IMPACT OF DIGITAL ACCOUNTING TOOLS ON THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES (SME's) IN KOGI STATE, NIGERIA

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Abstract
Small and medium enterprises (SME's) play a crucial role in economic development, yet many face challenges in managing financial operations efficiently. Despite the availability of digital accounting tools, the extent to which invoice processing automation (IPA) and payment automation (PA) influence overall financial automation (FA) remains underexplored, particularly in developing economies like Nigeria. The main objective of this study was to examine the impact of IPA and PA on FA among SMEs, providing empirical evidence on the effectiveness of these tools in enhancing financial operations. A quantitative research design was adopted, with data collected from 460 SME respondents using structured questionnaires. Descriptive statistics, correlation analysis, and multiple regression analysis were conducted using SPSS version 23 to analyze relationships and test hypotheses. The regression model tested the effect of IPA and PA on FA, while correlation matrices assessed the strength of associations between variables. Findings revealed that both IPA and PA have a positive and significant impact on FA, with IPA exhibiting a slightly stronger influence. Correlation results indicated that PA is strongly associated with FA, whereas IPA shows a moderate but meaningful relationship. The model explained 72.5% of the variance in FA, confirming the robustness of the predictors. These results suggest that effective adoption and integration of invoice and payment automation significantly improve financial management efficiency in SMEs. Based on the findings, the study recommends that SMEs adopt comprehensive digital accounting tools, invest in staff training to enhance digital literacy, and integrate automation systems into existing financial processes. Policymakers should provide support mechanisms, and software providers should develop user-friendly, scalable solutions tailored to SMEs' needs.
Keywords: Invoice Processing Automation, Payment Automation, Financial Automation, SMEs, Digital Accounting Tools

1.0 Introduction

In recent years, the relationship between digital accounting tools (DATs) and small and medium enterprise (SME) performance has gained increasing attention in academic and policy circles. Scholars recognize that SMEs play a vital role in economic growth and development, yet they face persistent challenges in managing financial records and ensuring accurate accounting, which limits their potential. The role of digital accounting tools, such as cloud-based accounting software, automated bookkeeping systems, and analytics-enabled financial platforms, in overcoming these barriers has emerged as an important area of research. For instance, Zhang et al. (2023) argue that the adoption of digital accounting tools positively affects the operational efficiency and growth potential of SMEs, especially in developing economies.

The performance of SMEs, as the dependent variable in this study, has been examined in numerous studies as a key indicator of economic development (Smith & Allen, 2022). In the context of digital accounting tools,

studies have shown that access to automated accounting systems can enhance financial management, operational flexibility and overall business sustainability for SMEs (Ogunleye et al., 2021). The importance of understanding this relationship cannot be overstated, as it provides insights that can inform policy decisions aimed at fostering SME growth in both urban and rural areas of developing nations.

While previous studies have explored various aspects of digital accounting tools, such as the availability and sophistication of software platforms (Kim & Park, 2022), fewer have focused on the direct impact of financial literacy and digital literacy (two independent variables) on SME performance (Chen & Wang, 2024). Digital literacy, in particular, has been shown to significantly affect the adoption of digital accounting tools by SMEs, especially in rural and underserved regions (Guevara & Patel, 2023). Studies indicate that SMEs with higher levels of digital literacy are better positioned to integrate digital accounting tools, which in turn improves their financial operations and overall business performance (Chavez et al., 2021).

Despite the growing body of research, gaps remain. One of the primary concerns is the methodological gap, as most studies in this area rely on cross-sectional data or small sample sizes, limiting the generalizability of their findings (Morris & Zhang, 2023). Furthermore, many studies have not adequately addressed the interaction effects between financial literacy and digital literacy, which could provide more nuanced insights into how digital accounting tools influence SME performance (Tung & Nguyen, 2022). Moreover, while much of the literature has focused on larger firms or developed economies, there is a dearth of research on the specific challenges and opportunities faced by SMEs in developing economies, especially in regions like sub-Saharan Africa or Southeast Asia (Nguyen et al., 2023).

Another gap in the literature is the geographical gap. While studies from North America, Europe, and parts of Asia provide substantial evidence of the role of digital accounting tools in SME performance, studies from regions such as Africa and Latin America remain scarce. This lack of geographical diversity in research limits our understanding of how institutional and regulatory environments in different regions influence the effectiveness of digital accounting tools (Vargas & Lopez, 2024). According to Silva et al. (2025), the regulatory frameworks in these regions have significant implications for the success or failure of digital accounting systems, yet little research has examined this in the context of SMEs.

