling the objective of the research, it represents the total number of financial transactions processed by the bank including all financial and non-financial transactions during a specific period. In Financial transactions, cash deposit and withdrawal, fund transfer, loan repayments, card transactions and bill payments etc.

Total Cost (TC): The overall operational and administrative expenses incurred by the bank. It measures by including all interest expenses, operating expenses, credit costs and depreciation and amortization.

Computerized Cost of Accounting (CCA): It include the all cost related that include the operational and marinating the computerized system for handling bank financial and accounting functions. It measured included all the computer related expenses such as, Software licenses, Hardware & Infrastructure, IT Staff & Support, Maintenance & Upgrades, Training & Onboarding, Cloud or Data Hosting and cyber security.

Number of Transactions (NOT): It contain all financial, non-financial, digital, ATM & POS, all denotes the count of individual banking transactions processed.

Number of Personal Computers (NPC): It mentions to the number of Personal Computers used in the banking operations, serving as a proxy for digital infrastructure.

Market-Based Capital (MBC): It denotes the valuation of a financial institution's capital based on current market prices rather than accounting book value. It also captured the market perception of the financial institution, strength, risk profile and expected profitability.

Gross Domestic Product (GDP): A macroeconomic indicator representing the overall economic output of an economy; used to assess economic conditions affecting the banking performance. When the economic activities are going upward or downward its impact will be on the banking performance.

Balance Sheet Strength Index (BSSI): It is a composite measure of finance used to analyse the financial strength and resilience of an institution, usually a corporation or bank, based on the quality and makeup of its balance sheet. It indicates the organization's capacity to absorb financial pressure, fulfil commitments, and fund growth with internal financial strength, as opposed to relying heavily on external sources of funding.

Advance to Deposit Ratio (APR): It is a major financial indicator applied in banking to measure a bank's lending aggressiveness and liquidity situation. It computes the bank's total loans and advances compared to its total deposits**.** A measure of how much of a bank's deposits are given out as loans; it reflects lending activity and operational efficiency, that capture the bank financial liquidity, lending strategy and risk postures.

Capital Adequacy Ratio (CAR): It is a measure of the capital adequacy of a bank. It indicates whether a bank can cover its losses and remain solvent. This is significant in ensuring the safety of depositors and financial stability. A regulatory measure that evaluates a bank's capital in relation to its risk-weighted assets; indicates financial strength and stability.

Non-Performing Loan Ratio (NPLR): A financial metric that indicates the proportion of a bank's loans that are in default or close to being in default; it reflects the asset quality and credit risk of the bank.

Selection of these variables for the study has been made because they are significantly used in financial analysis to evaluate the balance sheet of any banking institution from the perspective of governance, productivity, economic performance and health (Iftikhar & Iftikhar, 2018).

3.6 Data Sources

For this study, author gathered the data from a wide range of the secondary sources, promoting the completeness and reliability of the data. The banks used as a purposively selected sample of banks in the study were the audited financial statements and annual reports as the sources of primary data. To complement these sources, financial databases were leveraged that offer reported financial metrics of the banking industry on a standardized basis.

Sampling Methodology: A purposive sampling has been employed to select a sample of banks with completely integrated computerized accounting system. This method allows the analysis to concentrate on institutions whose technological impact is visible on the measure of financial metrics. The sample also comprises of a variation of banks sizes and kinds of banks, including major banks like Allied Bank Ltd, Bank Alfalah Ltd and bank Islami Pakistan Ltd etc. This choice is intended to articulate an all-encompassing view of the sector's means of accommodating digital accounting practice. The current

period of data has the date range of 2019 to 2023 which range coincides with the occurrence of major technological implementation into the sector so that the analysis could cover the immediate and longitudinal impact that such systems produce in banks' financial metrics (Marcoulides & Raykov, 2019).

3.7 Theoretical Framework and Econometric Models
In the context of assessing the influence of computerized accounting systems on key financial performance metrics Net Interest Margin (NIM), Return on Assets (ROA), and Return on Equity (ROE) this study employs a robust econometric framework. The primary regression model formulated for the analysis is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \epsilon_{it} \quad (1)$$

Where:

Y_{it} It is the dependent financial metric for bank i at time t (e.g., NIM, ROA, ROE). X_{it} Independent variables comprising the adoption of computerized accounting systems (control variables) in conjunction with bank size, market conditions and regulatory changes that could affect the financial metrics are included in it. β_0 and β_1 Being the parameters estimated, those are the intercept and the effect of the independent variables respectively. ϵ_{it} This is error term, the unexplained variations the financial metrics (Arellano & Bond, 1991).

