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Enhancing Performance of Zimbabwean Service-based Firms through Digital Transformation and Sustainable Competitive Advantage: A Structural Equation Analysis

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Abstract

This research has examined the impact of digital transformation on the sustainable competitive advantage and performance of service-based firms in Harare, Zimbabwe's central commercial hub. Grounded in the resource-based view (RBV) and dynamic capabilities (DCT) theoretical base, the study used structural equation modelling (SEM-AMOS) and a cross-sectional design to assess the relationship between information communication technologies (ICT) digital resources/capabilities and sustainable competitive advantage in the established service sector. Survey instruments were distributed to 800 service-based managers, with 782 responses received. The findings underscore the critical role of financial, operational, and digital resources in supporting core business capabilities and driving company success. The research demonstrates how digital transformation support for vital organizational competencies can enhance value creation and firm performance. An essential contribution is that sustainable competitive advantage agility mediates the link between digital transformation and firm performance. This highlights the pivotal influence of 'dynamic managerial capabilities', a term we define as the ability of managers to adapt and innovate in response to changing market conditions and technological advancements, as managers must strategically implement digital initiatives to gain a long-term competitive edge. Overall, the study provides valuable practical insights into the significance of digital transformation for achieving sustainable competitive advantage in service-based firms. The results emphasize the need for managers to thoughtfully adopt intelligent digital tools and make decisions that leverage the firm's digital resources and capabilities. This research significantly advances academic understanding of the digital transformation-competitive advantage-performance relationship in the context of Zimbabwe, with important implications for theory and practice.

Keywords: Digital transformation, information communication technology, service-based firms, competitive advantage, resource-based view (RBV), dynamic capabilities theory (DCT)

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1. Introduction and Background

African countries, including Zimbabwe, have reaped significant transformative benefits from adopting and implementing information communication technologies (ICT). Kabanda's (2014) research underscores this, showing how advancements in ICT's digital transformative roles have led to substantial performance improvements across various industries in Southern African countries, particularly for SMEs in the service sector. The potential of integrating cutting-edge technologies like robotics, mechatronics, and diagnostic sensors in Zimbabwe's service sector is vast. However, the literature is lacking, particularly on integrating digital transformation with firm performance in Zimbabwe's Harare service-based economic industry. This gap presents an exciting opportunity for further research and development, potentially significantly impacting Zimbabwe's economy. This research study could inspire a new digital transformation (DT) era in Zimbabwe's service sector, enhancing performance and economic growth.

Digital transformation (DT) refers to integrating digital intelligent technologies into all business areas, fundamentally changing how the organisation operates and delivering value to customers (Matt et al., 2015; Verhoef et al., 2021). It involves strategically using digital technologies to improve business performance, enhance customer experience, and drive organisational change (Henriette et al., 2016). The successful implementation of digital transformation has positively impacted firm performance and led to remarkable success stories, including increased efficiency, productivity, and competitiveness (Westerman et al., 2014; Fitzgerald et al., 2013). These success stories are not just examples but beacons of inspiration and motivation for us to delve deeper into the potential of digital transformation in Zimbabwe's service sector. They demonstrate that digital transformation can significantly improve firm performance and overall economic growth with the right strategies and investments.

Understanding the importance of integrating business with ICT continues to be a hurdle in developing nations like Zimbabwe. According to a recent survey by the Zimbabwean ICT Authority, only 30% of service-based companies in the country have fully integrated digitalisation aspects into their operations, significantly lower than the global average of 60%. Existing research highlights numerous advantages of using information and communication technology to support critical skills. For instance, Ongori and Migiro (2010) and Bayraktaroglu et al. (2019) have extensively researched and highlighted the advantages of incorporating digital intelligence tools to support core competencies in business operations, such as providing valuable intelligence, facilitating access to crucial accountability and control measures, enabling efficient operational administration, and offering decision-making information for managing firm growth. Park and Tan (2016) concur that using intelligent digital technologies to support core competencies can positively impact firm performance, providing tangible examples of the potential benefits of digital resources integration.