Additionally, the theoretical gap in existing studies points to the underutilization of comprehensive theoretical frameworks that could provide a deeper understanding of the mechanisms through which digital accounting tools influence SME performance. While scholars like Jones & Smith (2021) have applied the Technology Acceptance Model (TAM) to explore digital tool adoption, there is a need for more context-specific theories that take into account the socio-economic, cultural, and institutional factors unique to developing economies.

This study aims to fill these gaps by examining how digital accounting tools, financial literacy, and digital literacy impact the performance of SMEs in Nigeria, a developing economy in West Africa. By addressing the evidence, methodological, variable, scope, theoretical, and geographical gaps in the current literature, this

research seeks to provide a comprehensive understanding of the relationship between these variables in a context that has been relatively underexplored in existing studies.

Despite the growing body of research on digital accounting tools, there are notable gaps that this study aims to address. First, an evidence gap exists in the literature, as findings regarding the relationship between digital accounting tool adoption and SME performance are mixed. Morris & Zhang (2023) found a strong positive correlation, while Kim & Park (2022) reported weaker associations, especially in low-income regions. This inconsistency suggests that more nuanced research is needed to clarify the conditions under which digital accounting tools lead to improved SME performance.

Second, a methodological gap exists in the existing studies, with most research relying on cross-sectional data or small samples, limiting the generalizability of findings. Few studies have used longitudinal data or robust quantitative techniques that account for confounding variables such as institutional quality, economic climate, or firm size (Chen & Wang, 2024). By employing a longitudinal design and a larger, more representative sample, this study will help address this methodological limitation.

Third, a variable gap persists, as many studies have not fully examined the role of digital literacy in the relationship between digital accounting tools and SME performance. Studies such as Guevara & Patel (2023) highlight the importance of digital literacy, but this variable is often treated as secondary or omitted altogether. By integrating both digital literacy and financial literacy, this study seeks to provide a more holistic understanding of the factors that mediate the impact of digital accounting tools on SMEs.

Fourth, a scope gap exists in the literature, as much of the research has focused on developed countries or large firms. Few studies have explored how digital accounting tools affect small and medium enterprises in developing economies like Nigeria (Ogunleye et al., 2021). This study will fill this gap by focusing specifically on SMEs in Nigeria, which face unique challenges in adopting digital accounting systems.

Finally, a theoretical gap remains, as many studies have not sufficiently grounded their research in appropriate theoretical frameworks that account for the unique challenges faced by SMEs in developing countries. This study will apply a context-specific framework that incorporates institutional theory and technology adoption theory to better explain how and why digital accounting tools influence SME performance in the Nigerian context. By addressing these gaps, this study will contribute to the literature by providing a comprehensive, empirical analysis of the factors that influence SME performance in the context of digital accounting tools.

The following research questions guided the direction of the study:

i. How does the adoption of Invoice Processing Automation affect the accuracy of financial reporting in SMEs?
ii. What is the effect of Payment Automation on accuracy of financial reporting in SMEs?

The broad objective of the study is to investigate the impact of digital accounting tools on the Performance of small and medium enterprises (SME) in Kogi State, Nigeria. The specific objective is to:

i. Examine the effect of Invoice Processing Automation on the accuracy of financial reporting in SMEs.
ii. Determine the effect of Payment Automation on the accuracy of financial reporting in SMEs.

The following hypotheses were tested:

H01: Invoice Processing Automation has no significant effect on the accuracy of financial reporting in SMEs.

H02: Payment Automation has no significant effect on the accuracy of financial reporting in SMEs.

2.0 Review of Related Literature

Adoption of Digital Accounting Tools

Cloud accounting software (Xero, QuickBooks) and automation tools (automated invoicing, payroll management, expense tracking) are transforming the way SMEs manage their financial processes. These tools enable real-time data entry, automated financial processes, and increased collaboration across teams, all of which improve the overall accuracy and timeliness of financial reporting. By automating routine tasks, SMEs can reduce the risk of human error and ensure that their financial records are updated in real-time (Guevara & Patel, 2023).

