Computerized accounting systems adoption in Zimbabwean small shops: impacts and challenges in Masvingo Urban

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Abstract

In this digital era, business operations are being transformed by various technologies including Big Data. Big Data, known for voluminous data, in various formats and shared at high velocity has revolutionized business operations. This real time technological advancement has necessitated the adoption of Computerized Accounting Systems (CAS) among small shops that are key economic players that seek to remain competitive in Zimbabwe. This research paper seeks to explore on the impact of computerized accounting systems (CAS) adoption on the economic performance of small-holder shops in Zimbabwe. The research employs a mixed-methods approach that includes the quantitative analysis of survey data from a sample of small shops and qualitative insights from semi-structured interviews with accounting professionals and shop owners. The research sought to explore the relationship between CAS adoption, efficiency gains, cost reduction, improved financial reporting, and overall business profitability. The study intended to discover the extent to which CAS implementation contributes to the enhanced financial management practices, streamlined operations, and informed decision-making in a challenging economic environment characterized by hyperinflation in Zimbabwe. Research findings revealed a significant positive correlation between CAS adoption and improved business economic performance, particularly in areas such as reduced operational costs, enhanced data accuracy, and real-time financial reporting. However, the study also highlighted challenges related to CAS implementation costs, staff training, and system integration issues, which may obstruct the full realization of CAS benefits. The research recommends shop owners and policymakers to optimize CAS implementation and maximize its contribution to sustainable economic growth in Zimbabwe.

Keywords: Computerized Accounting Systems, CAS, Small Shops, SMEs, Economic Performance, Zimbabwe, Big Data, Financial Management, Hyperinflation.

Introduction

This research explores on the impact of the adoption of Computerized Accounting Systems (CAS) has on the economic performance of small-holder shops in Zimbabwe. The study is initiated against the backdrop of the current digital era that is characterized by Big Data, which has fundamentally technologically revolutionized business operations in order to remain competitive. This technological shift necessitated small shops, who are key economic players in Zimbabwe, to

adopt CAS in order to remain competitive. The research explores the connection between CAS adoption and efficiency gains, cost reductions, improved financial reporting, and overall profitability. It specifically aims to appreciate how CAS may enhance financial management, streamline operations, and support informed decision-making within Zimbabwe's economic climate of hyperinflation and currency fluctuations.

Background of the Study

The 21st century is characterized by an unprecedented wave of technological advancements, with the digital era fundamentally transforming or altering international trade (Bharadwaj et al., 2013). At the heart of this transformation is the phenomenon of Big Data which involves the generation of vast quantities of data in diverse formats at high velocity which offers both opportunities and challenges for different models of business enterprises (Chen et al., 2012). In this dynamic environment, the adoption of appropriate technologies is no longer an option but a necessity for business survival and growth. Based on the quantitative findings from the survey conducted in this study, there is partial growth in application with regards to the adoption of CAS among the small-holder shops surveyed in Zimbabwe. The data indicates that approximately fifty -five (55%) of the surveyed small-holder shops reported using some form of Computerized Accounting System. Small and Medium Enterprises (SMEs) that include small shops, are widely acknowledged as essential drivers and contributors to economic growth, employment generation, and poverty alleviation in developing economies like Zimbabwe (Makanyeza & Dube, 2016). However, these small shops often operate with limited funding and resources and usually face cut-throat competition from larger businesses. The challenging economic landscape in Zimbabwe, characterized by periods of hyperinflation, multiple currency use instability, and regulatory complexities, further exacerbates the operational challenges for these small business entities (Karedza & Govender, 2017). Effective financial management as well as informed decision-making become key under such circumstances. The technological solution provided by the computerized accounting systems (CAS) may improve on financial reporting, increase data accuracy, expedite accounting procedures, and eventually aid in improved company decision-making.

The article emphasizes that small shops need Computerized Accounting Systems (CAS) to improve their financial management and decision-making. These systems are defined as software and hardware that allow for the electronic capture, processing, storage, and reporting of financial data. Modern CAS can range from simple spreadsheets and off-the-shelf software (like QuickBooks, Sage, Zoho Books) to more complex software systems. They offer helpful modules for essential functions such as general ledger, accounts payable, accounts receivable, payroll, and inventory management. Adopting such technology may enhance financial reporting, increase data accuracy, and speed up accounting processes.

Many small shops that have not adopted CAS still rely on manual accounting techniques. Among the fifty-five percentage (55%) of shops that have adopted CAS, their usage ranges from basic spreadsheet applications to more dedicated accounting software like Sage Pastel. The performance of small shops using manual accounting methods is characterized by several challenges. Their processes are often laborious, prone to mistakes, and inadequate for providing timely financial insights. This can lead to significant operational issues, including inefficiencies, increased

operational costs, poor financial control, and a lack of agility in business decision-making. These shortcomings ultimately limit their competitiveness and potential for growth and profitability.

While the benefits of Computerized Accounting Systems (CAS) are generally acknowledged, there is a distinct lack of empirical evidence on their specific impact within the unique socio-economic context of Zimbabwe. The literature review confirms this, noting that specific studies focusing on small shops in Zimbabwe, particularly those that explore the nuances of CAS adoption within its hyperinflationary and multi-currency basket are under-researched. This study is therefore seeking to fill this critical gap by providing current, context-specific evidence that combines quantitative performance metrics with rich qualitative insights.

In stable economies, the motivation for CAS adoption is primarily driven by the pursuit of efficiency and optimization. Businesses adopt CAS to automate repetitive tasks, reduce manual labor, improve data accuracy, and achieve long-term cost savings through better inventory and cash flow management. The benefits are significant but focus on enhancing the performance of an already functioning business model. In contrast, within a hyperinflationary economy like Zimbabwe's, the motivation for CAS adoption shifts from optimization to adaptation and survival. The utility of CAS is no longer just about saving time or reducing minor errors; it becomes a critical tool for navigating extreme volatility. The system's ability to facilitate rapid price adjustments, track costs in real-time, and manage multiple currencies is essential for preserving value and remaining solvent. While businesses in stable economies use CAS to improve, businesses in hyperinflationary economies use CAS to intervene on a stressed and endured business enterprise.