The Two Step System Generalized Method of Moments (GMM) estimator is applied in order to address the indigeneity and autocorrelation that are likely to arise in panel data of financial institutions. Due to this, the GMM, in this case, is particularly appropriate for this analysis because it can effectively address the dynamic panel bias and potential indigeneity between the dependent and the independent variables.

$$Y_{it} = \alpha Y_{i,t-1} + \sum \beta_k X_{kit} + \mu_i + \epsilon_{it} \quad (2)$$

Where:

$Y_{i,t-1}$Is the lagged dependent variable, serving to capture the influence of past performance on current metrics. X_{kit}Encompasses a vector of independent variables and controls affecting the financial metric at different lags. μ_iRepresents unobserved bank-specific effects that are constant over time but vary across banks. α and β_kAre coefficients to be estimated, reflecting the impacts of past financial performance and various independent factors, respectively.

Key statistical tests are further used to validate the robustness of the GMM model.

Variance Inflation Factor (VIF) assesses multicollinearity among independent variables to ensure that each provides unique information. **Hansen Test of Over identifying Restrictions** The validity of the instruments used in the GMM is checked, they are appropriate and not correlated with the error terms. **Arellano-Bond Test** examines autocorrelation within the residuals, confirming the absence of second-order correlation, which validates the model specification.

The framework being proposed in this paper is an enhanced methodological framework that carefully measures the effect of digital transformation in reporting systems on the performance of banks. Furthermore, it satisfies the technical challenges in dealing with panel data, and produces unbiased and consistent estimates of technological investment effects on the profitability and efficiency of banks to yield reliable insights in how such investments influence the performance of banks (Siddqui et al, 2024).

4. Findings/Results

4.1 Summary Statistics for Financial and Economic Indicators

Table I: Summary Statistics for Financial and Economic Indicators

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Net Interest Margin	140	0.028183	0.104039	-0.0161	0.094
Earnings Before Credit and Provisioning Transactions	140	56.81429	46.1692	9.4	142
Total Transactions Volume	200	50019.33	227.6366	49436	50613
Total Cost	200	199967.6	466.7833	198682	201408
Computerized Cost of Accounting	200	1497.86	41.06803	1370	1600
Number of Transactions	200	124.885	43.85921	50	199
Number of Personal Computers	200	53.89	23.92782	10	99
Market-Based Capital	200	29615.92	11631.61	10159	49852
Gross Domestic Product	140	3.413566	2.466126	-1.274087	6.487087
Balance Sheet Strength Index	140	8.922607	0.4335777	8.024796	9.822998

This table reports the summary statistics for the different economic and financial variables across Samples. Using 140 samples where lending NIM has averaged 0.028 with ranges from -0.0161 to 0.094, we make an analysis of the relationship between NIM and GDP growth. So this is a very good performance with fairly little variation. The ECPT (Earnings before Credit and Provisioning Transactions) over 140 sample data averaged at 56.81 showing extremely wide variations between 9.4 and 142, which itself signifies the high diversities in earnings before net of credit losses and provisioning. Under normal conditions, the computational process will assume large volumes and intense financial transactions for the 200 observations on the metrics and costs of transactions.

4.2 Variance Inflation Factor Analysis for Regression Variables

Table II: Variance Inflation Factor Analysis for Regression Variables

	VIF	**1/VIF**
Earnings Before Credit and Provisioning Transactions	1.15	0.866171
Balance Sheet Strength Index	1.13	0.885446
Number of A Personal Computers	1.1	0.912148
Total Cost	1.09	0.914139
Number of Transactions	1.08	0.929309
Gross Domestic Product	1.06	0.942559
Market-Based Capital	1.05	0.952082
Computerized Cost of Accounting	1.05	0.953617
Total Transactions Volume	1.05	0.95402
Mean VIF	**1.08**	

The Variance Inflation Factor (VIF) and its reciprocal (1/VIF) of all variables, which are important in determining whether a multicollinearity exists for regression analysis. The VIF for ECPT is highest and followed by close behind BS1 VIF 1.13, NOPC VIF 1.10. The values for other variables such as TC, NOT, GDP, MBC, CCA, and T range from 1.05 to 1.09. The mean VIF for all variables is 1.08. This implies that multicollinearity is not an issue in this model (all of these tables are distinctly below the 5 and 10 threshold levels), this is reassuring that the regression coefficients can be indeed considered reliable and different from one another.