Integrating Digital Transformation (DT) with business activities can address organisational challenges and enhance

competitive advantage and performance (Mataruka et al., 2023; Dzindikwa & Kabanda, 2022; Ngendakumana & Mutimudye, 2019). The possession of knowledge, rather than non-current assets or capital resources, is essential for a company to maintain a competitive edge (Taouab & Issor, 2019; Feng et al., 2019; McDowell et al., 2018; Hafeez et al., 2018). This problem has led to this study to provide valuable insights that these firms can utilise to enhance their performance through the integration of digital transformation.

The primary research question for this study is: How does digital transformation impact firm performance in the service sector of Zimbabwe's Harare-based firms? This question addresses the gap in the current literature, which lacks a clear understanding of the relationship between digital transformation and firm performance in the Zimbabwean context.

Sub-questions:

- RQ1: What is the relationship between sustainable competitive advantage and firm performance in the service sector of Zimbabwe?
- RQ2: What is the relationship between digital transformation and sustainable competitive advantage in Zimbabwe's service sector?
- RQ3: Does sustainable competitive advantage mediate the relationship between digital transformation and firm performance in Zimbabwe's service sector?
- RQ4: What are the key factors that enable or hinder the integration of digital transformation in Zimbabwe's service sector?
- RQ5: What strategies can service-based firms in Zimbabwe adopt to integrate digital transformation and enhance their performance effectively?

With its vast skilled labour pool, Zimbabwe is uniquely positioned to leverage intelligent digital technologies for service exports. The service industry, a key driver of Zimbabwe's GDP, is instrumental in the country's economic growth. By drawing inspiration from the successful strategies of Cuba and India in exporting medical personnel and support services, Zimbabwe can chart a course towards economic success. Developed nations have long recognised the significance of a robust service industry in their economic growth. As a developing nation, Zimbabwe can enhance its service industry by leveraging digitalisation progress to attract tourism, banking, and education investments, contributing significantly to its overall economic growth.

Based on data from Statista in 2023, the service-based industry in Zimbabwe is the most significant contributor to the country's GDP, accounting for 57%. The service industry primarily offers intangible services rather than tangible goods and commodities, and its growth has been propelled by the enhanced mechanisation in the primary sector and the digitalisation of global economies. This emphasises the need for Zimbabwe's economy to redirect its attention from agriculture to the service sector, which currently contributes the most significant portion of the GDP. Like the agricultural sector, this transition

necessitates immediate and proactive measures, policies, and frameworks to bolster the initiative. This shift would benefit Zimbabwe as the service sector has the potential to generate a higher revenue than other industries. The agriculture and industry sectors should prioritise adopting innovative technologies to allocate resources for the development of the service sector.

Policymakers and business leaders have a crucial role in driving this transition. They must create a digital transformation (DT) enabling environment for ICT adoption, including policies promoting digital literacy, investment in digital infrastructure, and support for modernising startups through ICT adoption. By doing so, they can help unlock the service sector's full potential and drive economic growth in Zimbabwe by integrating digital transformation for better business performance. Their active participation in this research study can provide valuable insights and contribute to successfully integrating digital transformation in the service sector.

2. Theoretical and Conceptual Frameworks

To perform well in volatile market conditions, service-based companies seek ways to gain a competitive advantage in the current ruthless business environment. To achieve this competitive advantage, the company must quickly adapt its product price, quality, cost, and technological capability to unanticipated market changes. Utilising technical resources to enhance service-based operations and market-based capabilities is essential to the firm's effectiveness. The resource-based view (RBV) and dynamic capability theory (DCT) are the two organisational resource and capability theories employed in this study to explain competitive advantage and performance. RBV is concerned with businesses possessing resources that enable them to gain a competitive edge and superior long-term performance. Developing scarce and valuable resources can result in a competitive advantage (Barney, 1991). To maintain a competitive advantage over time, a company must avoid imitation, transfer, or substitution of its resources, which, according to the RBV, are a source of competitive advantage. In earlier information systems (IS) literature, RBV was frequently used to explain how information technology supported the firm's competencies to improve organisational skills and performance. In general, theory-based empirical studies have supported the resource-based perspective. Chaudhuri et al. (2022) posit that the physical resources used in organisational strategy to increase capacity are the digital capabilities of information technology. Digital technology enhances service delivery capabilities, directly impacting business operations by reducing operational costs, improving product quality, creating new products, expanding market share, and ensuring customer satisfaction (Ehie & Ferreira, 2019).