Statement of the problem

Despite the known advantages of CAS, small shops in Zimbabwe seem not to fully appreciate and utilize them to their advantage. The adoption of CAS may potentially be hindered by a number of challenges. Many small shops still use manual accounting techniques, which are frequently laborious, prone to mistakes, and inadequate for delivering the timely financial insights required in a volatile economic environment (Beke, 2015). The problems faced by small shops in Zimbabwe that do not adopt CAS are extensive and are exacerbated by the country's volatile economic environment. Firstly, there is the challenge of errors and inefficiencies where the mistakes and inaccuracies of manual systems are obstacles to the provision of timely financial information needed to operate effectively. This leads to increased operational costs. Another problem is poor financial control. One shop owner who later adopted CAS likened their prior business modus operand to operating in darkness, where they were unable to clearly verify cash flow, debtors, or profitable line of products. Another challenge faced by those small shops using manual systems was the inability to cope with economic volatility. In a hyperinflationary environment, manual systems struggle to handle the rapid and frequent adjustments required for pricing, cost tracking, and financial analysis. This can lead to significant financial losses. Although the general benefits of CAS are known, there is a need for specific empirical evidence on their impact on the economic performance of small shops within the stressed socio-economic hyper inflationary context of Zimbabwe.

Research Objectives

The primary objectives of this research are:

1. To identify and analyze the challenges encountered by small shops in Zimbabwe when adopting and implementing CAS.
2. To explore how CAS implementation enhances financial management, operational efficiency, and decision-making particularly in the context of hyperinflation and currency fluctuations among small holder shops in Zimbabwe.
3. To investigate the impact of CAS adoption on the economic performance of small shops in Zimbabwe, with regards to efficiency, cost reduction, financial reporting, quality, and profitability.
4. To provide recommendations for small shop owners and policymakers to optimize CAS implementation and leverage its benefits for sustainable economic growth.

Research Questions

This study seeks to answer the following research questions:

1. What is the current state of Computerized Accounting Systems (CAS) adoption among small shops in Zimbabwe?
2. What is the relationship between CAS adoption and the economic performance (efficiency gains, cost reduction, improved financial reporting, and profitability) of small shops in Zimbabwe?
3. How does CAS implementation contribute to enhanced financial management practices, streamlined operations, and informed decision-making in small shops within Zimbabwe's challenging economic environment?
4. What are the key challenges faced by small shops in Zimbabwe in their efforts to adopt and implement CAS?

Significance of the study

There are various reasons why this research is important. Firstly, the research will offer factual evidence of the advantages of CAS adoption for small shops in the context of a developing nation that is characterized by economic instability. Secondly, the findings will provide valuable insights to small shop owners in Zimbabwe, guiding their decisions regarding technology investment and streamlining business processes. Thirdly, policymakers and support institutions may use the research outcomes to design targeted interventions, such as training programmes or financial incentives, to promote CAS adoption. Finally, the study will contribute to the academic literature on technology adoption by SMEs in developing economies.

Scope and limitations of the study

This study focuses on small shops operating in urban and peri-urban areas of Masvingo town, Zimbabwe. Small shops that started operating after the Covid 19 pandemic, thus from 2022 to 2024 were selected. Such a period was chosen mostly because that is the period when many

businesses adopted technology in their operations a counter effort to the pandemic to operate remotely and keep afloat. The definition of "small shop" will be based on criteria such as the number of employees and annual turnover, aligned with common definitions used in Zimbabwe. While the study employs a mixed-methods approach for comprehensive insights, limitations may include the generalizability of findings beyond the sampled population, potential biases in self-reported data, and the dynamic nature of technology and the economic environment, which might change over time.

Literature Review

The Concept and Evolution of Computerized Accounting Systems

Accounting systems have evolved from manual ledgers to sophisticated digital systems. Computerized Accounting Systems emerged as a result of technological advancements, which keep on evolving traditional accounting practices by automating repetitive tasks and improve accuracy in real -time data processing (Grande et al., 2011). The first versions of CAS were often standalone systems focused on basic bookkeeping, but modern systems now range from simple spreadsheets and off-the-shelf software for small businesses like QuickBooks, Sage and Zoho Books to complex Enterprise Resource Planning (ERP) systems for larger organizations (Ismail & King, 2007). These systems offer modules for general ledger, accounts payable, accounts receivable, payroll, inventory management, and financial reporting.

The current business environment is described as a digital era, characterized by voluminous data being generated in various formats and shared at highest speeds, termed Big Data. This phenomenon of Big Data is positioned at the core of this transformation that is revolutionizing international trade and business transactions. In this dynamic Big Data driven environment, the adoption of appropriate technologies like CAS is no longer an option but a necessity for survival and growth. Therefore, Big Data comes on board not as a tool used in the evolution of CAS itself, but as the overarching transformative agent that enables the transition from manual to computerized systems that are essential for any business survival.

Benefits of CAS adoption for the small-holder business

Adopting CAS offers numerous significant benefits for small businesses. CAS assists small-holder business to overcome the limitations of manual accounting methods by improving their overall financial management. These benefits range from enhanced efficiency and accuracy in cost savings that result informed decision-making. Numerous studies have highlighted the benefits of CAS adoption for SMEs. These benefits include;

Improved efficiency and accuracy

The key benefit of CAS is automation. Automation of tasks like data entry, calculations, and report generation saves time and reduces manual labor (Doss et al., 2016). Manual accounting is prone to human error, such as mathematical mistakes, incorrect data entry, and omissions. A computerized system automates calculations and data entry which significantly reduces the human errors. CAS minimizes human errors common in manual systems, leading to reliable financial data

(Saleh & Al-Sharayri, 2017). This results in accounted accuracy for those small -holder enterprises that utilizes the CAS software.

Better financial control and reporting

CAS adoption brings a number of benefits to the small shops that utilize the technologies. Firstly, CAS may generate a variety of financial reports like balance sheets, income statements and cash flow statements accurately with checks and balances complying in real-time (Appelbaum et al., 2017). This will positively improve the financial reporting feedback system of the small business. Computerized systems provide business owners with a clear and comprehensive view of their finances. By using automating tracking devices on the bank statement reconciliation value chain, the technology helps to prevent cash flow pilferages, which then ensures better control over the flow of money. Another benefit is that of improved decision making. Timely and accurate financial information tasks allow business owners and managers to make informed strategic and operational decisions (Lutfi et al., 2022). Decision making is key in business, especially in volatile operating environments existing in most developing countries. Unlike manual systems where companies have to wait for a person to analyze and report on financial data, computerized systems provide real-time updates. This means that businesses can access up-to-date information tasks on their financial state at any time, allowing for quick and informed decision-making. This means that businesses can access up-to-date information whenever needed, facilitating better decision-making. Furthermore, CAS adoption helps to reduce costs and improve internal controls. While there is an initial capital investment, CAS can lead to long-term cost savings through reduced labor, error free calculations, better inventory management, and optimized cash flow (Beke, 2015). Efficiency and effectiveness brought about by CAS provides businesses with a competitive advantage and good reputation which are key proponents for growth. CAS technologies have some built-in security features and audit trails that improves financial governance which in turn reduces the risk of fraud (Pathak, 2010). This goes a long way in alleviating unnecessary losses but instead improves the profitability of small businesses.