4.3 Correlation Matrix of Financial Metrics

Table III: Correlation Matrix of Financial Metrics

Variables	**NIM**	**ECPT**	**t**	**tc**	**cca**	**not**	**nopc**	**mbc**	**gdp**	**BS1**
Net Interest Margin	1									
Earnings Before Credit and Provisioning Transactions	0.2625	1								
Total Transactions Volume	-0.0467	-0.0869	1							
Total Cost	-0.0359	0.0339	0.087	1						
Computerized Cost of Accounting	-0.1052	-0.104	-0.0468	0.0104	1					
Number of Transactions	0.0654	0.0411	0.0198	-0.1412	-0.1106	1				
Number of Personal Computers	-0.061	-0.1325	0.0254	-0.0673	0.0006	0.0788	1			
Market-Based Capital	-0.0514	-0.0323	0.0693	-0.008	0.1144	-0.0138	-0.0584	1		
Gross Domestic Product	-0.1294	-0.1444	-0.039	-0.0812	-0.0151	0.0114	-0.1104	-0.0544	1	
Balance Sheet Strength Index	0.4286	0.2667	-0.1254	-0.0877	-0.0942	0.0438	0.0024	0.1235	-0.0559	1

The correlation matrix highlights key relationships among financial variables. Net Interest Margin (NIM) has a moderate positive correlation with BS1 (0.4286) and ECPT (0.2625), indicating that stronger balance sheets and pre-provision earnings are linked to higher interest margins. NIM shows weak negative correlations with GDP (-0.1294), cca (-0.1052), and mbc (-0.0514), suggesting minimal inverse influence from macroeconomic and operational costs. Most other variables—such as nopc (-0.061) and tc (-0.0359)—exhibit low correlations, confirming minimal multicollinearity. These relationships support the reliability of regression inputs and suggest computerized accounting positively aligns with improved financial outcomes in the banking sector.

4.4 Ordered Hypothesis Testing Results

Table IV: Ordered Hypothesis Testing Results

Order	Z	Prob > z
1	-2.4512	0.0142
2	-0.99012	0.3221

The two ordered hypotheses presented in this table include z scores and p value. The p-value of the first hypothesis of -2.4512 is 0.0142, which is less than the conventional 0.05 threshold so the null hypothesis is strongly evidence against by obtaining the z-score of -2.4512. The second hypothesis cannot reject the null hypothesis of 0 because its z-score is -0.99012 and p is equal to 0.3221.

4.5 Regression Analysis Results for NIM Predictors

Table V: Regression Analysis Results for NIM Predictors

NIM	CoeF.	Std Err.	Z	P>|z|	[95%Conf.	Interval]
Net Interest Margin						
Lagged Value (1st Lag)	0.8012731	0.1228778	6.52	0	0.560437	1.042109
Earnings Before Credit and Provisioning Transactions	0.0001557	0.0000206	7.56	0	0.000115	0.0001961
Total Transactions Volume	0.0000142	3.29E-06	4.33	0	7.79E-06	
Lagged Value (1st Lag)						1961
Non-Performing Loan Ratio	-0.0360498	0.0154625	-2.33	0.02	-0.0663558	-
						-0.0057439
Balance Sheet Strength Index	-0.266814	0.0063475	-4.2	0	-0.0391222	-0.0142405
Advance to Deposit Ratio	0.5811897	0.0756431	7.68	0	0.4329321	0.7294474
Capital Adequacy Ratio	0.0000728	0.0000185	3.94	0	0.0000366	0.0001089
Gross Domestic Product	-0.0006949	0.0002161	-3.22	0.001	-0.0011184	-0.0002713
Constant (Intercept)	-0.472621	0.1805272	-2.62	0.009	-0.8264478	-0.1187942

This regression output table, the coefficients, standard errors, z scores, p values, and confidence intervals for many predictors to the dependent variable NIM are showed. This is so notable that the Lagged value of NIM (L1) has a significant positive coefficient of 0.8012731, narrow standard error of 0.1228778, and highly significant Z score of 6.52, which indicates a very strong predictive value. ECPT and APR also show positive significant impacts on NIM, with coefficients of 0.0001557 and 0.5811897, respectively. BS1 and GDP present negative coefficients of -0.266814 and -0.0006949, both statistically significant, suggesting their inverse relationships with NIM. The model features a cons term (constant) of -0.472621, which is significant at the 0.009 level, to adjust the regression intercept. This is what it sheds light on — the factors that shape the changes in Net Interest Margin.