Cloud accounting software, in particular, offers scalability, cost-effectiveness, and remote access features that are especially beneficial to SMEs, which often face financial constraints and lack the infrastructure for more traditional accounting systems. By enabling secure data storage and seamless integration with other business functions, cloud-based tools provide a centralized platform for financial management, which leads to improved accuracy and efficiency in financial reporting (Zhang et al., 2023). Automation tools, such as automated reconciliation and invoicing, streamline workflows and further minimize errors (Ogunleye et al., 2021). Therefore, adopting these digital tools is increasingly seen as an essential step for improving the accuracy and reliability of financial reporting within SMEs.

Invoice Processing Automation

Invoice processing automation is broadly understood as the application of digital systems to streamline the handling of invoices, from receipt to payment, thereby reducing manual effort and accelerating approval cycles. Kumar et al. (2022) highlight that such automation enhances operational efficiency by minimizing repetitive tasks and shortening processing time. In practical terms, it is akin to replacing manual sorting and data entry with a digital assistant that performs these functions swiftly and reliably.

Another perspective emphasizes automation as a tool for data accuracy and regulatory compliance. Silva and Thompson (2023) describe it as a technology-driven approach that leverages Optical Character Recognition (OCR) and AI-driven validation to ensure invoices are recorded accurately and in accordance

with tax and reporting standards. This definition humanizes the concept by imagining a digital accountant that double-checks every number, reducing errors and safeguarding compliance.

Some scholars frame invoice processing automation as the integration of invoicing workflows into broader accounting and enterprise resource planning (ERP) systems. Ghosh and Mehta (2021) argue that such integration enables real-time updates and analytics, allowing businesses to maintain accurate ledgers, monitor cash flow, and detect discrepancies seamlessly. In everyday terms, it is like giving your invoices the ability to communicate directly with your accounting system, creating a more connected and responsive financial environment.

Recent research also characterizes invoice processing automation as the application of cognitive AI to recognize patterns, flag anomalies, and make payment recommendations. Choudhury et al. (2024) emphasize that machine learning allows automation systems to learn from past data, anticipate issues, and provide intelligent guidance. Conceptually, this resembles a smart assistant within the accounting team, capable of identifying potential errors and advising on priorities based on historical behavior.

Finally, automation is increasingly defined as end-to-end workflow optimization**,** encompassing the entire lifecycle of an invoice from receipt through validation, approval, and payment. Fernandez and Li (2022) argue that this holistic approach not only increases processing efficiency but also enhances transparency and accountability within financial operations. In human terms, it functions as a complete digital pipeline: invoices enter the system, pass through automated checks, gain approval, and result in payment, all while minimizing manual intervention and maintaining a clear audit trail.

Among these conceptualizations, the definition of invoice processing automation as end-to-end workflow optimization provides the most comprehensive and practical perspective. It integrates the strengths highlighted in other definitions—efficiency, accuracy, system integration, and cognitive intelligence—while reflecting the needs of contemporary businesses, particularly SMEs. Fernandez and Li (2022) report that organizations adopting full-lifecycle automation experience substantial reductions in processing time and error rates, underscoring the value of viewing invoice automation as a complete, integrated process rather than a collection of isolated tasks.

Payment Automation

Payment automation is generally understood as the use of digital systems to initiate, authorize, and complete financial transactions without extensive manual intervention**.** According to Smith and Allen (2022), automating payments reduces processing time and operational bottlenecks, allowing businesses to manage cash flows more efficiently. In practical terms, it functions like a digital assistant that ensures funds move where they need to go on schedule, without human oversight for routine transactions.

Another perspective defines payment automation as a mechanism to enhance accuracy and compliance**.** Silva and Thompson (2023) describe it as a technology-driven approach that verifies payment details, enforces authorization protocols, and ensures adherence to regulatory and tax requirements. From a

humanized standpoint, it is comparable to having a vigilant digital controller that double-checks every payment before execution, mitigating errors and ensuring regulatory compliance.

Some scholars emphasize payment automation as integration within broader financial and enterprise systems. Ghosh and Mehta (2021) note that automated payment systems connected to accounting or ERP platforms allow real-time updates, reconciliation, and reporting, providing a transparent and connected financial ecosystem. Conceptually, it is like giving your payments the ability to communicate directly with your accounts, automatically updating ledgers, monitoring balances, and flagging discrepancies without human intervention.

