



## Evaluating smart invoicing by ZRA on SME strategic growth of selected SMEs in Ndola District, Zambia

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### Abstract

This study evaluated the Smart Invoicing system, implemented by the Zambia Revenue Authority (ZRA), on the strategic growth of Small and Medium Enterprises (SMEs) in Ndola, Zambia. Employing a convergent parallel mixed-methods approach guided by the Unified Theory of Acceptance and Use of Technology (UTAUT). The target population of this study was 125 SMEs who are members of the Ndola Chamber of Commerce. Using Taro Yamane's formula, the sample size of this study was 95 SMEs. The sample was selected using stratified random sampling as it contained SMEs from different sectors. Both primary and secondary data were collected for this study with primary data collected through structured and unstructured questionnaires and analyzed using STATA 14. Findings indicate that 62 (75.62%) respondents expressed agreement that Smart Invoicing contributes to business growth and 63 (76.82%) agreed that Smart Invoicing improves decision-making using transaction data. With F-statistic = 10.68, P value = 0.0016 and  $\beta = 0.195$ , the findings showed that adequate ICT infrastructure significantly predicts awareness of the Smart Invoicing system among SMEs. Further, with F-static = 11.71, P value = 0.001 and  $\beta = 0.207$ , the findings indicated that digital skill has a positive and statistically significant effect on awareness of Smart Invoicing. The findings further indicated that 55 (67.08%) indicated that Smart Invoicing enhances sales transparency, improving transaction records and reducing revenue leakages. However, challenges such as limited technical skills, system complexity, and infrastructure constraints were identified as barriers to optimal utilization. Interventions such as targeted capacity building, investment in ICT infrastructure and supportive policy such as ICT grants and public-private partnerships for SME digitalization were made to maximize its effect.

**Keywords:** Small and medium enterprises (SMEs), strategic growth, smart invoicing, Zambia Revenue Authority

### Introduction

This study sought to evaluate the relationship between Big Data and SME strategic growth in Ndola with a focus of evaluating the Smart Invoicing system introduced by the Zambia Revenue Authority.

Small and Medium Enterprises (SMEs) are vital to Zambia's economy, contributing significantly to employment generation and poverty alleviation, and accounting for approximately 90% of all businesses and over 70% of the workforce (Zambia Development Agency, 2019) <sup>[20]</sup>. Despite their importance, Zambian SMEs face challenges including financial mismanagement, limited access to financing, and issues with tax compliance and record-keeping (Thabani, Kasongo & Richard., 2020) <sup>[18]</sup>. In Ndola, these challenges are particularly acute, with SMEs struggling with inefficient invoicing systems prone to errors, fraud, and misreporting, leading to high administrative costs and non-compliance penalties (Thabani *et al.*, 2020) <sup>[18]</sup>.

Traditional invoicing systems used by SMEs are often inefficient and error-prone, hindering business operations and growth. In response, the ZRA introduced the Smart Invoicing system, a Big Data initiative, to improve tax collection, reduce fraud, and enhance business efficiency. This system enables real-time invoicing and transmits unique invoice codes directly to the ZRA's database for accurate recording and monitoring (ZRA, 2022) <sup>[21]</sup>. There has been a surge in the adoption of digital solutions globally, however, there is limited research specifically evaluating the impact of Big Data-driven systems like Smart Invoicing on the strategic growth of SMEs in Zambia. In this study, we focus on SMEs in Ndola, which has joined the mandatory use of e-invoices among enterprises and the public sector as of 1 July 2024 (Pagero, n.d.) <sup>[6]</sup>.

### Statement of the Problem

In 2022, the Zambian Statistical Agency (ZamStats) and the Bank of Zambia released a survey report in which it was stated that 88.6% of SMEs keep business records in ledgers or books and 74.3% of SMEs did not maintain any financial record data (Is Data the Missing Link for Zambia's Entrepreneurs? Insights from Micro, Small and Medium Enterprises (MSMES), 2025) <sup>[10]</sup>. Traditional invoicing systems employed by these SMEs have been inefficient and prone to errors. This hinders the smooth operation and growth of these businesses. In response to this, the Zambia Revenue Authority (ZRA) has introduced the Smart Invoicing system. Despite the launch of the system, the compliance level from many companies and Institution has been slow especially among private businesses (*Electronic-Invoicing-FAQs*, n.d.) <sup>[7]</sup>. This prompted ZRA to extend the implementation period to 1 January 2025 and intensified sensitization among businesses through workshops and online campaigns.

### Objectives

This research was guided by the following research objectives:

#### 1. General Objective

The general objective was to evaluate how the implementation of the Smart Invoice system influences the strategic growth of SMEs in Ndola, fostering long-term growth.

#### 2. Specific Objectives

1. To determine the role of Smart Invoicing by ZRA in SME strategic growth in Ndola.

- To examine the readiness of SMEs in Ndola to adopt Smart Invoicing technology.
- To establish the effects of Smart Invoicing on SME strategic growth in Ndola.