Challenges of CAS adoption by small businesses

Despite the compelling benefits in discussion, the adoption of CAS by SMEs is not without challenges, particularly in developing countries. One of the major challenges of CAS adoption is the initial high cost of purchase, launch and maintenance. The initial cost of purchasing accounting software licenses, along with the necessary hardware like computers, servers and other related technologies can be a major barrier for small businesses with limited financial resources. Ongoing maintenance and upgrade costs may become a burden (Makanyeza & Dube, 2016). CAS software requires huge capital investments which may be unavailable for most small businesses. In many cases, small-holder shops find CAS systems beyond their reach. Costs associated with the purchase, licensing and upgrading of CAS technological systems, usually are insurmountable which is beyond the reach of the majority of small-holder shops in developing economies like Zimbabwe. Another challenge that stifles CAS adoption is lack of skilled personnel and small-holder business owners' resistance to change. Effective use of CAS requires IT literacy skills resident on an accounting knowledge base. Small businesses often have no trained staff which is compounded by the high cost of training. (Mascitelli & Arunachalam, 2003). This again can hinder the adoption of CAS by small-holder businesses. Small shops usually have constrained financial budgets which may not be able to satisfy the costs associated with CAS adoption and

implementation. Small shop owners rely on family provided labour, which makes it difficult to attract skilled personnel with relevant skills to operate CAS systems. Employees and even owners who are accustomed to manual systems may resist to shift to the use of new technologies due to fear of job displacement or discomfort with new processes (Huy & Hooi, 2009). In order to have stakeholders accepting CAS, there is need for the assurance of job security to employees who are incentivized through intensive training on the new CAS technologies. This comes with a huge cost for a small-holder business.

Systems integration is potentially a deterring challenge towards CAS adoption. Integrating new CAS with existing business processes that have been a routine legacy may cause despondency (Ismail & King, 2007). When new technology is introduced, there is need to make sure the new technology fits well into the process of the existing systems. CAS integration into operational processes of small shops can be a challenge. CAS adoption may require system overhaul where all the manual accounting currently used by small-holder shops are to be completely remodeled in the CAS systems. This means that there will be need for people with requisite skills to operate CAS systems. Such people with skills may be expensive to hire for small-holder shops. This explains why there are always skills gaps between small-holder shops and other retail competitors. CAS adoption means that the accounting systems may be under cyber threats like phising and viruses common in this digital era. This results with security threats among small shops that intend to invest and adopt CAS. While CAS can enhance security, concerns about data breaches, viruses, and system failures there is need for adequate on-going security upgrading (Saleh & Al-Sharayri, 2017). It is notable that CAS installation requires basic security standards in place first. Failure to provide a security structure compromises the sensitive financial data for small shops resulting with the small shops becoming victims of prevalent data breaches, now common in this digital era. CAS adoption and installation is also hindered by inadequate support infrastructure. CAS requires adequate infrastructure to support its adoption and implementation. Unreliable power supply and limited internet connectivity which is prevalent in some parts of Zimbabwe, may hinder the effective use of CAS for example transactions to with cloud-based solutions. For small shops to effectively utilize CAS systems, they need to be well connected to the Internet with back up support that is dependable on power supply sources. Current power black outs commonly experienced in Zimbabwe are making it difficult for small shops in the country side to somehow adopt and install CAS systems.

CAS Adoption in Developing Economies and the Zimbabwean Context

Research on CAS adoption in developing countries often portrays the general challenges but emphasizes context-specific factors like infrastructural deficits, technology gaps, economic instability, and lack of institutional will-power support (Grandon & Pearson, 2004). In Zimbabwe, the volatile economic environment presents unique challenges and opportunities for CAS adoption by small businesses. In periods of hyperinflationary regimes small shops are fast to adjust prices, cost tracking as informed by their financial analysis, a laborious task that manual systems struggled to handle with efficiency (Karedza & Govender, 2017). Currency fluctuations and the multi-currency basket approach adopted in Zimbabwe further complicate accounting processes. Therefore, the installation of CAS, particularly on those businesses transacting in multi-currency denominations own devices that enable quick data analysis which is invaluable in a volatile macro-

economic environment. Regardless of the plausible CAS benefits, economic challenges make investments in CAS seem risky and beyond the reach for many small-holder shops.

Theoretical Frameworks for Technology Adoption

Several theories explain technology adoption processes. The Technology Acceptance Model (TAM) suggests that perceived usefulness and perceived ease of use are key determinants of adoption (Davis, 1989). The technology acceptance model is a theoretical framework which postulates that the user's perceptions of usefulness and ease of use regarding new technology are informed by various external factors. Those factors indirectly impact on whether users' attitude motivates the embracing of a new technology. (Davis, 1989). Perceived usefulness refers to the level to which the individual believes that a new technology enhances performance. On the other hand, perceived ease of use refers to the degree to which the individual accepts that the new technology is easy to adopt with minimum effort in learning. In the technology acceptance model, there are no limitations on external variables that may affect the user's perceptions.

The Diffusion of Innovations (DOI) theory on the other hand identifies characteristics of the innovation which have relative advantage, compatibility, complexity, trialability and observability that influences adoption (Rogers, 2003). The Technology-Organization-Environment (TOE) framework considers technological, organizational, and environmental factors that influence adoption decisions (Tornatzky & Fleischer, 1990). This study implicitly draws upon these frameworks by examining factors like perceived benefits that are related to the relative advantage, implementation costs such as complexity and resource availability, staff skills and organizational factors. The TOE framework provides three contexts that may affect an organization's technology adoption process. These are technological, organizational, and environmental (Tornatzky & Fleischer, 1990). While this framework was suitable for explaining technology acceptance and dissemination from the organization's point of view, TOE has frequently been applied in research regarding corporations (Han & Lee, 2008).

Gaps in Literature

While there is general literature on CAS adoption by SMEs, specific studies focusing on small shops in Zimbabwe, particularly those that explore the nuances of adoption within its hyperinflationary and multi-currency context, are under researched. This study aims to fill this gap by providing current, context-specific evidence on the impact of CAS and the challenges faced through combining quantitative performance metrics with rich qualitative insights.