Recent literature highlights payment automation as the application of artificial intelligence and machine learning to optimize payment workflows**.** Choudhury et al. (2024) observe that AI-enabled payment automation can prioritize transactions, detect anomalies, and recommend optimal scheduling based on cash flow patterns. In human terms, it acts like an intelligent advisor that not only executes payments but also provides guidance on the most effective timing and sequence, reducing risk and enhancing operational efficiency.

Finally, payment automation is increasingly framed as end-to-end payment workflow management, encompassing everything from payment initiation to final settlement while maintaining full auditability. Fernandez and Li (2022) argue that this holistic approach ensures efficiency, transparency, and accountability, particularly in complex business environments. Humanized, it resembles a fully automated pipeline where payments flow through secure, verified, and approved steps, ensuring that the organization maintains financial control without excessive manual work.

Among these conceptualizations, the definition of payment automation as end-to-end payment workflow management provides the most comprehensive and practical understanding. It incorporates efficiency, accuracy, system integration, and intelligent decision-making, reflecting the needs of modern businesses, especially SMEs. Fernandez and Li (2022) report that organizations using full-lifecycle payment automation experience significant reductions in delays, errors, and manual workload, highlighting the value of viewing payment automation as a holistic, integrated process rather than a set of isolated functions

Performance of Small and Medium Enterprises (SMEs)

The performance of small and medium enterprises (SMEs) is often measured by their ability to manage resources efficiently and generate accurate, reliable financial reports. Accurate financial reporting is essential for SMEs, as it directly influences decision-making, stakeholder trust, and compliance with regulatory frameworks. Financial reporting accuracy helps businesses present their true financial position, fostering better relationships with investors, suppliers, and customers (Morris & Zhang, 2023). Inaccurate financial reports, on the other hand, can result in lost opportunities, poor financial decisions, and even legal complications (Silva et al., 2025).

As SMEs increasingly move toward digital transformation, the accuracy of financial reporting has become more reliant on the tools they use for accounting. The traditional, manual methods of accounting have been

prone to human error, inefficiency, and delays. In contrast, the use of digital accounting tools such as cloud accounting software and automation tools has been identified as a critical factor in enhancing financial accuracy (Chavez et al., 2021).

Theoretical Framework

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), is one of the most widely applied frameworks for understanding the adoption of new technologies. According to TAM, the adoption of a technology is influenced by two main factors: perceived ease of use and perceived usefulness. If individuals or organizations perceive a technology as easy to use and beneficial to their goals, they are more likely to adopt it.

TAM assumes that users will engage with technology if they believe it enhances their performance and is user-friendly. In the context of SME accounting, TAM suggests that if SME owners and managers perceive cloud accounting software and automation tools as useful and easy to use, they will be more likely to adopt them to improve their financial reporting accuracy.

While TAM is useful for understanding individual technology adoption, it has limitations. Specifically, TAM does not fully address external factors such as organizational support, socio-economic conditions, or environmental barriers, all of which can influence the adoption of digital tools in SMEs (Tung & Nguyen, 2022). These factors are especially relevant in developing economies, where SMEs face unique challenges related to infrastructure, financial resources, and technology access.

This study draws on TAM to explore how SME owners' perceptions of cloud accounting software and automation tools influence their adoption decisions. By integrating this theory with insights from institutional theory and resource-based theory, this research will explore not only individual perceptions but also broader organizational and environmental factors that impact the adoption and effectiveness of digital accounting tools in SMEs.

Empirical Review

Morris and Zhang (2023) examines the impact of cloud accounting software adoption on the accuracy of financial reporting in SMEs. This study employed a survey-based approach with a sample of 150 SMEs in China. The researchers used regression analysis to assess the relationship between the adoption of cloud accounting software and the accuracy of financial reporting. The study found a strong positive correlation between the use of cloud accounting software and improved accuracy in financial reporting. SMEs that adopted cloud-based systems experienced fewer errors in their financial statements and more efficient reporting processes. The study recommended that SMEs in developing economies prioritize cloud accounting software adoption to improve financial transparency and reduce manual errors. The authors also suggested that training programs be introduced to help SME owners understand the benefits of digital tools. The study focused solely on Chinese SMEs, which may not be representative of SMEs in other developing economies with different technological infrastructure. Future research should examine SMEs in different

regions, especially in Africa and Latin America, to determine if the findings can be generalized across different cultural and economic contexts.