### Research Questions

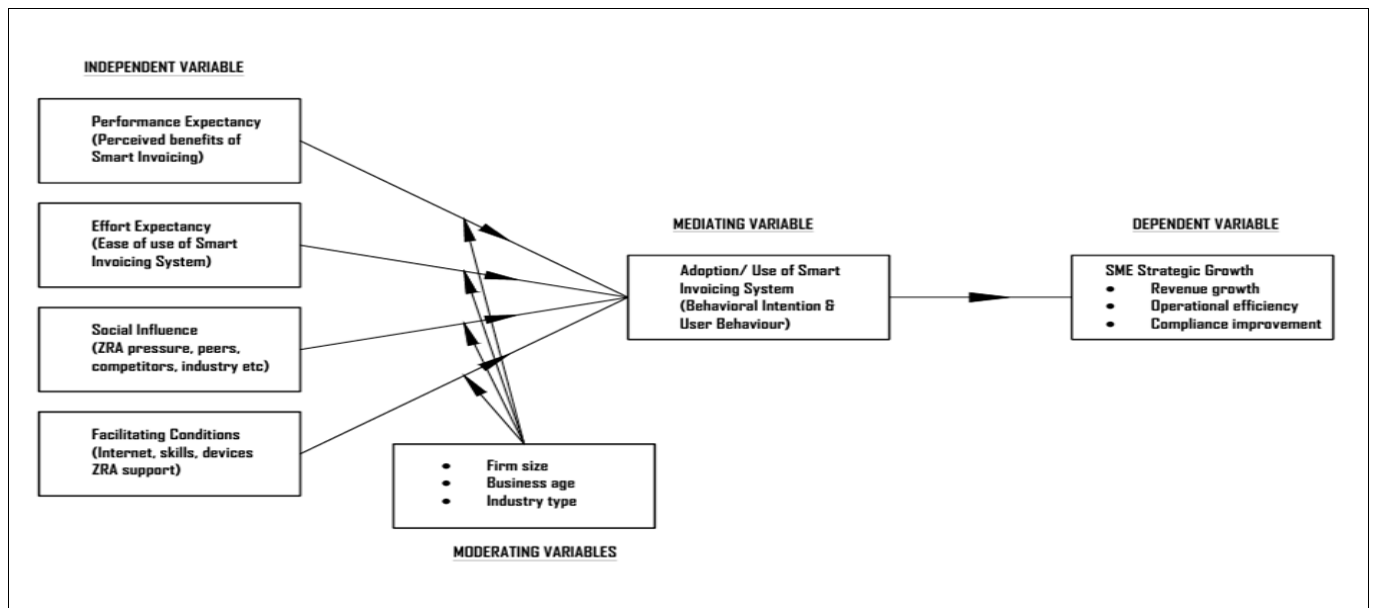
This research sought to answer the following questions:

- How does Smart Invoicing influence SME strategic growth in Ndola?
- To what extent are SMEs in Ndola ready to adopt Smart Invoicing technology?
- What relationship exists between Smart Invoicing and the strategic growth of SMEs in Ndola?

The purpose of the study, therefore, was to evaluate the Smart Invoicing system by ZRA in fostering strategic growth among SMEs in Ndola.

### Theoretical and Conceptual Framework

In answering the research questions, this study was guided by the Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh *et al.* in 2003. UTAUT explains user intentions to adopt and use information technology based on four key constructs. These are performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh *et al.*, 2003) [19]. In this study, UTAUT is used to explain the adoption and use of Smart Invoicing technology and its influence on SMEs' strategic growth in Ndola. The dependent variable is SME Strategic Growth, influenced by the UTAUT constructs as independent variables, with behavioral intention and user behavior acting as mediating variables. This is depicted in the conceptual framework below.



Source: Unified Theory of Acceptance and Use of Technology by Venkatesh *et al.*, (2003)

Fig 1: Conceptual Framework

### Literature Review

This literature review provides empirical evidence on Smart Invoicing in fostering strategic growth among Small and Medium-sized Enterprises (SMEs), with a focus on global, African, and Zambian perspectives. It assesses the role of Smart Invoicing and readiness of SMEs to adopt Smart Invoicing, highlights challenges, and identifies benefits and research gaps.

#### 1. Global Context of Smart Invoicing

Smart Invoicing plays a transformative role in SME strategic growth by digitizing the invoicing process. It improves the quality, traceability, and availability of financial records, leading to better tax compliance and internal financial management (Molina & Ojeda., 2022) [3]. Benefits include reduced administrative costs, faster payment cycles, improved record-keeping accuracy, enhanced access to formal markets and finance, and simplified tax compliance (Molina *et al.* 2022) [2], (Salazar, Bedoya, Fretell, Mayuri & Ruiz., 2023) [8].

Studies, such as one in Lima, Peru, found that 96.4% of surveyed micro and small enterprises reported cost reductions from e-invoicing (Salazar *et al.*, 2023) [8]. Furthermore, 97.4% of SMEs reported that it also

streamlined administrative and accounting operations, reducing processing time and improving accuracy. Additionally, 96.9% of respondents noted reduced paper consumption, contributing to cost savings and environmental sustainability (Salazar *et al.*, 2023) [8].