The RBV suffered increased criticism in the early 1990s for being static and ignoring market dynamism due to the rapidly changing business environment (Eisenhardt & Martin, 2000; Theriou et al., 2009; Priem & Butler, 2001). The emergence of dynamic capabilities such as resource and capability development has strengthened RBV (Zahra & George, 2002; Eisenhardt & Martin, 2000). Dynamic capability is the capacity to modify, reorganise, renew, and enhance one's resources and abilities to manage internal

and external factors in a changing environment (Barney, 1991; Teece et al., 1997; Li, 2022). The evolution of RBV also highlights how internal resources and capabilities contribute to the development of dynamic capabilities and the factors that comprise them, resulting in cost efficiencies related to competitive pricing and increased profit margins (Girod & Whittington, 2017). The company's competitive advantage enables it to achieve organisational performance by rapidly adapting its internal resources and capabilities to external challenges and opportunities (Banerjee et al., 2018).

On the one hand, DCT contends that a company's resource utilisation must be responsive to environmental changes by continuously improving and modifying its activities (Bozic & Dimovski, 2019; Ambrosini & Altintas, 2019; Helfat & Martin, 2015; [16] Eisenhardt & Martin, 2000; Teece et al., 1997). By adopting ICT and recognising the central role of information systems (IS) as a resource and capability, businesses can strengthen their position to boost productivity. Organisations' capabilities and resources evolve as they learn and adapt to change. Despite the internal RBV orientation, the capabilities perspective has remained a process-based and non-event-based static approach (Adeniran & Johnston, 2016). Moreover, Ambrosini et al. (2000) assert that the DCT has emerged in the current dynamic environment to address the problematic issues of long-term competitive advantage. Decision-makers generate value from generic input in a specific and path-dependent manner to adapt to changing internal and external contexts. The dynamic capabilities thought stream is a firm-specific inside-outside process that focuses on intra-organizational factors such as resources, competencies, and capabilities as internal sources of competitive advantage (Ambrosini & Altintas, 2019; Mikalef & Pateli, 2018). As such, firms must aim at operational agility to gain the capacity to increase efficiency within the value chain network for rapid response to potential suppliers and customers in a changing environment (Chen, 2019). In addition, supplier and customer service flexibility is a technique that enhances the ability of internal and external entities to rapidly develop alternatives and improved mechanisms in response to unpredictable market conditions (Shekarian et al., 2020).

Current studies on IS indicate that researchers increasingly consider digital technology capability as an organisational resource. Digitalisation aids the development of higher-order capabilities such as agility in exploiting market opportunities, neutralising competitive threats, and reducing cost flexibility concerning operational and strategic market-access capabilities. The digital capability allows end-to-end value chain networking to aid collaboration and sharing of information in time for decision-making, which increases the chain's dependability and productivity. According to this study, using digital technology in service-based delivery operations will assist companies in developing their capacity to sustain competitive advantage, thereby enhancing their performance. Thus, a combination of RBV and DCT explains the variables related to digital orientation, such as ICT-enabler resources and capabilities, competitive advantage, and firm performance (Mataruka, 2022). The literature supports these three ideas, as evidenced by the discussion of improving organisational effectiveness in the

following section. This study examined the utilisation of digital transformation in Zimbabwe's service-based sector.

2.1 Digitalization in Support for Service-Business Core Competencies

Secondly, digital transformation (DT) core competencies are a unique blend of resources and capabilities that a firm develops over time and continually renews through managerial decision-making. These core competencies are hinged on a company's ability to integrate tangible and intangible resources, including organisational, financial, technological, physical, and human resources. Teece et al. (2016) propose that these fundamental skills serve as the bedrock upon which a company can build and execute value-added strategies, leading to reasonable returns and strategic competitiveness. Resources serve as the inputs to a company's service provision process, and their transformation is contingent on the firm's capabilities. If the resources are distinct, valuable, and firm-specific, the firm is more likely to possess a unique core competency set. Competencies are born from a company's capacity to pool its resources into a unified whole, enabling more practical, cost-effective, and efficient use to gain a competitive edge (Barney & Hesterly, 2019). Hence, digital-enabled core competencies follow a similar organic trajectory, relying on managerial insight for business strategy, model, and transformation alignment.