Chavez (2021) examines the role of digital accounting tools in improving financial reporting accuracy in SMEs in Latin America. The authors conducted a quantitative study using a sample of 120 SMEs in Latin America. They used structural equation modeling (SEM) to explore the relationship between digital accounting tools and the accuracy of financial reports.The study found that digital accounting tools, particularly cloud-based software and automation tools, significantly improved the accuracy and timeliness of financial reporting in SMEs. These tools reduced manual errors and provided more up-to-date financial data for decision-making. The study recommended that SMEs adopt digital accounting tools to streamline their financial processes and reduce errors. It also suggested that governments and financial institutions provide incentives and subsidies to make digital accounting tools more affordable for SMEs. The study was limited to Latin American SMEs and did not account for external barriers such as infrastructure challenges or resistance to digital transformation. Future studies should explore the broader socio-economic and infrastructural barriers to digital accounting tool adoption in SMEs, especially in rural and underserved regions.

Kim and Park (2022) examines the effectiveness of cloud accounting software in enhancing financial reporting accuracy for SMEs in South Korea. This research utilized a longitudinal study design with 100 SMEs in South Korea. Data were collected over six months, and the authors used paired sample t-tests to measure the improvements in financial reporting accuracy before and after the adoption of cloud accounting software. The study revealed that SMEs using cloud accounting software experienced a 30% reduction in financial reporting errors. The software helped SMEs reconcile accounts more accurately and efficiently. The authors recommended that SMEs invest in cloud accounting tools to enhance the accuracy of their financial reports. They also suggested that educational programs be introduced to improve digital literacy among SME managers. The study only included SMEs in South Korea, which may not represent the challenges faced by SMEs in other parts of Asia or Africa. Additionally, the study did not explore the barriers to adoption faced by SMEs in lower-income regions. Future research should include SMEs from diverse geographical regions and explore the role of financial literacy and digital literacy in overcoming adoption barriers.

Ogunleye (2021) examines the challenges and benefits of adopting digital accounting tools in Nigerian SMEs. This study used a mixed-methods approach, with both a quantitative survey and qualitative interviews. A sample of 150 SMEs in Nigeria was surveyed, and in-depth interviews were conducted with 20 SME owners. The study found that while SMEs recognized the potential benefits of digital accounting tools, including improved accuracy and efficiency, they faced significant challenges such as high upfront costs, lack of technical expertise, and unreliable internet access. The authors recommended that SMEs receive more affordable digital tools and that government initiatives be put in place to support SMEs in adopting these technologies. They also emphasized the need for targeted training programs to improve digital skills among SMEs. The study focused primarily on the challenges, with less attention given to the specific factors that drive the adoption of digital accounting tools. Additionally, the study did not examine the impact of these tools on financial performance beyond reporting accuracy. Future research should explore the drivers of digital

tool adoption, including financial literacy and business culture, and assess the broader impact of these tools on overall SME performance, such as profitability and growth.

Guevara and Patel (2023) examines the impact of digital accounting tools on financial accuracy in SMEs in Southeast Asia. The study used a survey of 200 SMEs across three Southeast Asian countries Thailand, Vietnam, and Indonesia. Data were analyzed using multiple regression analysis to determine the relationship between digital accounting adoption and financial reporting accuracy. The research found that SMEs that adopted digital accounting tools saw a significant improvement in financial reporting accuracy, especially in tax filings and balance sheet reconciliations. However, the study also identified that SMEs in rural areas faced higher adoption barriers due to limited internet access. The study recommended that SMEs in rural areas be given more support in terms of internet access and financial literacy programs. It also suggested that governments and tech companies collaborate to make digital accounting tools more affordable and accessible to SMEs in these regions. While the study focused on SMEs in Southeast Asia, it did not fully explore the cultural and economic differences between rural and urban SMEs in terms of digital tool adoption. Future research should focus on rural-urban differences in digital accounting tool adoption and explore how cultural factors influence the adoption and use of technology in SMEs.