Despite the benefits, adoption is constrained by security concerns, upfront investment requirements, digital literacy gaps, and the need for complementary regulation. In Peru, key challenges included lack of economic resources (47.7%), scarcity of electronic service providers (46.9%), poor access to technology (45.1%), and insufficient information (44.0%) (Salazar *et al.*, 2023) [8].

Another study in Finland delved into the transformative impact of electronic invoicing within the logistics sector (Awan., 2023) [2]. The study asserted that e-invoicing offers substantial benefits in logistics contributing significantly to both cost savings and operational efficiency (Awan., 2023) [2]. It was found that e-invoicing leads to faster invoice processing and approval, resulting in shorter payment cycles and improved cash flow (Awan., 2023) [2]. This speed increases customer confidence thereby fostering stronger relationships with suppliers and customers. Like in global and other African contexts, this study agreed that automating invoice processes minimizes errors and

discrepancies inherent in manual data entry, reducing disputes and streamlining approval.

## 2. Regional Context of Smart Invoicing

Rwanda's Electronic Billing Machine (EBM) system, introduced in 2013, demonstrated improved record-keeping, transaction monitoring, and business reputation, particularly attracting IT-savvy customers (Hakizimana & Santoro 2023) <sup>[9]</sup>. It enhanced reporting accuracy, leading to higher reported turnover and VAT (Hakizimana *et al.* 2023) <sup>[9]</sup>. Additionally, the system also improved administrative capacity and the ability to detect discrepancies and non-compliance.

In a separate study in Kenya, research indicated that e-invoicing significantly influences SME performance, increasing profitability and promoting timeliness in invoice settlement by suppliers (Mutunga & Makhamara., 2020) <sup>[13]</sup>. It also helps prevent invoice errors and enhances accuracy. However, SMEs face challenges such as fear of investment, poor infrastructure, lack of expertise, and high equipment costs (Mutunga *et al.*, 2020) <sup>[13]</sup>.

Conversely, a study in Malawi found that the implementation of electronic fiscal devices (EFDs) did not lead to anticipated improvements in VAT collection or taxpayer compliance. It revealed that VAT collection as a percentage of GDP did not increase, and taxpayers inflated purchases to reduce tax liability (Kenani, Masiya & Njolomole., 2021) <sup>[11]</sup>.

The African contexts share challenges like infrastructure deficits, limited technical capacity, weaker institutional frameworks, and financial and psychological barriers such as anxiety and perceived risk. Government support, clear legal frameworks, and free or low-cost implementation pathways are critical for successful adoption of technologies such as the Smart Invoice.

## 3. Zambian Context of Smart Invoicing

The Zambia Revenue Authority (ZRA) has implemented digital tax systems, including TaxOnline for e-filing and e-payment, and recently Smart Invoicing Systems and Electronic Fiscal Device pilots (OECD, 2022) <sup>[14]</sup>. These initiatives aim to modernize tax administration, expand the tax base, reduce evasion, and improve compliance.

While Smart Invoicing became effective from July 2024 for all businesses, its implementation has been uneven, especially among SMEs (Pagero, n.d.) <sup>[6]</sup>. Earlier studies on e-tax systems in Zambia highlighted that while perceived as useful, some taxpayers found the system not easy to use or secure, indicating a need for continued sensitization and education (Soneka & Phiri., 2019) <sup>[17]</sup>. The initial rollout of Smart Invoicing faced constraints, targeting only VAT-registered taxpayers and experiencing temporary suspension, which created uncertainty (Soneka *et al.*, 2019) <sup>[17]</sup>

## 4. Research Gaps and Weaknesses

A critical limitation is the complete absence of empirical studies examining Smart Invoicing's impacts on SMEs readiness, adoption rates, or implementation experiences specifically in Ndola, Zambia. This necessitates relying on extrapolation from other contexts, introducing uncertainty. Additionally, Smart Invoicing is relatively new in developing countries, leading to a lack of longitudinal

studies to observe adoption patterns and outcomes over time.

## Methodology

### 1. Research Philosophy and Design

This research was guided by pragmatism. Pragmatism is a flexible philosophy focusing on what works best to solve a problem, prioritizing practical outcomes over rigid adherence to a single worldview (CarlsenMantere2007\_Pragmatism, 2007.) <sup>[4]</sup>. This provides a practical approach to research factors influencing SMEs strategic growth considering Big Data with a focus on Smart Invoicing.

Convergent parallel design, a mixed method research approach was employed, collecting both quantitative and qualitative data simultaneously to understand Smart Invoicing and SME strategic growth. This design allows for a comprehensive understanding of the research problem by merging and integrating both data types.

### 2. Population and Sample Size

The study population comprised 125 SMEs registered with the Ndola Chamber of Commerce (Clients — Ndola District Chamber of Commerce and Industry, n.d.) <sup>[5]</sup>. A sample size of 95 SMEs was targeted using Taro Yamane's formula, with 82 responses successfully returned and analyzed, yielding an 86% response rate. The sample was randomly selected using random stratified sampling, assuming knowledge of the study topic among participants.

### 3. Data Collection

Primary data was gathered through structured and unstructured questionnaires which were distributed electronically. One-on-one interactions were also used for clarification. Additionally, secondary data was sourced from books, journals, articles, and other documents.