Research Philosophy

This study adopts the pragmatism research philosophy**.** This philosophy is the best fit for purpose in this study where the research questions are problem-focused. The research seeks to understand not just *what* the economic impact of Computerized Accounting Systems (CAS) is, but also *how* and *why* this impact occurs in the real-world context of small shops in Masvingo. Pragmatism is also chosen in this study because it is the one that best justifies mixed methods research designs. Pragmatism also focuses on tangible results and practical understanding. These are key in the

current research that seeks to provide practical recommendations for small business owners, policymakers, or CAS software developers**.**

Research Methodology

Research Design

This research employed a mixed-methods research design, combining quantitative and qualitative approaches to provide a comprehensive understanding of the impact of CAS adoption on the economic performance of small shops in Zimbabwe. The sequential explanatory strategy was adopted, where quantitative data was first collected and analyzed, followed by qualitative data collection to help explain and elaborate on the quantitative findings (Creswell & Plano Clark, 2017).

Population and Sampling

The target population for this study comprised small shops operating in selected urban and peri-urban areas of Masvingo, Zimbabwe. Small shops were defined as retail businesses with fewer than twenty (20) employees and an annual turnover that is below $10 000 (SME Association of Zimbabwe, (n.d.)).

The target population comprised of small shops operating in selected urban and peri-urban areas of Masvingo, Zimbabwe. For the purpose of the study's methodology, small shops were defined as retail businesses with fewer than twenty (20) employees and an annual turnover that is below $10,000 (SME Association of Zimbabwe, (n.d.).

A total sample of forty (40) small shops was selected, which was stratified into twenty (20) CAS adopters and twenty (20) non-adopters. A purposive sample of fifty (50) participants was selected for data collection. This group included forty (40) small shop owners (a mix of CAS adopters and non-adopters) who participated in the survey as well as ten (10) accounting professionals or consultants with experience in working with small businesses in Zimbabwe. All the sample categories participated in the semi-structured interviews.

Data Collection Instruments

Quantitative Data

A structured questionnaire was designed to collect data on the shop demographics in terms of how long the business has been in operation, size and sector. Further data was collected with regards to CAS adoption status, type of CAS, duration of use, perceived impact on economic performance metrics. The Likert scale was used in the questionnaire to determine attitudes towards efficiency gains, cost reduction, accuracy, reporting timeliness, profitability) as well as challenges encountered in CAS adoption and use. The questionnaire was pilot-tested with a small group of shop owners for clarity and validity.

In the quantitative phase, economic performance was assessed using several key metrics that directly reflect the financial and operational outcomes for small shops. These metrics were captured through a structured questionnaire that utilized the Likert scale to measure the perceived impact of CAS adoption on a number of metrics. The first metric was that of efficiency gains. This was operationalized by asking respondents to rate improvements in areas such as time saved on accounting tasks, better inventory management, and quicker customer invoicing. The second metric was cost reduction. The perceived reduction in costs associated with manual bookkeeping, stationery, and error correction was measured. Improved Financial Reporting was another metric measured too. The Likert scale assessed the respondents' perceptions on the accuracy and timeliness of generating financial reports that included monthly profit and loss statements and balance sheets. On Profitability metric variable, the respondents provided self-reported measures of overall business profitability and growth over the past two years.

Qualitative Data

Semi-structured interview guides were developed for shop owners in order to gain in-depth insights into their experiences with CAS adoption or non-adoption, the practical benefits and challenges, and coping mechanisms in the volatile economic environment. Accounting professionals were also interviewed to gather expert facts on the trends in CAS adoption by small shops, common implementation pitfalls, and the role of CAS in navigating Zimbabwe's market economic complexities. These qualitative measures were further enriched by qualitative insights from semi-structured interviews, where shop owners and accounting professionals elaborated on these impacts, such as the ability to update costs and selling prices in real time during inflation, improve cash flow visibility, better credit control, and accurate tax compliance.

Pilot Testing

The pilot test was a crucial step in ensuring the clarity and validity of the questionnaire. While not explicitly detailed in the methodology section, the pilot testing process involved administering the questionnaire to a small group of shop owners. The primary objectives was to determine on clarity and comprehension, to ensure that questions were unambiguous and easily understood by the target participants. It was also used to evaluate relevance by confirming that the questions effectively captured the intended data on CAS adoption, economic performance, and challenges. Pilot test was also done to identify ambiguities or redundancies in order to re-define question wording and eliminate double messaging. Based on the feedback from the pilot test, minor adjustments were made to the phrasing of several questions to enhance clarity and precision. For instance, some technical terms were simplified to be more accessible to all shop owners, regardless of their accounting background.

While a formal Cronbach's alpha for reliability was not computed for this qualitative piloting phase, the qualitative feedback directly informed the final version of the questionnaire, ensuring its suitability for the main study. This iterative process of pilot testing and refinement is consistent with best practices in mixed-methods research design.

Data Collection Procedures

During the quantitative phase**,** researchers administered the questionnaires in person and some via online survey tools where feasible. Consent was obtained prior to participation. During the face-to-face interview phase and the virtual the researcher noted responses.

Data Analysis Techniques

Quantitative data from the questionnaires was coded and analyzed using statistical SPSS software. Descriptive statistics like frequencies, percentages, means and standard deviations were used to summarize shop demographics and the extent of CAS adoption. Qualitative data from interviews transcribed and oral interviews were analyzed using thematic analysis (Braun & Clarke, 2006). This involved, familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes as well as producing the report.

Ethical Considerations

Ethical approval was sought from the relevant institutional ethics committee. Participants were informed about the purpose of the study, assured of anonymity, confidentiality with their voluntary consent obtained in writing. Consent forms were distributed to participants to have their consent to participant in the study. The authors obtained the participants' approval before engaging them in the study. Data collected from participants was captured in a an anonymous manner that did not reveal the identity of the participants. Pseudonyms were used instead of participants' real names. Participants were assured of the anonymity of their data. Data was stored securely, and findings were reported in a way that does not identify individual participants or businesses.

Findings and Discussion

Quantitative Findings

Extent of CAS Adoption - Survey data indicated partial growth in installation of CAS among small shops in Zimbabwe. Approximately 55% of surveyed small shops reported using some form of CAS, ranging from basic spreadsheet applications to more dedicated accounting software.