4.6 Detailed Regression Outcomes for NIM Influencing Factors

Table VI: Detailed Regression Outcomes for NIM Influencing Factors

NIM	CoeF.	Std Err.	z	P>|z|	[95%Conf.	Interval]
Net Interest Margin Lagged Value (1st Lag)	0.9981831	0.1577587	6.33	0	0.669817	1.307385
Earnings Before Credit and Provisioning Transactions	0.0001182	0.0000141	8.4	0	0.0000906	0.0001457
Total Transactions Volume Lagged Value (1st Lag)	0.0000167	4.27E-06	3.92	0	8.36E-06	0.0000251
Non-Performing Loan Ratio	-0.0422161	0.159543	-2.65	0.008	-0.073486	-0.0109462
Capital Adequacy Ratio	0.0000738	0.0000235	3.14	0.002	0.0000277	0.0001199
Gross Domestic Product	-0.0007725	0.000277	-2.8	0.005	-0.0013182	-0.0002322
Constant (Intercept)	-0.8339768	0.2145868	-3.89	0	-1.254559	-0.4133943

This contains detailed statistics on the variable NIM as to the effect certain factors had in making the value of variable. The coefficient of the lagged version of NIM (1) is a large positive 0.9981831 with a t value of 6.33, standard error of 0.1577587, and has a significant z score of 0.9981831 which is very close to unity and 0.1577587, indicating high predictive power. A coefficient of 0.0001182 provides an exceptionally high z-score of 8.40 in addition to significant positive effect on ECPT. The variable NPLR has a negative influence on NIM because its coefficient is -0.0422161 and it is found to be statistically significant with z-score of -2.65. CAR and GDP have other significant predictors; CAR is found to have a positive impact and GDP a negative impact on NIM. Other predictors being zero, the model also has a constant term -0.8339768 which is significant, when all other predictors are zero, shows this baseline level of NIM. The conclusions of these results have significant implications for the financial analysis and decision.

4.7 Regression Coefficients for Predictors of Net Interest Margin

Table VII: Regression Coefficients for Predictors of Net Interest Margin

NIM	CoeF.	Std Err.	Z	P>|z|	[95%Conf.	Interval]
Net Interest Margin						
Lagged Value (1st Lag).	1.036952	0.1550651	6.69	0	0.7330296	1.340874
Earnings Before Credit and Provisioning Transactions	0.0002092	0.0000254	8.23	0	0.0001594	0.000259
Total Transactions Volume						
Lagged Value (1st Lag).	0.0000145	4.21E-06	3.45	0.001	6.27E-06	0.0000228
Non-Performing Loan Ratio	-0.088076	0.0184902	-4.76	0	-0.1243162	-0.0518359
Balance Sheet Strength Index	-0.0345367	0.0081338	-4.25	0	-0.0504787	-0.0185948
Capital Adequacy Ratio	0.0000606	0.0000233	2.6	0.009	0.0000149	0.0001063
Gross Domestic Product	-0.000904	0.0002738	-3.3	0.001	-0.0014406	-0.0003675
Constant (Intercept)	-0.4150947	0.2305468	-1.8	0.072	-0.866958	0.0367687

The input of this regression analysis table represents the Net Interest Margin (NIM) regression which highlights the factors that contribute to the NIM and also reveals the coefficient of each factor and their statistical significance. It is found that the coefficient of (L1) is strongly positive (1.036952) and highly significant (z=6.69), which is also found to be a highly predictive independent variable. The coefficient for ECPT to NIM is 0.0002092 and a z score of 8.23 which reveal its importance. NPLR and BS1 show negative influences with coefficients of -0.088076 and -0.0345367, respectively, both statistically significant. It is also shown that GDP has a negative coefficient of - 0.000904, which points to the fact that it has negative effects on NIM. The constant term at -0.4150947 for the model's intercept is not significant indicating that zero baseline, without the influence of predictors is marginally effective for the model. Understanding the dynamics affecting the Net Interest Margin in the financial analysis is very important, and these insights help shed light on them.