Quantitative data were analyzed using STATA 14, employing descriptive statistics (frequencies, percentages, standard deviations) and cross-tabulation. Qualitative data were transcribed and analyzed thematically, with themes aligned to research objectives. Furthermore, direct quotes were extracted to support findings.

## Key Findings

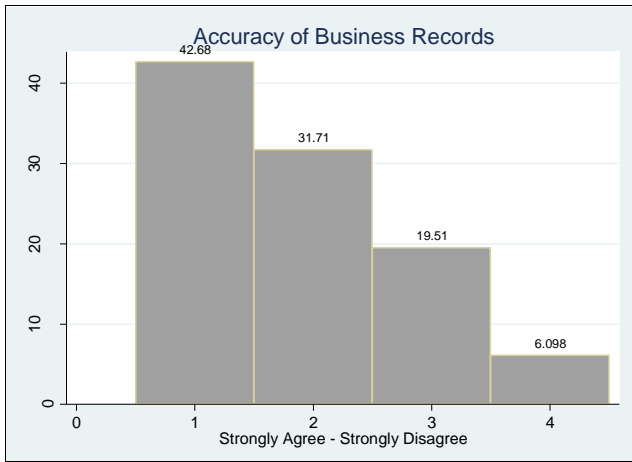
This section presents the findings of the study. It interprets and analyses the findings of this study in response to the research questions.

### 1. Role of Smart Invoicing in SME Strategic Growth

#### 1.1 Improved Accuracy of Business Records

Majority of respondents, 61 representing (74.39%), perceived Smart Invoicing as improving the accuracy of business records. This suggests that most SMEs experience improved record accuracy using Smart Invoicing.

A further 16 respondents representing 19.51% were neutral, indicating that while they may not have experienced clear improvements, they also did not perceive negative effects. Only 5 respondents (6.10%) disagreed, and none strongly disagreed. Overall, these results suggest that Smart Invoicing plays a significant role in enhancing the accuracy and reliability of business records among SMEs. Below is a graph to illustrate these findings.

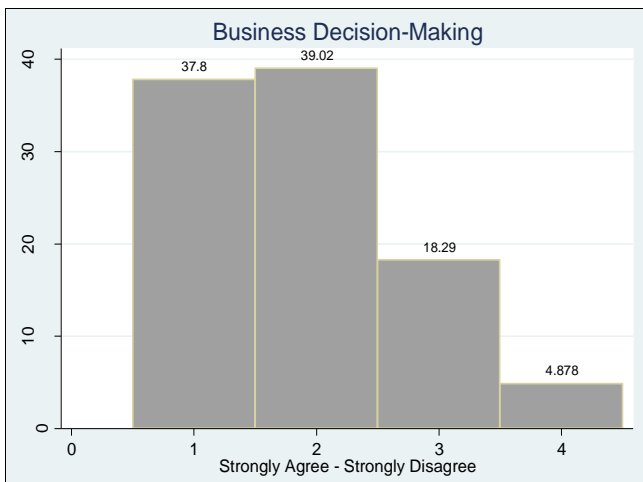


Source: Field Data 2026

Fig 2: Improved Accuracy of Business Record & Enhanced Decision-Making

### 1.2 Enhanced Decision-Making

76.82% (63) of SMEs believed Smart Invoicing improved decision-making through transaction data. This indicates that SMEs widely recognize the value of Smart Invoicing in supporting informed business decisions. Additionally, 15 respondents (18.29%) remained neutral, while only 4 respondents (4.88%) disagreed. No respondents strongly disagreed. These findings suggest that Smart Invoicing provides SMEs with accessible and reliable transaction data that enhances the managerial decision-making processes. Below is a graph to illustrate these findings.



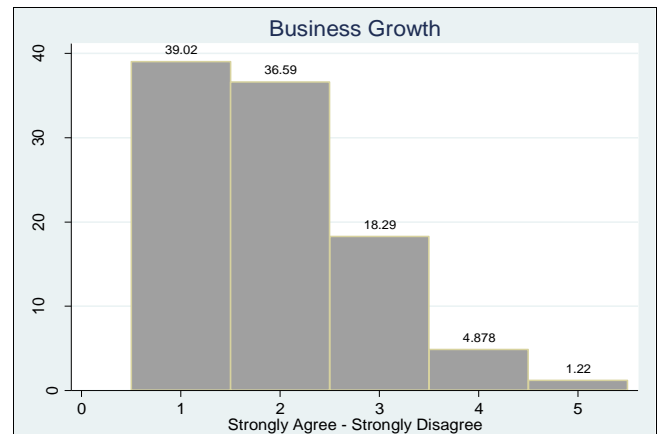
Source: Field Data 2026

Fig 3: Enhanced Decision-Making

Additionally, the qualitative data indicates that Smart Invoicing has had a positive influence on decision-making among SMEs that have adopted and actively use the system. Respondents frequently highlighted improved accuracy, transparency, and access to real-time data as key benefits. SMEs reported that Smart Invoicing enables them to monitor tax obligations more effectively, reduce errors, and make better-informed financial decisions.