ICT resources and capabilities play a significant role in a company's proficiency. Deploying digital tools to manage information and adapting to the environment is crucial for growth. Businesses with enhanced performance typically possess functional structures, including digital transformation-enabled tools (DT), products, and services. These tools encompass software, hardware, ICT personnel, and internal and external digital (DT) infrastructure access. The study uses DT competencies as independent variables to explain firm performance. The study argues that private and public businesses can improve their long-term performance using ICT support core competencies. The predictors of performance in ICT support core competencies are functionality (FUN), integrity (INT), and market access (ACC), as identified in existing literature (Mataruka et al., 2023; Gupta et al., 2018; Ravichandran & Lertwongsatien, 2005).

2.2 Digital Transformation and Firm Performance

First, firm performance (FP) measures how a company outperforms its competitors regarding profitability, productivity, operating efficiency, and financial performance. Operational performance of the firm (OPF) indicators, such as market share and customer satisfaction, are crucial for understanding a company's competitiveness (Dzindikwa, 2021; Grimsley, 2021; Santos et al., 2019; Lau et al., 2018; Modimogale & Kroeze, 2021). Improving operational performance can enhance customer satisfaction by delivering high-quality products and services on time. Key OPF metrics include flexibility, service delivery cycle time, inventory turns, dependability, and delivery (Grimsley, 2021; Santos et al., 2019; Lau et al., 2018; Modimogale & Kroeze, 2021). Operational costs, such as resource efficiencies and cost reduction, also impact firm performance (Grimsley, 2021). Effective digital transformation-enabled inventory management can save

costs and improve timely product delivery, providing additional benefits.

The market-based performance of the firm (MPF) depends on the external actions a business takes to create value for its stakeholders. Financial performance results from the firm's investment, operating, and finance activities, which must be efficient. Some studies suggest that a company's ability to generate revenue is critical to profitability (Grimsley, 2021; Santos et al., 2019; Lau et al., 2018).

The resource-based view (RBV) explains how businesses achieve and sustain a competitive advantage, leading to improved performance compared to competitors. RBV posits that a company's competitive advantage arises from its unique combination of rare, valuable, and difficult-to-replicate resources (Rumelt, 1984; Wernerfelt, 1984; Gupta et al., 2019). This research underscores the practical implications of RBV, highlighting the importance of resource utilisation in determining an organisation's success. Similarly, this study concurs with Barney (1991) in considering a company's resources as assets, capabilities, processes, qualities, experience, and know-how within a competitive context. However, developing and deploying information and communication technology (ICT) resources and capabilities necessitates dynamic capabilities to effectively integrate, build, and adapt internal and external competencies in response to rapidly changing environments. Thus, in today's digitalisation era, management faces the challenge of meeting the expectations of multiple stakeholders while delivering value. Leveraging information resources and capabilities becomes essential for driving optimal performance in this context.

Organisations embrace ICT advances to increase their effectiveness and efficiency. Efficiency boosts innovation and the company's output by lowering input costs and raising productivity. Competencies related to structure or functioning can enable firms to achieve desired outcomes. Efficiency measures how well firms can achieve their objectives, supported by their selected ICT applications. Nawinna and Venable (2019) suggest that efficacy can be augmented by responding to various pressures facing stakeholders, especially those that drive market-access-related competencies. Integrity-related competencies arise through the innovative approach adopted and further created by the firm's human intellect resources. Market-access competencies are social and relational. As a result, the impact of an information system on an organisation has various business performance perspectives, including managerial, financial, operational, and long-term competitive advantages.

Information management is critical to developing business capabilities like customer, process, and performance management. These capabilities favour customer, financial, human resource, and organisational success metrics. Management should focus on creating the critical conditions for improving ICT infrastructure and information management expertise, as these play a crucial role in developing other capabilities for enhanced business performance.

This research provides a positive outlook, suggesting that while ICT is a valuable resource for modern businesses, the

failure of many ICT-highly invested corporations calls into question whether ICT guarantees success. Swalwell (2012) regards computers as useless due to their pervasiveness. The root cause of the productivity quandary associated with non-productive ICT usage in businesses is a weak relationship between ICT expenditures and financial performance (Liang et al., 2010). These disparities are likely due to differences in service-based business performance at operational and market-based levels. As a result, diverse human resources might be lacking in developing ICT-enabled management competencies to enhance resource complementarities and integrate industry-specific competencies for firm success in service-based organisations. This study posits that digital transformation is supportive of the business core competencies in the areas of structural functionality (FUN), integrity (INT) in terms of its intellectual capital, and market access (ACC) in the form of its social capital (Mataruka, 2023).