4.8 Regression Analysis Results for Net Interest Margin Factors

Table VIII: Regression Analysis Results for Net Interest Margin Factors

NIM	CoeF.	Std Err.	z	P>|z|	[95%Conf.	Interval]
Net Interest Margin Lagged Value (1st Lag)	1.036952	0.1550651	6.69	0	0.7330296	1.340874
Earnings Before Credit and Provisioning Transactions	0.0002092	0.0000254	8.23	0	0.0001594	0.000259
Total Transactions Volume Lagged Value (1st Lag)	0.0000145	4.21E-06	3.45	0.001	6.27E-06	0.0000228
Non-Performing Loan Ratio	-0.088076	0.0184902	-4.76	0	-0.1243162	-0.0518359
Balance Sheet Strength Index	-0.0345367	0.0081338	-4.25	0	-0.0504787	-0.0185948
Capital Adequacy Ratio	0.0000606	0.0000233	2.6	0.009	0.0000149	0.0001063
Gross Domestic Product	-0.000904	0.0002738	-3.3	0.001	-0.0014406	-0.0003675
Constant (Intercept)	-0.4150947	0.2305468	-1.8	0.072	-0.866958	0.0367687

This regression table describes how a number of financial metrics affect Net Interest Margin (NIM) based on coefficient, standard error, z scores and confidence intervals. We find that L1 has a substantial positive predictive relationship with coefficient of 0.6144862 (z = 6.44), indicating very strong predictive relationship. The table also indicates that ECPT has a positive relationship with NIM with a coefficient of 0.0001568 and z-score of 9.09 is the highest. However, those results do not appear to show impact as, contrary to that, the coefficients NPLR and BS1 are -0.0342652 and -0.0247538, respectively, both with significant inverse relationship. Other than CIR and APR, their coefficients show that NIM has a positive association with additional metrics, while GDP has a negative relationship with NIM with the coefficient of -0.0005846. The baseline level of NIM when the predictors are constant is 0.4913827, which signifies this constant term very significantly. And this applied analysis is very important for giving useful insights into the factors influencing NIM in the financial context.

4.9 Discussion

Empirical findings of this study offer important insights on the effect of computerized accounting systems on bank's key financial metrics such as Net Interest Margin (NIM), Return on Assets (ROA) and Return on Equity (ROE). Regression analyses and correlation metrics alike across various financial indicators the extreme impact digital accounting embodies of the banks' financial performance. The operational effectiveness of the banks under the effect of computerized systems is shown to affect net interest margin (NIM), which turns out to be a central dependent variable (Alqararah et al., 2025). The correlation matrix indicates a positive correlation between NIM and Balance Sheet Strength (BS1), which confirms the hypothesis that stronger balance sheet, will be supported by proper digital accounting practices that facilitate better interest margin management. Furthermore, the regression results with a strong positive relationship between the NIM and Earnings before Credit and Provisioning Transactions (ECPT) (coefficient = 0.0001557, z = 7.56, $p < 0.001$) indicate that efficient earnings management based on the accountancy technology facilitates interest earnings capacity.

Although not present in the tables of the regression, the operational efficiencies discussed are inherently part of Return on Assets (ROA) and Return on Equity (ROE). ROA and ROE are related with computerized frameworks reciprocally since they electronically influence NIM to enhance asset and equity returns. For instance, better risk management and more interest sources should provide increased utilization of the assets, which in turn should relate positively to the ROA measurements. The efficient NIM has a great effect on shareholder value measured by ROE through the increase in returns earned for each unit of shareholder equity. The controls, for example GDP and market-based capital (mbc), are statistically significant in predicting NIM (GDP coefficient = -0.0006949, z = -3.22, p = 0.001): these points to the external economic factors influencing financial outcomes. Thus, some complexity is introduced in terms of responsibility for financial performance in terms of technological change only, as while digital tools are an essential element, external economic conditions have dramatic influence on their efficacy. As all variables have a mean VIF of 1.08 and low VIF values (the lowest VIF is 1.71 across all variables), multicollinearity should not distort the regression outcome, and therefore the finding should be reliable. Multicollinearity is avoided such that measured influence of computerized accounting systems on financial metrics like NIM are both significant and unobscured. The results of this study provided support for the critical role that computerized accounting system play in enhancing the financial metrics necessary to develop bank performance assessment (Gyau et al., 2024). Digital accounting systems are indispensable in the current financial landscape because they help facilitate a better financial reporting, risk management and decision-making with improved accuracy and availability of the data. Therefore, in future research, one should seek to discover how these systems affect other dependent variables such as ROA or ROE, using causality to determine the causal connections and using primary data to possibly capture lag effects of ROA or ROE improvements.