Zhang (2023) examines the role of cloud accounting software in improving financial reporting accuracy in African SMEs. The study employed a cross-sectional survey of 120 SMEs in Nigeria and Kenya. The researchers used factor analysis to identify key factors influencing the adoption of cloud accounting software and its effects on financial reporting accuracy. The study found that cloud accounting software significantly improved financial reporting accuracy, particularly in SMEs that had adopted the technology in the past two years. The software also helped reduce the time spent on manual accounting tasks. However, the study highlighted that financial constraints and lack of digital literacy were major adoption barriers. The authors recommended that financial institutions and governments provide more financial support and training programs to encourage the adoption of cloud accounting software. They also suggested creating awareness campaigns to highlight the long-term benefits of digital tools for SMEs. The study did not account for the impact of financial literacy and digital skills on SMEs' ability to fully utilize cloud accounting software, and it did not explore SMEs' motivations for adopting digital tools. Future research should explore the role of financial literacy and digital skills in the adoption process and assess the specific motivations that drive SMEs to invest in digital accounting tools

3.0 Methodology

This study employed a survey research design, which is particularly effective when the goal is to assess individuals' thoughts, feelings, and opinions regarding a specific situation by collecting primary data directly from respondents (Fisher, 2016). The survey method allows for the collection of quantitative data that can then be analyzed using descriptive and inferential statistics. This type of analysis facilitates the identification of patterns and relationships between variables, and can also provide insights into potential causes for these relationships (Saunders et al., 2017). The research focuses on the perspectives of owners and managers of registered SMEs in Kogi State, Nigeria, regarding the adoption of digital accounting systems and their influence on SME performance. Given this focus, the survey method was deemed appropriate to achieve the

study's objectives. The population for this study consisted of 1,468 registered small-scale businesses operating in Kogi State (SMEDAN, 2020). From this population, a sample of 500 SMEs was selected, with the sample size determined using GPower, a statistical software for power analysis and sample size calculation (Faul et al., 2007). GPower is commonly used in social and behavioral sciences to calculate appropriate sample sizes (Faul et al., 2017). To ensure the sample was unbiased, the study applied a simple random sampling technique, as this method is known to produce samples that are free from bias (Sekaran & Bougie, 2016). The study used a list of registered SMEs provided by SMEDAN as the sampling frame to randomly select 500 SMEs. For measurement purposes, the study adapted existing scales from relevant prior research. This approach aligns with (Haruna et al., 2021; Ejura et al., 2023; Moses et al., 2018; Musa et al., 2025; John et al., 2024; Karimu et al., 2022; Haruna et al., 2021; Badaru & Moses,2025; Abdul et al., 2025; Chamba et al., 2024) recommendation to adapt measurements from prior studies when appropriate. A Likert scale was used for all items, with respondents asked to rate their responses on a five-point scale. To ensure the reliability of the instrument, a pilot test was conducted with 60 SMEs in Benue State, which, although outside the study's target area, shares similar characteristics with the study sample. This sample size is consistent with the recommended pilot test range of 25 to 75 respondents (Hair et al., 2017). The data from the pilot test were analyzed using Cronbach's Alpha, a measure of internal consistency. The Cronbach alpha coefficients for the three variables were as follows: SME performance (0.79) and digital accounting system (0.83). These values suggest that the instrument is reliable, as a Cronbach alpha of at least 0.70 is considered acceptable (Hair et al., 2017). For data analysis, SPSS 23 was utilized throughout the study.

4.0 Data Analysis and Discussion of Findings

The research explores Impact of Digital Accounting Tools on Small and Medium Enterprise (SME) Performance in Kogi State Nigeria. To gather data, the researcher distributed 500 questionnaires to respondents, of which 460 were completed and returned. This resulted in a response rate of 72.30%. The high return rate of 82.30% strengthens the reliability of the study's findings. According to Almed (2020), a response rate over 50% is considered acceptable in organizational research, while rates exceeding 60% are exceptional and highly beneficial for minimizing non-response bias. Using 460 valid responses provides a robust sample size for conducting meaningful quantitative analysis. Karimu (2019) suggests that a sample size ranging from 40 to 500 is suitable for most research, depending on the objectives and characteristics of the target population

Descriptive Statistics

Variables	Obs	Minimum	Maximum	Mean	Std Deviation
FA	460	0.00	5.00	2.500	0.330
IPA	460	0.00	5.00	2.500	0.551
PA	460	0.00	5.00	2.500	0.442

Source: SPSS 23 Outputs (2026)

Descriptive statistics provide a summary of the main features of a dataset, offering insight into the distribution, central tendency, and variability of the variables under study. In the SPSS output for 460 observations, Financial Automation (FA) has values ranging from 0 to 5, with a mean of 2.5 and a standard deviation of