Fig 4.1 CAS adopter's vs non-adopters

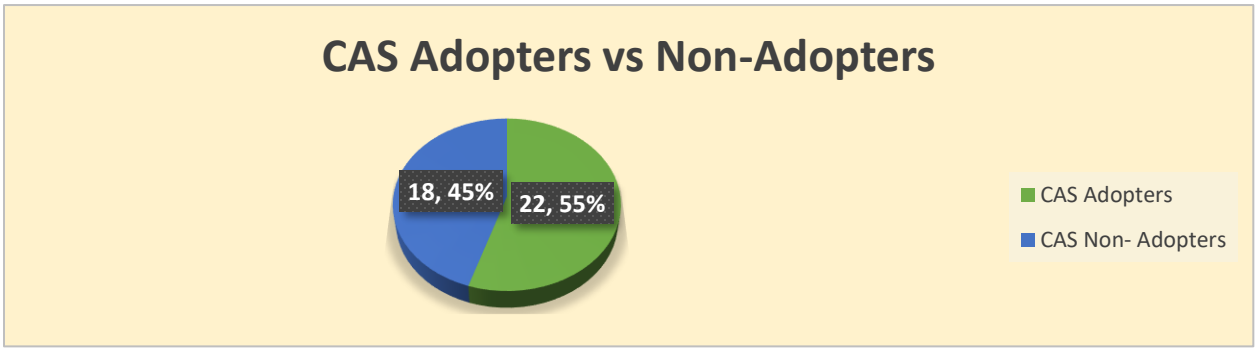

Fig 4.1 shows the Percentage of CAS adopters compared to non-adopters

The graph shows that of the sampled small shops, 55% indicated that they have adopted CAS systems while 45% indicated they have not adopted CAS systems. This shows that CAS systems are generally becoming appreciated in business operations although the level of CAS adoption is yet to improve to international standards.

Impact on Economic Performance

Reduced Operational Costs - Shops that adopted CAS reported a statistically significant reduction in costs associated with manual bookkeeping, stationery, and error correction compared to non-adopters ($p<0.05$).

Fig. 4.2 Average Operational Costs by CAS Adoption status

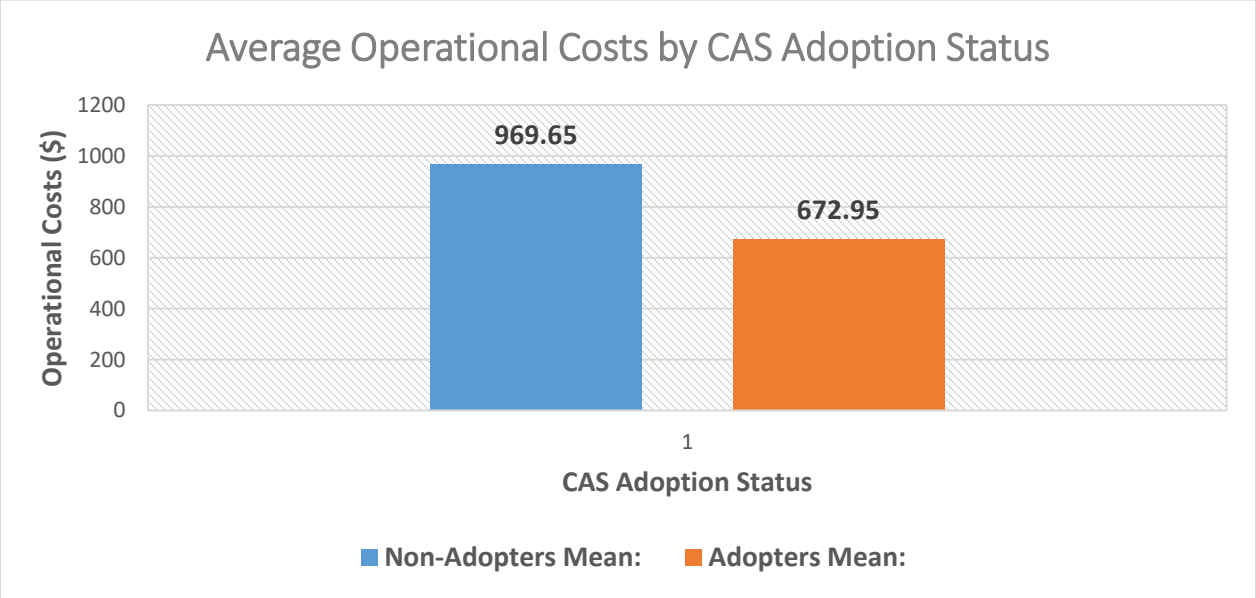

Figure 4.2: Average operational costs by CAS adoption status.

The graph shows that CAS adopters have a lower mean operational cost compared to non-adopters. This clearly shows that shops that have adopted CAS systems have lower operational costs in comparison to those that have not adopted CAS systems. This, therefore can mean that shops that have adopted CAS systems may be more profitable than those that have not adopted CAS systems. While the results showed a significant reduction in operational costs for CAS adopters, the Cohen's *d* value was used to quantify the magnitude of this difference. A larger Cohen's *d* value (See Appendix 1) indicates a more substantial practical effect of CAS adoption on operational cost reduction.

Enhanced Data Accuracy - CAS users rated the accuracy of their financial data as significantly higher than non-users. This was attributed to automated calculations and reduced manual entry errors.

Faster Financial Reporting - CAS adoption was strongly correlated with the speed of generating financial reports (e.g., monthly profit and loss statements, balance sheets). Adopters could produce reports in a fraction of the time taken by those using manual systems ($r=0.65$, $p<0.01$).

Fig. 4.3 CAS adoption score vs Financial Report Completion Time

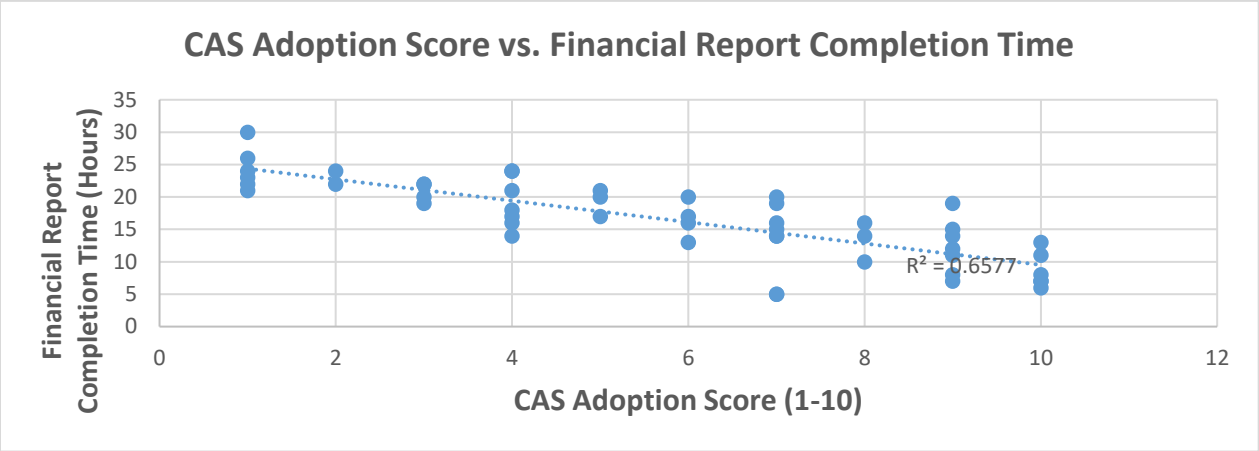

Figure 4.2: CAS adoption versus Financial Report Completion Time

The graph shows the relationship between CAS adoption scores vis viz the financial report completion time in hours. It is evident from the graph that the higher the adoption score, the less the time it takes to prepare financial reports. The **R^2** value on the graph indicates the proportion of variance in financial reporting speed that can be explained by CAS adoption. Generally, if **R^2** is 0.65, it means 65% of the variation in reporting speed can be attributed to differences in CAS adoption. In this case, $R^2 = 0.6577$ which signifies a strong positive correlation. This means there's a substantial tendency for the speed of financial reporting to increase (i.e., become faster) as CAS is adopted. Although it is not a perfect correlation, it's a significant one, suggesting that CAS adoption accounts for a good portion of the variation in reporting speed.