The first hypothesis (H₁) stated that Our research posits a solid and positive relationship between Digital Transformation and firm performance, reinforcing the central argument of our study. Further, the sub-hypotheses are:

H_{1.1}: The relationship between Digital Transformation and operating performance is positive and significant.

H_{1.2}: The relationship between Digital Transformation and financial performance is positive and significant.

2.3 Digital transformation and sustainable competitive Advantage

Sustained competitive advantage (CADV) is a critical performance indicator that encompasses a firm's ability to leverage market opportunities, mitigate competitive threats, and drive cost reductions (Mataruka, 2023; Asri, 2021; Soebroto & Budiyanto, 2021; Ambrosini & Altintas, 2019). As prior research highlighted, CADV is the foundation for various competitive performance outcomes (Charles & Ochieng, 2023; Porter & Millar, 1985; Ghamari, 2008). Businesses can gain a competitive edge by focusing on their core competencies to increase sales and profitability, often achieved through innovative product and service development (Ford, 2020; Ravichandran et al., 2005).

Digital transformation can serve as a strategic lever for enhancing managerial expertise and facilitating the development of valuable, scarce, and strategic resources that contribute to long-term CADV and firm performance (Soebroto & Budiyanto, 2021; Chen et al., 2020). This perspective aligns with the Resource-Based View (RBV), emphasising the importance of leveraging critical resources to gain a competitive advantage. Core competencies, which encompass specific knowledge, abilities, or technologies that are difficult for competitors to replicate, provide a company with a sustained competitive advantage (Gupta et al., 2018; Ravichandran et al., 2005; Tippins & Sohi, 2003). Such core expertise enables a company to enter various related markets, further enhancing its CADV (Asri, 2021).

The existing literature has illuminated several ways digital transformation can bolster a firm's sustainable competitive

edge. First, by investing in digital technologies, firms can seize emerging market opportunities by swiftly adapting to evolving customer needs and competitive dynamics (Kohtamäki et al., 2019; Soto-Acosta, 2020). Secondly, innovative digital solutions can fortify a firm's market position by erecting formidable barriers to entry and imitation, shielding them from competitive threats (Hess et al., 2016; Mithas et al., 2013). Lastly, digital transformation initiatives can yield substantial cost savings through process automation, data-driven decision-making, and resource utilisation optimisation, enhancing a firm's sustainable competitive advantage (Mithas et al., 2012; Tse et al., 2018).

However, the empirical evidence on the specific mechanisms and contingencies governing the digital transformation-sustainable competitive advantage relationship remains mixed. While some studies have found a positive relationship, others have reported no significant or even negative relationships, suggesting that the impact of digital transformation on competitive advantage may be context-dependent (Jeffers, 2003; Ravichandran & Lertwongsatien, 2005; Patrakosol & Lee, 2009). This may be due to the complex and context-dependent nature of the phenomenon, as well as the tendency of some research to overlook critical organisational factors that mediate the link between digital capabilities and firm performance.

This study posits that digital transformation supports business core competencies on sustainable competitive advantage in the dimensions of dynamic attributes in the sensing, seizing and exploitation of market opportunities (EMO), neutralisation of competitive threats (NCT), and effectiveness and efficiencies in the reduction of costs (ROC), as highlighted by Mataruka et al. (2023).

To address this gap, the current study proposes the following hypotheses:

H₂: The relationship between digital transformation support for core business functions and sustainable competitive advantage is positive and significant.

H_{2.1}: Exploiting market opportunities (EMO) positively and significantly correlates with digital transformation.

H_{2.2}: Digital transformation and the ability to neutralise competitive threats (NCT) have a positive and significant relationship.

H_{2.3}: Cost reduction (ROC) is positively and significantly related to digital transformation.

This research can offer invaluable insights for policymakers and business leaders keen on harnessing digital technologies to drive long-term competitive success, fostering a more informed and enlightened approach to digital transformations.