### 1.3 Contribution to Business Growth

The results also demonstrate positive perceptions regarding the contribution of Smart Invoicing to business growth. 75.62% (62) of respondents agreed that Smart Invoicing contributed to business growth. Meanwhile, 15 respondents (18.29%) were neutral, and only 5 respondents (6.10%) expressed disagreement or strong disagreement. These findings indicate that SMEs generally perceive Smart Invoicing as supporting business expansion, improved efficiency, and strategic growth. The graph below illustrates these findings.

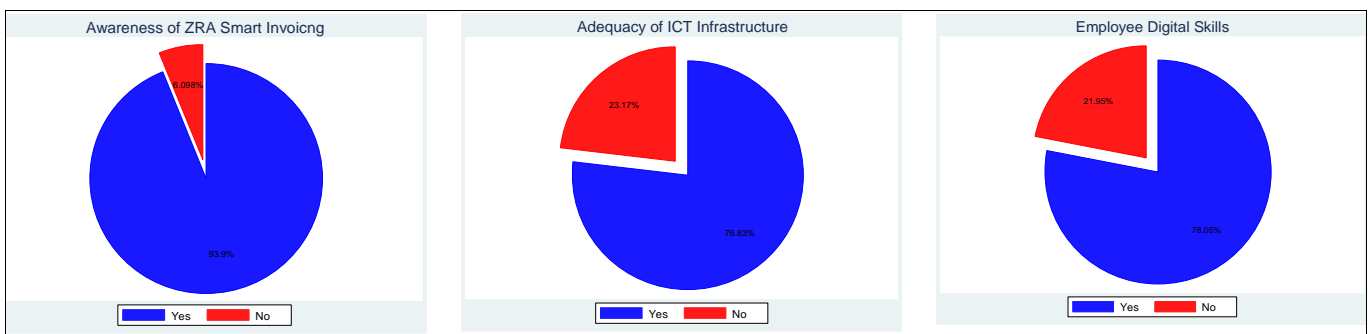


Source: Field Data 2026

Fig 4: Business Growth

## 2. SME Readiness and Adoption

Assessing the level of awareness and readiness of Small and Medium Enterprises (SMEs) toward the adoption of Zambia Revenue Authority (ZRA) Smart Invoicing is critical to understanding the effectiveness of digital tax reforms and their potential contribution to SME strategic growth. Awareness of the system influences SMEs' perceptions of its usefulness, while readiness reflected through the availability of ICT infrastructure and employees' digital skills determines the ability of firms to effectively adopt and utilize the technology.



Source: Field Data 2026

Fig 5: Awareness, ICT Infrastructure & Employee Digital Skill

**2.1 Awareness of ZRA Smart Invoicing**

The findings indicate a very high level of awareness of the Zambia Revenue Authority (ZRA) Smart Invoicing system among the surveyed SMEs. A total of 77 respondents (93.9%) reported that they are aware of ZRA Smart Invoicing. This suggests that ZRA’s sensitization and communication efforts regarding Smart Invoicing have been largely effective within the study area.

**2.2 ICT Infrastructure**

In terms of ICT infrastructure readiness, 76.83% of the respondents reported that their businesses have adequate ICT infrastructure to support the implementation of Smart Invoicing while 23.17% of the respondents indicated that

they lack sufficient ICT infrastructure. These findings highlight that, although overall readiness is relatively high, infrastructure constraints remain a challenge for nearly a quarter of SMEs.

**2.3 Digital Skills**

The results show that 78.05% of the respondents believe their employees possess sufficient digital skills to use Smart Invoicing systems, while 21.95% reported inadequate digital skills among their staff. This suggests that human capital readiness is generally favorable, though a significant minority of SMEs may require additional training and capacity-building initiatives.

Variable	Obs	Mean	Std. Dev.	Min	Max
ZRAencoura~t	82	1.695122	.8845592	1	5
SMEsinflue~e	82	1.939024	.8937031	1	5
industryex~s	82	1.939024	.9209169	1	5

Source: Field Data 2026

**Table 6:** Facilitating Conditions

Overall, the findings demonstrate that SMEs exhibit high awareness and moderate to high readiness for the adoption of ZRA Smart Invoicing. High awareness aligns with the performance expectancy and effort expectancy constructs of the UTAUT model, while the presence of ICT infrastructure and digital skills reflects favorable facilitating conditions. Nonetheless, the identified gaps in infrastructure and skills may hinder full adoption and effective utilization of Smart

Invoicing, potentially affecting its contribution to SMEs’ strategic growth.

A simple liner regression was performed where awareness is the dependent variable and adequate ICT infrastructure is the independent variable.

The general regression formula is:

$$Y = \beta_0 + \beta_1X + \epsilon$$

Source	SS	df	MS	Number of obs	=	82
Model	.55310023	1	.55310023	F(1, 80)	=	10.68
Residual	4.14202172	80	.051775272	Prob > F	=	0.0016
Total	4.69512195	81	.057964469	R-squared	=	0.1178
				Adj R-squared	=	0.1068
				Root MSE	=	.22754

awareness	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
adequateICT	.1946533	.0595554	3.27	0.002	.0761343 .3131723
_cons	.8212197	.0775392	10.59	0.000	.6669117 .9755277

Source: Field Data 2026

**Table 7:** Relationship between Awareness of ZRA Smart Invoicing and ICT Infrastructure

With (F(1,80) = 10.68, p = 0.0016) and positive coefficient for adequate ICT been (β = 0.195, t = 3.27, p = 0.002), the regression model is statistically significant, indicating that adequate ICT infrastructure significantly predicts awareness of the Smart Invoicing system among SMEs.