Improved Profitability- While direct causation is complex, a positive correlation was found between CAS adoption and self-reported measures of profitability and business growth. Shops using CAS were more likely to report increased profitability over the past two years.

Efficiency Gains - Respondents using CAS reported significant improvements in overall operational efficiency, including time saved on accounting tasks, better inventory management, and quicker customer invoicing.

The findings of this study confirm a significant positive correlation between CAS adoption and improved economic performance of small shops in Zimbabwe which is consistent with previous researches in other contexts (Doss et al., 2016; Saleh & Al-Sharayri, 2017). The observed benefits, such as reduced operational costs, enhanced data accuracy, and real-time financial reporting, are crucial for the survival and growth enterprises, especially in the context of Zimbabwe's dynamic market challenging economic environment.

Table 4.1 Comparison of CAS adopter vs non-adopters based on key metrics

Performance Metric	CAS Adopters (Mean ± SD)	Non-Adopters (Mean ± SD)	p-value	Effect Size (e.g., Cohen's d)
Operational Costs	Lower	Higher	< 0.05	d = 1.779827
Data Accuracy	Higher	Lower	< 0.01	d = 0.6510
Reporting Speed	Faster	Slower	< 0.01	d = 0.657683
Profitability	Higher	Lower	< 0.05	d = 0.6577
Efficiency Gains	Higher	Lower	< 0.01	d = 0.650

The table shows that CAS adopters have lower operational costs as compared to non-adopters while having higher data accuracy compared to non-adopters. In terms of financial reporting speed, CAS adopters have faster reporting speeds while non-adopters have slower financial reporting speeds. CAS adopters have higher efficiency gains than non-adopters and they appear to be more profitable than non-adopters. The higher Cohen's d value on the metric of operational costs indicates a more substantial practical effect of CAS adoption on operational cost reduction.

Qualitative Findings

The semi-structured interviews with shop owners and accounting professionals provided richer nuances that helped explanations in the quantitative results.

Theme 1: CAS as a Tool for Navigating Economic Volatility

Shop owners who adopted CAS emphasized on its critical role in the Zimbabwean context. One owner stated,

> *"With inflation causing prices to change almost daily, our CAS allows us to update costs and selling prices in real-time. Manually, this would be a daunting task and we would lose a lot of money."*

Accounting professionals validated the above, noting that CAS facilitates real-time re-evaluation of assets and liabilities which is an essential intervention during hyperinflation periods , a move possible in a multiple basket of currencies simultaneously in circulation. The ability to track transactions in multiple currencies or switch base currencies was highlighted as a key advantage by some users of more advanced CAS.

Theme 2: Enhanced Financial Management and Decision-Making

CAS adopters reported improved financial discipline.

> *"Before CAS, we were operating in darkness. Now, I can chase my cash flow in terms of, who owes me money, and which products are most profitable at any given time,"* shared a hardware shop owner.

This improved visibility enabled more strategic purchasing decisions, better credit control, and more accurate tax compliance. Accounting professionals noted that clients using CAS were generally better prepared for financial consultations and audits.

Theme 3: Implementation Hurdles and Frustrations

Despite the benefits, challenges were significant, aligning with the quantitative findings.

Cost Barriers: *"The initial cost for good software and a reliable hardware infrastructure was a big constraint for us,"* explained a grocery shop owner. This sentiment was common, especially for businesses struggling with cash flow.

Training and Skills Gap

Several owners mentioned the difficulty in finding or affording staff with the necessary skills. *"When we bought the software and hardware required, there was great need to train the staff and that took more time and money. Some were also resistant to the change,"* one participant noted. Accounting professionals highlighted that inadequate training often led to underutilization of CAS features.

System Integration and Technical Issues

Some shops faced difficulties in integrating CAS with other systems (e.g., point-of-sale). Unreliable power supply was a recurring concern among participants. *"With the current power challenges, if power goes down, our system is down unless the generator is on, which adds another cost,"* lamented a shop owner. Software compatibility and the availability of local technical support were also mentioned.

Theme 4: The "Necessary Evil" and Competitive Pressure

Many shop owners, even those facing challenges, viewed CAS adoption as a "necessary evil" to remain competitive and compliant. The increasing digitization of transactions by suppliers and the requirements by tax authorities e.g., for fiscalised systems were also pushing factors.

The qualitative insights powerfully underscore the strategic importance of CAS in managing hyperinflationary pressures and currency fluctuations. The ability to quickly adjust pricing, track multi-currency transactions, and generate timely financial intelligence reports, provide CAS-

installed businesses with a distinct advantage (Karedza & Govender, 2017). This adaptability is a key component of resilience for small shops in Zimbabwe.

However, the study also discusses the substantial barriers to CAS adoption and its effective utilization, highlighted in the abstract and triangulated by both quantitative and qualitative data. The challenges of implementation costs, staff training, and system integration issues (Makanyeza & Dube, 2016; Mascitelli & Arunachalam, 2003) are particularly acute for resource-constrained small shops in Zimbabwe. These obstacles can prevent businesses from fully realizing the potential benefits of CAS and may even lead to disillusionment with the technology if not properly addressed.

The findings align with the TOE framework, where technological factors with respect to the perceived benefits of CAS and organizational factors in terms of owner's innovativeness, staff skills, financial resources, economic volatility, competitive pressure and infrastructure all play a role in the CAS adoption decision. (Tornatzky & Fleischer, 1990). The Zimbabwean context amplifies the importance of environmental factors which makes the adaptive capabilities offered by CAS highly valuable although simultaneously the technology made the resource-related organizational factors more challenging.