0.33. This indicates that respondents generally rated FA around the midpoint, with relatively low variation in responses. Invoice Processing Automation (IPA) also ranges from 0 to 5, with the same mean of 2.5 but a higher standard deviation of 0.551, suggesting a slightly wider spread of responses compared to FA. Payment Automation (PA) follows a similar range and mean, 0 to 5 and 2.5 respectively, with a standard deviation of 0.442, reflecting moderate consistency in participant responses. Overall, the identical means imply a neutral or mid-level perception of automation across all three variables, while the differences in standard deviations highlight that IPA responses are more varied, FA responses are more clustered, and PA responses fall in between. This descriptive summary sets the stage for further analysis, such as examining relationships or testing hypotheses among these automation variables

Correlation Matrix of variables

Variables	Coefficients	FD	DAAD	DEM	WBD
FA	Correlation Coefficient	1.000			
	Sig. (2-tailed)	.			
IPA	Correlation Coefficient	0.245**	1.000		
	Sig. (2-tailed)	.000	.		
PA	Correlation Coefficient	0.824**	.176**	1.000	
	Sig. (2-tailed)	.000	.000	.	

Source: SPSS 23 Outputs, (2026)

The correlation matrix summarizes the strength and direction of linear relationships between the variables under study. Financial Automation (FA) shows a strong positive correlation with Payment Automation (PA), with a correlation coefficient of 0.824, which is statistically significant at the 0.01 level ($p < 0.01$). This indicates that higher levels of FA are strongly associated with higher levels of PA. FA also has a moderate positive correlation with Invoice Processing Automation (IPA) at 0.245, which is likewise significant at the 0.01 level, suggesting a modest relationship between general financial automation practices and the adoption of invoice-specific automation. Payment Automation (PA) shows a weaker positive correlation of 0.176 with IPA, also significant at the 0.01 level, indicating that while the two forms of automation are related, the association is relatively limited. The significance values across all correlations are below 0.01, confirming that these relationships are statistically meaningful. Overall, the matrix indicates that FA and PA are closely linked, while IPA maintains moderate but significant connections with both FA and PA, highlighting the interrelated nature of digital accounting automation processes.

Regression Results of the Study

Variables	Coefficients	T-Values	P-Values
Constants	0.283	3.550	0.010
IPA	0.341	3.311	0.040
PA	0.224	2.662	0.030
R^2			0.725
Adj. R^2			0.837
F-Stat.			60.212
F- Sig			0.000

Source: SPSS 23 Outputs (2026)

The regression results present the influence of Invoice Processing Automation (IPA) and Payment Automation (PA) on the dependent variable, Financial Automation (FA). The constant term has a coefficient of 0.283, with a t-value of 3.550 and a p-value of 0.010, indicating that when IPA and PA are zero, FA would have a baseline positive level that is statistically significant. IPA has a positive coefficient of 0.341, with a t-value of 3.311 and a p-value of 0.040, suggesting that for every one-unit increase in IPA, FA increases by 0.341 units, and this effect is statistically significant at the 5% level. Similarly, PA has a positive coefficient of 0.224, a t-value of 2.662, and a p-value of 0.030, indicating that an increase in PA also contributes significantly to higher FA.

The model's coefficient of determination (R^2) is 0.725, meaning that approximately 72.5% of the variance in FA is explained by IPA and PA combined. The adjusted R^2 of 0.837 accounts for the number of predictors and confirms that the model fits the data well. The F-statistic of 60.212 with a significance level of 0.000 indicates that the overall regression model is statistically significant, showing that IPA and PA collectively have a meaningful impact on FA.

In practical terms, the results suggest that both invoice processing and payment automation play significant and complementary roles in enhancing overall financial automation, with IPA having a slightly stronger effect than PA. This emphasizes the importance of adopting a comprehensive approach to digital accounting tools for maximizing efficiency and operational effectiveness.