Additionally, a simple liner regression was performed where awareness is the dependent variable and digital skill is the independent variable.

The general regression formula is:

$$Y = \beta_0 + \beta_1X + \epsilon$$

Source	SS	df	MS	Number of obs	=	82
Model	.59963584	1	.59963584	F(1, 80)	=	11.71
Residual	4.09548611	80	.051193576	Prob > F	=	0.0010
Total	4.69512195	81	.057964469	R-squared	=	0.1277
				Adj R-squared	=	0.1168
				Root MSE	=	.22626

awareness	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
digitalskill	.2065972	.0603654	3.42	0.001	.0864662 .3267283
_cons	.8090278	.0777411	10.41	0.000	.654318 .9637376

Source: Field Data 2026

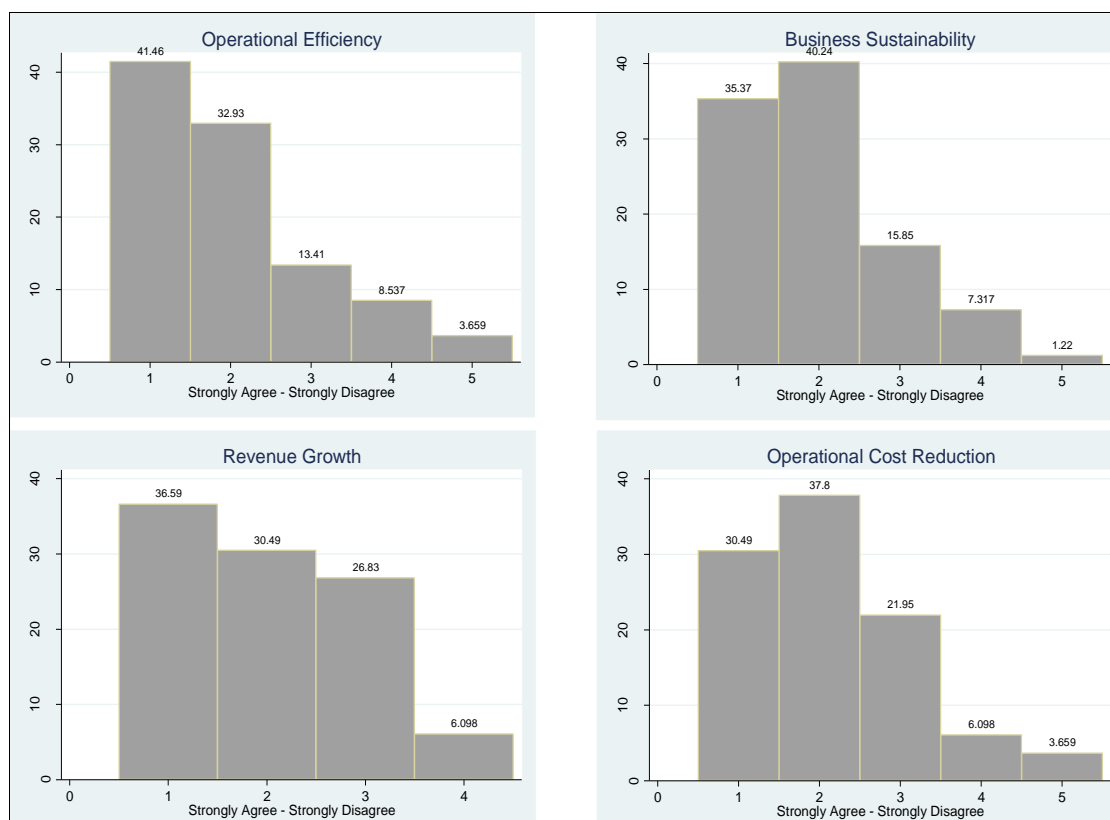
**Table 8:** Relationship between Awareness of ZRA Smart Invoicing and Employees' Digital Skills

The model is statistically significant with  $F(1,80) = 11.71$ ,  $p < 0.05$  and  $(\beta = 0.207, p = 0.001)$ , The results indicate that digital skills have a positive and statistically significant effect on awareness of the Smart Invoicing system. These findings highlight the importance of human capital (digital skill) readiness in supporting both awareness and potential adoption of Smart Invoicing.

### 3. Effects of Smart Invoicing on SME Strategic Growth

The results show strong positive perceptions regarding the impact of Smart Invoicing on revenue growth, reduced operational cost, improved operational efficiency and long-

term business sustainability. The strongest impacts were observed in operational efficiency at 74.39% agreement and long-term sustainability at 75.61% agreement. Overall, the findings demonstrate that Smart Invoicing is widely perceived as a strategic driver of SME growth in Ndola. The strongest impacts are observed in operational efficiency and long-term sustainability, followed closely by revenue growth, cost reduction, and competitiveness. While neutral responses suggest that some SMEs are still adjusting to the system, the overwhelmingly positive perceptions provide empirical support for the role of Smart Invoicing as a catalyst for strategic growth among SMEs.