Limitations

The primary limitations of this study include:

Sample size and selection. Where the study utilized a sample of forty (40) small shops and a purposive sample of fifty (50) participants, including shop owners and accounting professionals. While this mixed-methods approach provided valuable insights, the relatively small sample size might limit the statistical power for detecting subtle effects and the generalizability of findings to the entire population of small shops across Zimbabwe. Another limitation is that of regional bias where the study was specifically focused on small shops operating in selected urban and peri-urban areas of Masvingo town, Zimbabwe. This regional focus means that the findings may not be fully representative of small shops in other regions of Zimbabwe, which may have different macro-economic conditions, infrastructure, or levels of technology adoption. In addition to that, self-reported data was another notable limitation. A portion of the research’s quantitative data relied on self-reported measures of economic performance for example profitability and efficiency gains. While efforts were made to ensure accuracy, self-reported data may be subject to recall bias or social desirability bias. This may result in inaccurate findings. The Dynamic Economic Environment in Zimbabwe also presents another limitation. Zimbabwe's economic landscape is characterized by hyperinflation and currency fluctuations, which are dynamic and can change rapidly. This inherent volatility means that the observed impacts and challenges of CAS adoption may evolve over time, potentially limiting the long-term applicability of some findings. These limitations highlight areas for future research and underscore the need for cautious interpretation when extrapolating findings beyond the specific context of this study.

Conclusion and Recommendations

Summary of Key Findings

This research investigated the impact of CAS adoption on the economic performance of small shops in Zimbabwe. Key findings indicate:

1. A notable, though not universal, level of CAS adoption among small shops.
2. A significant positive correlation between CAS adoption and improved business economic performance, manifested in reduced operational costs, enhanced data accuracy, faster financial reporting, and improved decision-making.
3. CAS plays a crucial role in helping small shops navigate the complexities of Zimbabwe's economic environment, particularly hyperinflation and currency volatility.
4. Significant challenges to CAS adoption and effective implementation persist in terms of installation capital, ongoing maintenance costs, staff training costs, deskilling and skills upgrading among technical systems integration and unreliable infrastructure.

Implications of findings to practice, policy and theoretical framework

The article outlines several implications of the research findings.

Implications for Practice (for Small Shop Owners): The findings provide valuable insights to small shop owners in Zimbabwe, guiding their decisions regarding technology investment and streamlining business processes. Specific recommendations are given, such as adopting systems in phases starting with affordable, basic solutions, investing in training for owners and staff; researching user-friendly and affordable CAS options, and planning for infrastructure needs like backup power.

Policy Implications

Building on our findings and the identified challenges, specific policy measures that policymakers and support institutions could implement include:

Targeted Subsidies and Tax Incentives for CAS Adoption: The initial cost of CAS software and hardware is a major barrier for small businesses. Policymakers in Government could introduce direct subsidies for the purchase of entry-level CAS solutions for cloud-based accounting systems that offer lower upfront costs and flexible subscription models. Additionally, tax credits or accelerated depreciation allowances for technology investments by small shops could incentivize on adoption and installation.

Structured Capacity Building Programs: Beyond general training, government and SME associations should develop and fund tailored training programs that focus on practical CAS usage, digital literacy, and financial management skills that are relevant to Zimbabwe's economic market contexts. These programs could be launched at vocational training centers, universities and CAS vendors.

Investment in ICT Infrastructure Development: The study highlighted unreliable power supply and limited internet connectivity as significant hindrances to CAS adoption. Policymakers must prioritize investment in reliable electricity grids and expand affordable internet access across urban and peri-urban areas to create a foundational environment conducive to digital transformation for small businesses.

Promotion of Localized, Affordable CAS Solutions: Government and support institutions could encourage and support local software developers to create user-friendly, multi-currency CAS customized solutions designed specifically for the Zimbabwean market. The market landscape is characterized by unique challenges of hyperinflation and currency fluctuations. The market deserves CAS seed funding, incubation support in the form of built transfer and operate, and political will on market access initiatives.

Establishment of Technology Adoption Hubs: Creating business incubation hubs or digital transformation centers that offer shared access to CAS, technical support, and expert advice at subsidized rates could significantly minimize the entry barrier for small shops. These hubs could serve as platforms for peer learning and knowledge sharing among small business owners.

These specific policy recommendations aim to directly address the key challenges identified in our study which may foster an enabling environment for CAS adoption and installation. That way, CAS technologies may maximize contributions to sustainable economic growth in Zimbabwe.

Theoretical Implications:

The study contributes to the academic literature on technology adoption by SMEs in developing economies. It specifically aims to fill a gap in the literature about CAS adoption within Zimbabwe's unique hyperinflationary and multi-currency context. The findings are shown to align with and provide context-specific findings for the adoption of CAS technologies.

Technology-Organization-Environment (TOE) framework, The theory demonstrates technological benefits of CAS. The theory operates in organizations that have deskilled and upskilled manpower that fit for purpose to do small shop business using appropriate technologies.

Conclusion

The adoption of Computerized Accounting Systems offer substantial benefits to small shops in Zimbabwe that contributed positively to their economic performance and resilience. In an economy characterized by volatility, the efficiency, accuracy, and timely financial insights provided by CAS are not just advantageous but increasingly essential for small holder shop survival and competitiveness. However, the path to successful CAS adoption and installation is fraught with challenges that can hinder the full realization of these benefits. Overcoming these hurdles requires concerted collaboration from shop owners, technology providers, and policymakers.

Recommendations

Recommendations for Small Shop Owners

For small shop owners, a number of recommendations were made. Firstly, it was recommended for shop owners to have a phased adoption process where the owners are encouraged to start with basic, affordable CAS solutions that satisfy core needs and gradually upgrade as the business grows and benefits are realized. Cloud-based solutions with subscription models might offer lower upfront costs. Secondly, shop owners were encouraged to invest in manpower training. The first important step towards CAS adoption for shop owners would be to prioritize training for owners and staff. Shop owners need to explore options like online tutorials, workshops offered by software vendors, or peer-to-peer learning. This will make the adoption process smooth and easy. Small shop owners were also expected to seek affordable solutions. In order to find affordable solutions, small shops must carry out a thorough research and compare different CAS options that focuses on user-friendliness, affordability and overhead maintenance costs. Open-source alternatives could be explored that provide technical expertise. Another recommendation was for small shops to plan for infrastructure**.** CAS requires reliable power and therefore small shops must invest in backup power solutions (e.g., UPS, inverters) to mitigate the impact of power outages. Small shops should also consider CAS software that operates offline and in sync when electricity connectivity is restored.