2.4 Digital Transformation Capabilities, Sustainable Competitive Advantage and Firm Performance

While several studies have demonstrated that sustainable competitive advantage (CADV) influences firm performance (Mataruka, 2022; Sucuahi & Cambarihan, 2016; Wang et al., 2016; Baker et al., 2017; Kamukama, 2013; Jardon & Martos, 2012), we argue in this study that it is essential for businesses including service-based organisations in today's markets to develop dynamic

managerial skills that provide a competitive edge.

As a result, the final inquiry possibilities are as follows:

Thus, we propose the hypothesis (H3): The relationship between competitive advantage and firm performance is positive.

H_{3.1}: Exploiting market opportunities (EMO) positively and significantly impacts a company's performance.

H_{3.2}: The neutralisation of competitive threats (NCT) positively and substantially affects firm performance.

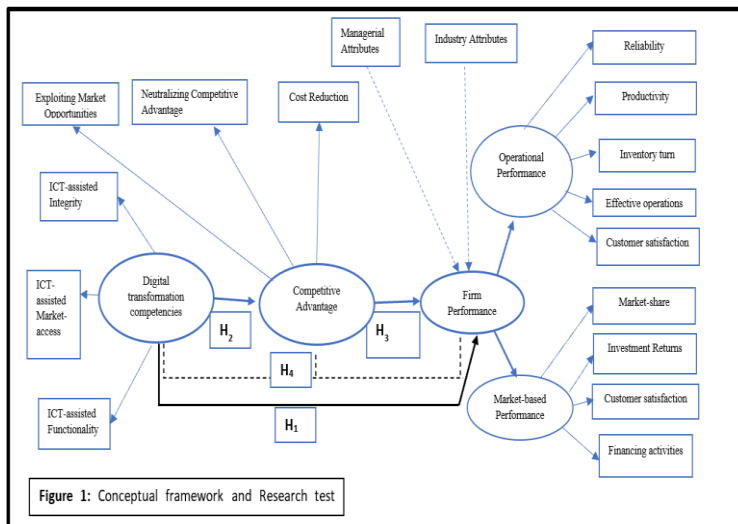
H_{3.3}: Cost-reduction (ROC) strategies positively impact firm performance.

The impact of competitive advantages (CADV) on firm performance is positive.

H_{4.1}: The relationship between Digital Transformation and operating performance is mediated by Competitive advantage.

H_{4.2}: Competitive advantage is mediated by the relationship between Digital Transformation and financial performance.

The researchers suggest using a "combinatory function" of intangibles to gain a competitive advantage, enhance innovation, and improve service delivery. We further argue that these abilities influence chances of success in uncertain future markets acquired inside and outside the organisation. Based on these arguments and the ideas gained from the reviewed literature, we demonstrate these relationships in the conceptual model depicted in Figure 1 below.



3. Methodology

The study used quantitative methodologies and a cross-sectional design to assess the digital transformation through the ICT resources and capabilities proxies of Harare's established service-based industry sector entities. The service-based sector was selected because it accounted for 57% of Zimbabwe's GDP (Statista, 2023). Thus, the study population comprised all service-based business managers in Harare. The service-based sector in Harare was selected because it is vital to supporting service-based industries in Zimbabwe. It was, therefore, considered a good proxy for the general appreciation of management ICT competencies on firm operational performance. Our sample size computation was

at a 95% confidence level and a 5% margin of error. Saunders et al. (2015) contend that social scientists should use these percentages. The sample of 800 respondents was drawn from the study population using a probability-based stratified sampling technique. We employed a questionnaire to collect perception data on three ICT resource constructs: capabilities for managerial competency support, competitive advantage, and firm operational performance. The questionnaire was distributed electronically to 800 service-based managers, and 782 completed the survey instrument, exceeding our response expectations.

3.1 Sample Characteristics

This high response rate allowed us to investigate how the critical abilities of ICT management affect business performance.