Source: Field Data 2026

**Fig 9:** Operational Efficiency, Business Sustainability, Revenue Growth & Cost Reduction

Several respondents emphasized that the system supports faster transactions and reduced paperwork, making daily operations more efficient and convenient. Other respondents noted that Smart Invoicing improves record-keeping, allowing easier access to sales data and enhancing business monitoring and control.

“Transactions are much faster using the Smart Invoicing system and there is less hassle with paperwork,” (Interviewee R15).

#### 4. Challenges

Poor network connectivity, unreliable internet services, power outages, inadequate ICT infrastructure such as computers, smartphones, and limited digital literacy were identified as key challenges. One participant said:

“Sometimes we experience intermittent network from the network providers which poses as a serious challenge in accessing and using the Smart Invoicing system,” (Interviewee R3).

Another challenge identified was customer resistance. Some customers preferred traditional receipts, thereby discouraging full system use.

Lack of understanding from the customers, most customers want the old type of receipts,” (Interviewee 12).

These findings indicate that facilitating conditions particularly infrastructure, technical reliability and user capability remain key barriers to effective Smart Invoicing adoption. Despite these challenges, it is important to note that a notable proportion of respondents reported no major challenges, which may reflect either limited engagement with the system, partial adoption, or lack of technical awareness among some SMEs.

### Discussion

#### 1. Role of Smart Invoicing in SME Strategic Growth

The findings support the notion that Smart Invoicing is not merely a compliance tool but a strategic enabler for SME growth in Ndola. The high levels of perceived performance benefits, such as improved record accuracy, decision-making, and business growth, align with the UTAUT model's performance expectancy construct. Integrating the empirical findings with existing literature demonstrates that Smart Invoicing functions as both a compliance mechanism and a strategic business tool.

The study found that (61) 74.39% of SMEs agreed that Smart Invoicing improves the accuracy of business records, indicating strong perceived gains in financial transparency. This result aligns closely with international evidence demonstrating that digital invoicing systems strengthen the reliability, traceability, and availability of financial data. Electronic invoicing platforms create verifiable transaction trails through automated documentation and centralized storage, reducing document loss, manipulation, and reporting errors (Salazar *et al.* 2023) <sup>[8]</sup>. Similar improvements in auditability and compliance monitoring have been documented across Ecuador, Rwanda, and Indonesia, where digital tax systems enhanced detection of discrepancies and strengthened regulatory oversight (Hakizimana *et al.*, 2023) <sup>[9]</sup>.

The findings also confirmed that improved record accuracy extends beyond tax compliance to support internal financial management. Literature shows that real-time financial reporting and automated accounting workflows reduce information gaps and improve managerial control (Salazar

*et al.* 2023) <sup>[8]</sup>. The positive perceptions reported by SMEs in Ndola therefore reflect broader empirical patterns linking digital invoicing to improved financial governance and operational reliability.

Additionally, the findings demonstrated that (63) 76.82% of SMEs perceive Smart Invoicing as improving decision-making through enhanced access to transaction data. This outcome strongly supports the literature on data-driven management, which emphasizes that real-time and structured financial data enables organizations to monitor performance, identify trends, and respond more effectively to market changes. Electronic invoicing systems provide dashboards and reporting tools that increase managerial visibility into sales, receivables, and tax liabilities, enabling more responsive financial planning (Salazar *et al.* 2023) <sup>[8]</sup>.

The results indicated that (62) 75.62% of SMEs perceive Smart Invoicing as contributing to business growth, suggesting that operational efficiency gains translate into strategic outcomes. This finding aligns with international evidence showing that electronic invoicing reduces administrative costs, accelerates accounting processes, and improves productivity. Empirical studies from Peru report that over 96% of SMEs experienced cost reductions and faster administrative operations following e-invoicing adoption (Salazar *et al.* 2023) <sup>[8]</sup>. Similarly, research in Ecuador indicates that digital invoicing reduces human error, shortens transaction cycles, and improves productivity (Molina *et al.* 2022) <sup>[3]</sup>.

The qualitative findings from SMEs in Ndola support these conclusions, as respondents reported faster transactions, reduced paperwork, and improved operational efficiency.

#### 2. SME Readiness and Adoption

The findings of this study indicated that SMEs in Ndola demonstrate high awareness and moderate to high readiness to adopt Smart Invoicing, reflecting an emerging but uneven adoption environment consistent with global and African evidence on SME digital transformation. The results align with technology adoption frameworks such as TAM, UTAUT, and institutional theory, which collectively posit that perceived usefulness, perceived ease of use, social influence, facilitating conditions, and external pressure shape organizational adoption behavior (Sandberg, Wahlberg & Pan., 2009) <sup>[16]</sup> (Olaleye & Temitayo Sanusi, 2019) <sup>[1]</sup>.