Discussion of Findings

The findings of this study indicate that both Invoice Processing Automation (IPA) and Payment Automation (PA) have a positive and statistically significant influence on Financial Automation (FA) in SMEs. The regression analysis shows that IPA has a coefficient of 0.341 ($p = 0.040$), while PA has a coefficient of 0.224 ($p = 0.030$), implying that increases in these automation practices directly contribute to higher levels of overall financial automation. This suggests that SMEs that implement IPA and PA effectively are likely to achieve more streamlined financial operations, reduced errors, and enhanced operational efficiency. The model explains approximately 72.5% of the variance in FA ($R^2 = 0.725$), indicating a strong explanatory power. The high F-statistic (60.212, $p < 0.001$) confirms the overall significance of the model, showing that these forms of automation collectively impact financial automation.

The correlation analysis further supports these findings, showing a strong positive relationship between FA and PA ($r = 0.824$, $p < 0.01$) and a moderate positive relationship between FA and IPA ($r = 0.245$, $p < 0.01$). These results indicate that while both IPA and PA are linked to FA, payment automation appears more strongly associated with the overall financial automation outcomes in SMEs, likely due to the direct impact of timely and accurate payment execution on cash flow management and accounting accuracy.

These findings are consistent with prior research. Kumar et al. (2022) and Fernandez & Li (2022) found that automation in financial processes, particularly invoice and payment workflows, improves operational efficiency and reduces manual errors in SMEs. Similarly, Choudhury et al. (2024) highlighted the role of cognitive and AI-driven automation in enhancing financial operations, which aligns with the significant positive effects observed for IPA and PA in this study. The study by Ghosh and Mehta (2021), emphasizing system integration and real-time updates, also supports the notion that both invoice and payment automation strengthen overall financial automation.

However, some literature presents differing perspectives. Kim & Park (2022) reported weaker associations between specific financial automation practices and overall financial efficiency, particularly in SMEs operating in resource-constrained environments. Their study suggested that automation adoption does not always translate to operational improvement due to challenges such as limited technical skills, resistance to change, or inadequate system integration. Similarly, Ogunleye et al. (2021) noted that while automation tools have potential, SMEs often face implementation barriers that reduce the expected benefits, which contrasts with the strong effects observed in this study.

In conclusion, the findings provide robust evidence that both invoice and payment automation contribute significantly to financial automation among SMEs. While the results are largely supported by recent literature emphasizing efficiency, accuracy, and integration benefits, discrepancies in prior studies highlight the importance of contextual factors such as SME capacity, technological readiness, and training. These findings underscore the value of adopting a comprehensive approach to digital accounting tools while addressing potential adoption challenges to maximize financial automation benefits

5.0 Conclusion and Recommendations

This study examined the impact of Invoice Processing Automation (IPA) and Payment Automation (PA) on Financial Automation (FA) among SMEs. The results revealed that both IPA and PA positively and significantly influence overall financial automation, with IPA showing a slightly stronger effect. Correlation analysis further demonstrated that PA has a strong relationship with FA, while IPA exhibits a moderate association, highlighting the complementary roles of these digital accounting tools. The model explained a substantial proportion of the variance in FA, confirming the critical role of automation in improving financial management processes.

These findings suggest that SMEs that adopt and integrate invoice and payment automation into their financial operations are likely to experience enhanced operational efficiency, reduced errors, improved cash flow management, and greater overall accountability. The study aligns with existing literature emphasizing the benefits of digital accounting tools for process efficiency and accuracy. However, variations reported in other studies indicate that adoption challenges, technological readiness, and employee capacity can affect the realization of these benefits, particularly in resource-constrained SMEs.

Overall, the study concludes that invoice and payment automation are integral components of financial automation and represent strategic tools for SMEs aiming to enhance operational efficiency and financial performance.

Based on the study findings, the following recommendations are proposed for SMEs, policymakers, and software providers:

i. For SMEs, it is recommended to prioritize the adoption of both invoice and payment automation systems as part of a comprehensive financial management strategy. Training staff in digital literacy and financial software use will ensure that these tools are effectively utilized. SMEs should also focus on integrating automation with existing accounting and ERP systems to maximize efficiency and accuracy.

ii. For policymakers and industry regulators, initiatives that provide support for digital technology adoption in SMEs are essential. This could include subsidized training programs, awareness campaigns on digital accounting benefits, and the development of supportive regulatory frameworks that ensure secure and compliant automation practices. For software developers and providers, designing user-friendly, affordable, and scalable automation tools tailored to the needs of SMEs is crucial. Features such as AI-assisted validation, end-to-end workflow automation, and seamless integration with existing financial systems should be prioritized to enhance usability and adoption.

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