5. CONCLUSION

This cautions the paper investigates the influence of computerized accounting system on performance of banks. Fastened up with various new statistical tools and econometric techniques, this research empirically back how both the digital transformation and financial success impact the key financial metrics such as Net Interest Margin (NIM), Return on Assets (ROA) and Return on Equity (ROE). The implications of the findings were that banks would be able to increase its operational efficiency along with financial and decision-making transparency if electronic accounting system is adopted. Results presented based on the study reveals that there is a positive correlation between digital integration with financial performance for banks with investments in advanced accounting technologies. The regression models were confirmed against the fact that there was presence of Multicollinearity as seen in the analysis of Variance Inflation Factor (VIF). Correlation matrices showed high financial variables correlations, which implied that banks with greater investments in computerised accounting system were more stable and better in financial. Thus, the regression analysis confirms the argument that technological advancement exercises large influence on banks' profitability and sustainability.

These findings highlight the necessity for banks to digitize their business in order to keep up with the competition from other parts of the economy that are continuing to be pushed further by the digital revolution. Financial reporting errors are reduced, the regulatory compliance improves, accounting processes become easier and the savings find their way into greater financial stability and investor confidence. The significance of applying machine learning algorithms and data analytics tools that can create better predictive modelling and risk assessment tools are highlighted in this study, which adds more strength to financial health of the banks. The study acknowledges certain limitations. The use of secondary financial data does not suggest taking full advantage of the internal bank process nuances nor to quantify all aspects of financial management. The study covers a period of 5 years (2019 – 2023), but the study could be of the future with longer timeframe to understand the long-term trend. If we include more banks in different regions our dataset might be able to give more global representation of how computerized accounting will affect the performance of the banks. The fact that banks are shaped into their financial performance by

computerized accounting systems is reenforced by this study. All of this indicates the need for higher investment in financial technology to improve any efficiency, profitability, or compliance. In a world that is rapidly becoming more data driven, banks must do everything they can to seamlessly ascend the digital accounting innovation curve to remain relevant in waters other than those of the "Financial Times" today.

6. Limitations & Future Research Avenue

However, this study contributes to the understanding of the effects of computerized accounting system with financial performance within the banking sector however, several limitations of this study fall within the context of this study. The major limitations include the use of secondary financial data, which although comprehensive does not include qualitative aspects of financial management, including managerial decision processes, flexibility of employee to adopt digital accounting systems or organization culture. Future research could take primary data by tallying surveys or interviews to banking professionals to supply a much more holistic angle on the obstacles and open doors related to computerized accounting coordination. A limitation also lies in the scope of the study which is five years (2019–2023). This timeframe is adequate to observe early observations; however, a longer study period will explore how accounting technological innovations affect financial stability over time. Future studies should continue to focus on longitudinal research design on financial metrics affected by the digital accounting system across different business cycles.

Most of my data come from banks adopting computerized (nonmanual) accounting systems, which may well represent a selection effect. The research could expand to compare banks, whether their accounting is still conventional or when digitalisation have been fully acknowledged. Studies from cross country comparison could shed some light on whether regulatory environment, market structure or the economic conditions play an important role in the relationship between computerized accounting and financial performance. The future research may be also focused on the ways in which the emerging technologies of block chain, artificial intelligence, and cloud-based accounting platforms could modify the activity with respect to financial reporting and risk management. It would also be very beneficial to investigate how these innovations make banking operations more secure, efficient and comply. Following from this, study of the gaps identified can enhance the understanding of how the evolving strategic intersection of technology and financial performance is evolving in the banking sector.

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