The very high awareness level observed among SMEs confirms the role of regulatory and institutional pressure as a primary driver of adoption readiness. The mandatory implementation of Smart Invoicing by the Zambia Revenue Authority creates coercive pressure consistent with institutional theory and empirical findings that regulatory mandates significantly accelerate e-invoicing uptake (OECD, 2022) <sup>[14]</sup>. The results therefore support literature indicating that external pressure, particularly from tax authorities, can overcome inertia and stimulate adoption even in resource-constrained SME environments.

Additionally, the positive associations observed between awareness, ICT infrastructure, and employee digital skills provide empirical support for the interaction between performance expectancy, effort expectancy, and facilitating conditions proposed by UTAUT. SMEs that are aware of Smart Invoicing are more likely to possess technological capacity and skilled personnel, suggesting that awareness and organizational capability reinforce each other.

This relationship aligns with global findings that technologically capable firms are more responsive to digital innovations due to their ability to recognize benefits and absorb technological change (Sandberg *et al.*, 2009) <sup>[16]</sup>. Conversely, firms lack infrastructure and skills experience both informational and capability constraints, limiting engagement with digital initiatives.

The findings also confirm African evidence that digital literacy plays a critical role in technology adoption. The Nigerian study by Olaleye *et al.* (2019) <sup>[16]</sup> found technology literacy to be a significant predictor of adoption intention, while lack of expertise constrained uptake. The Ndola results therefore validate the importance of human capital readiness as both a determinant of awareness and a prerequisite for effective adoption.

### 3. Effects of Smart Invoicing on SME Strategic Growth

The study found that (55) 67.08% of SMEs agreed or strongly agreed that Smart Invoicing has increased their revenue growth. This perception aligns closely with international evidence showing that digital invoicing improves sales transparency, reduces underreporting, and minimizes revenue leakages. The Ndola results suggest that improved transaction recording and real-time reporting enhance revenue visibility, thereby strengthening SMEs' financial performance similar to empirical findings from Peru, where e-invoicing increased reported firm sales and value addition by over 5%, particularly among smaller firms, support this outcome (Salazar *et al.* 2023) <sup>[8]</sup>.

Operational efficiency emerged as the strongest perceived benefit, with (61) 74.39% of SMEs reporting improvements. The Ndola results suggest that efficiency gains are often the most immediate and tangible benefits of smart invoicing, particularly through reduced processing time, improved accuracy, and better internal controls. This finding strongly corroborates evidence from Peru, Sweden, Finland, and Ecuador, where over 90% of SMEs reported streamlined administrative processes and faster transaction handling following e-invoicing adoption (Salazar *et al.* 2023) <sup>[8]</sup>. (Sandberg *et al.*, 2009) <sup>[16]</sup>.

Furthermore, consistent with Mukuwa and Mwale (2020) <sup>[12]</sup>, these efficiency improvements likely free managerial and staff time for strategic activities rather than routine compliance tasks. This supports the argument that Smart Invoicing functions not only as a compliance mechanism but also as an operational enabler of SME growth.

The strong agreement 62 (75.61%) from Ndola SMEs that Smart Invoicing supports long-term business sustainability closely mirrors global and regional evidence emphasizing improved compliance, transparency, and financial discipline (Poel, Marneffe & Vanlaer., 2016) <sup>[15]</sup>, (Hakizimana *et al.*, 2024) <sup>[9]</sup>. These Ndola findings reinforce the view that digital invoicing embeds standardized processes and verifiable audit trails that enhance business resilience and continuity.

This perception is particularly significant in the Zambian context, where SMEs often face informality risks and compliance volatility. Consistent with Sub-Saharan African evidence, sustained use of smart invoicing can contribute to gradual formalization and more predictable business environments.

Overall, the findings provide strong empirical support for existing theoretical and empirical literature on SME digital

adoption. The findings therefore contribute context-specific empirical evidence to a body of literature that previously lacked localized insights from Zambia.

### Conclusion and Recommendations

The study concludes that Smart Invoicing, as a Big Data driven digital tax system, plays a significant and positive role in fostering SME strategic growth in Ndola. The findings provide strong empirical support for the applicability of the UTAUT model in explaining technology adoption and continued use in a developing-economy context. While infrastructural and capacity-related challenges persist, the high levels of adoption, positive performance perceptions, and strong continuance intentions suggest that Smart Invoicing has substantial potential as a catalyst for SME development.

Based on the findings of the study, it is recommended that:

1. ZRA should strengthen technical support and system stability by improving system reliability, reducing downtime.
2. Government should provide incentives for digital adoption such as tax incentives, subsidies and/or ICT grants to encourage SMEs to invest in digital tools such as Smart Invoicing and ICT equipment.
3. Government should encourage Public-Private Partnerships for SME digitalization. Partnerships with technology providers, financial institutions, and business associations such as chambers of commerce can accelerate digital transformation.
4. SMEs should prioritise gradual investment in basic ICT infrastructure and digital skills training to maximise the benefits of Smart Invoicing.
5. SMEs should integrate Smart Invoicing into their strategic planning. SMEs should use Smart Invoicing for all transactions rather than partial adoption. Full integration strengthens record accuracy, improves audit trails and maximises efficiency gains as observed in the study.

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