

# Chapter 1

# A Cloud Computing Framework for Optimizing Performance in E-Commerce Operations in Zimbabwe

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## **ABSTRACT**

*This chapter explores the implementation of a cloud computing framework to optimize performance in e-commerce operations in Zimbabwe. The rapid growth of e-commerce in the country has created a need for scalable, reliable, and efficient solutions to meet the demands of online shoppers. By leveraging cloud infrastructure, content delivery networks, auto-scaling capabilities, data analytics tools, security measures, and mobile optimization, e-commerce businesses can enhance user experience, improve website performance, and drive growth in their online operations. The study holds potential for various stakeholders, including e-commerce businesses in Zimbabwe, policymakers, and technology providers. Acknowledging that only a few businesses*

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*have implemented cloud technologies, the chapter reveals a substantial resource gap in technical, financial, and infrastructure requirements, hindering widespread cloud adoption. Additionally, security concerns and a lack of awareness contribute to the low adoption rate. The study makes use of existing literature.*

## **1. INTRODUCTION**

The increasing use of information and communication technology in business has led to the growth of e-commerce, which now serves as the main platform for transactions. Morepje et al. (2024) reported a surge in e-commerce activities in Zimbabwe, leading to increased sales volumes and intensified competition among businesses to attract a larger customer base and achieve higher financial revenues. However, this rapid expansion has also brought challenges, including downtime due to traffic fluctuations, increased data storage demands and heightened security concerns related to the growing number of transactions. In addressing these challenges faced by e-commerce businesses in Zimbabwean, this research advocates migrating to cloud computing solutions. The cloud infrastructure allows businesses to handle fluctuating website traffic, and offers scalable data storage solutions, enabling businesses to accommodate the mounting volumes of customer information securely and efficiently (Obi et al., 2024). This chapter includes the study's background, problem statement, research questions to be answered, study objectives, assumptions, delimitations, and dissertation structure. For e-commerce businesses, the practical implication is that they can derive actionable strategies for embracing cloud technologies, overcoming the challenges associated with scalability, traffic fluctuations, data management and ultimately enhancing their operational performance. Policymakers in Zimbabwe can also gain insights from this study, as it provides valuable information on how cloud computing can support local businesses in overcoming technical barriers and thriving in the digital economy.

The Zimbabwean e-commerce businesses face challenges that hinder their growth (Maumbe & Chikoko, 2022; Morepje et al., 2024; Tsokota et al., 2022). These challenges include difficulty in scaling infrastructure to meet rising demand, leading to downtime, revenue loss and customer dissatisfaction. Operating on-premises has proven costly, with frequent upgrades imposing a significant financial burden and leaving data vulnerable. Potential benefits of adopting cloud computing include amplified scalability, resilience to traffic fluctuations, efficient data management, streamlined operations, cost-effectiveness and enhanced customer experiences. This study employs the use of existing literature mixed-methodology approach to explore the factors influencing adoption and the overall readiness of e-commerce businesses for cloud technology. Key findings reveal prevalent performance issues

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