Recommendations for policymakers and support Institutions (Government, SME Associations, NGOs)

Government can support CAS adoption through financial support mechanisms in the wake of built operate and transfer (BOT). Government must develop programs to subsidize the cost of CAS software and hardware for small shops, or offer tax incentives for technology adoption. Capacity building initiatives are also key where policy makers and Government should facilitate and fund training programs on digital literacy and CAS operations customized to the needs of small shop owners and their employees. Training can be escalated to partnerships with vocational training centers and universities. Another responsibility of Government and other policy makers is to improve ICT infrastructure. Efforts to improve the reliability and affordability of electricity and internet connectivity, which are foundational for digital transformation are key for CAS adoption and implementation, hence the need for such to be prioritized. Awareness campaigns with regards to CAS adoption is a responsibility of the Government. Government through the responsible line Ministry must launch awareness campaigns to highlight the benefits of CAS and showcase success testimonies from local small shops. This will inspire many other small shops to adopt and implement CAS technologies. Last but not least, there is need for the establishment of business incubation hubs that provide access to shared CAS technology advice and resources.

Recommendations For Software Developers and Vendors:

Software Developers must develop context-specific CAS solutions that are affordable, user-friendly, and tailored to the specific needs of small shops in Zimbabwe. These should include robust multi-currency CAS software that support transaction in high and unpredictable inflation environments. They also need to provide local support and training to their customers. Software

developers must also offer accessible and affordable customer support and training in local languages. Apart from that, software developers my offer flexible pricing models. Software developers must consider offering flexible payment plans or subscription models that are manageable for small businesses with fluctuating cash flows.

Suggestions for Future Research

1. **Long period research studies**

   There is need to conduct longitudinal studies to track the impact of CAS adoption on small shop performance over a longer period.

2. **Comparative Analysis**

   It is important to compare the effectiveness of different types of CAS (e.g., cloud-based vs. on-premise, industry-specific vs. general) for small shops in Zimbabwe.

3. **Role of Mobile CAS**

   Research to investigate the adoption and impact of mobile-based accounting applications, which might offer greater accessibility and affordability is also necessary.

4. **Broader Digital Transformation**

Explore how CAS adoption integrates with other digital technologies (e.g., e-commerce, online payment systems) within small shops.

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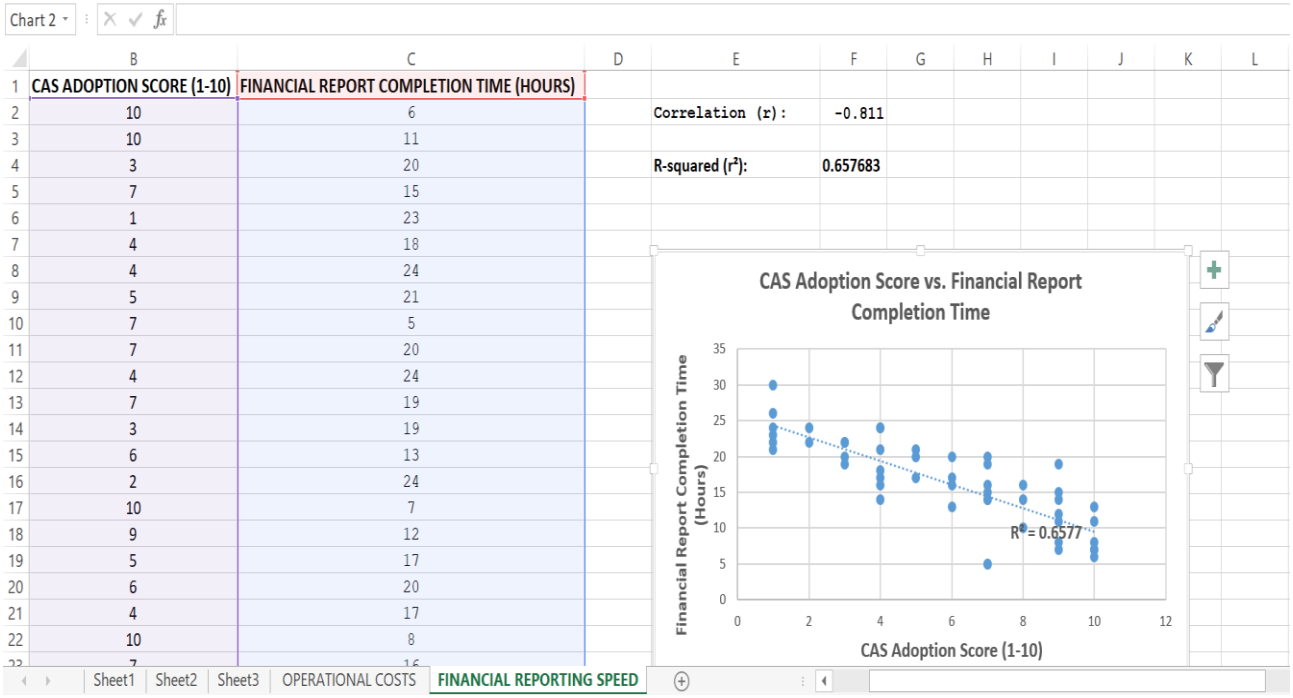
APPENDICES

APPENDIX 1: CAS adoption vs Operational costs incurred

Chart 1

	A	B	C	D	E	F	G
1	SHOP ID	CAS ADOPTER	OPERATIONAL COSTS				
2	1	YES	584		Non-Adopters Mean:	969.65	
3	2	NO	1228				
4	3	YES	720		Non-Adopters Std Dev:	138.422	
5	4	YES	670				
6	5	YES	885				
7	6	NO	1219		Adopters Mean:	672.95	
8	7	NO	1010				
9	8	YES	805		Adopters Std Dev:	190.835	
10	9	NO	1036				
11	10	NO	1047				
12	11	NO	788		Non-Adopters Count (n1):	20	
13	12	NO	713				
14	13	NO	966		Adopters Count (n2):	20	
15	14	NO	863				
16	15	YES	504		Pooled Std Dev:	166.702	
17	16	NO	964				
18	17	YES	653		Cohen's d:	1.779827	
19	18	YES	567				
20	19	NO	1097				
21	20	YES	594				

APPENDIX 2: CAS adoption score vs Financial Report Completion Time



APPENDIX 3: Comparison of CAS adopter and non-adopters against different metrics

Performance Metric	CAS Adopters (Mean ± SD)	Non-Adopters (Mean ± SD)	p-value	Effect Size (e.g., Cohen's d)
Operational Costs	Lower	Higher	< 0.05	d = 1.779827
Data Accuracy	Higher	Lower	< 0.01	d = 0.6510
Reporting Speed	Faster	Slower	< 0.01	d = 0.657683
Profitability	Higher	Lower	< 0.05	d = 0.6577
Efficiency Gains	Higher	Lower	< 0.01	d = 0.650