Table 1: Study Sample Characteristics

Service Types	Number of Managers
Financial and Insurance	203
Information Communication	163
Health Care	85
Professional services	82
Retail and Wholesale	75
Tourism and Leisure	66
Other	132
<hr/>	
Demographics	Demographic Distribution
Gender	600 (Male), 182 (Female)
Education	315 Postgraduates, 220 Masters, 208 Bachelor holders, 39 Other
Experience	215 (10 years), 228 (5-10 years), 339 (less than five years)
Scope job position	289 (ICT managers), 342 (Senior managers), 146 (Executives)
N=782	

3.2 Measurements

Adopting measurements from various sources is typically done to reduce common-method-variance (CMV) bias. As Chang explained, collecting measurements from different sources is the best way to prevent or mitigate CMV bias. Therefore, measures for independent and dependent variables(s) should be collected from various sources. ICT-enabled management competencies (ICTC) and competitive advantages were the independent variables. The ICTC had three factors with a total of twenty-two items: market access (7 items), integrity/intellectual (9 items), and functionality/structural (6 items). Most elements came from Ray et al. (2005), Asri (2021), Gupta et al. (2018) and Ravichandran and Lertwongsatien (2005). Twenty-four (24) indicators make up CADV and had three predictors: using/taking advantage of market opportunities (EMO, seven items), getting rid of competitors (NCT, nine elements), and cutting costs (ROC, seven indicators) (8 items). The respondents rated all the questions on a 5-point Likert scale.

3.3 Model diagnostic tests

Academics recommend AMOS-SEM as an efficient statistical method for marketing, consumer behavior, and environmental management research. AMOS-SEM is a suitable technique for prediction-oriented modelling (Hair et

al., 2021). AMOS-SEM is particularly applicable when a relatively complex model has a small sample size and nonparametric data (Hair et al., 2021; Janavi et al., 2021). The structural equation model addresses the dimensions of the measurement items outside the test model and the structural inner test model. Different constructs are employed in the exterior model, whereas elements in the internal structural measurement are with items adapted from the prior literature in the conceptual model.

Following the model fitness criteria recommended by Hu and Bentler (1999), the most commonly used fitness indices, namely the Chi-square (χ^2 /pdf), Tucker-Lewis index (TLI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Root Mean Square Error of Approximation were used (RMSEA). The results showed that the four-factor measurement model had excellent fitness, meeting all criteria (χ^2 /df = 1.437, RMSEA = 0.025, NFI = 0.987, TLI = 0.994, and CFI = 0.996).

Table 2: Measurement Model

Measurement model	χ^2 /df	RMSEA	IFI	TLI	CFI
Factor Hypothesised Model	1.437	0.025	0.987	0.994	0.996
Model Fit Criteria	< 3.00	<0.080	>0.90	>0.90	>0.90

N = 346

3.4 Confirmatory factor analysis

Using SPSS version 21 and AMOS version 24, confirmatory factor analysis (CFA) was used to evaluate the validity and reliability of the measurement model results. The reliability statistics, that is, the Cronbach alpha (CA), the Composite Reliability (CR), Average Extracted Variance (AVE), the inter-constructs correlations and the square root of AVEs used to investigate discriminant validity, are shown in Table 2. Instead of Cronbach's alpha, composite reliability (CR) values greater than 0.70 (0.720 ~ 0.944) evaluate the reliability. Cronbach's alpha coefficient, commonly used to examine the reliability of scales, has been criticised for underestimating true reliability (Peterson & Kim, 2013). As a result, structural equation modelling increasingly uses composite reliability (CR) to calculate reliability.

Table 3: Reliability and validity and inter-correlation statistics

	CA	CR	AVE	FUN	ACC	INT	OPF	EMO	ROC	NCT	MPF
FUN	0.784	0.944	0.610	0.781							
ACC	0.819	0.884	0.659	0.708	0.812						
INT	0.708	0.913	0.605	0.716	0.703	0.778					
OPF	0.771	0.720	0.509	-0.013	0.001	0.011	0.713				
EMO	0.753	0.826	0.522	-0.017	-0.013	0.006	0.730	0.722			
ROC	0.811	0.836	0.561	0.038	0.042	0.045	0.008	0.046	0.749		
NCT	0.804	0.942	0.535	0.050	0.074	0.047	0.004	-0.052	0.008	0.732	
MPF	0.722	0.826	0.524	-0.010	-0.046	-0.021	0.073	0.066	-0.022	0.011	0.724

Note that N = 782; diagonal values in bold are the square root of AVE values.

Table 3 supports the reliability because the CA and CR values are above 0.70 and 0.8, respectively. In addition, the AVE values exceed the threshold value of 0.5, and their square roots are above the corresponding correlation coefficient values of other variables, implying discriminant validity. Nunnally and Bernstein (1994) assert that CR values

must be greater than 0.70 for construct reliability. In our study, every value was more significant than 0.70. (see Table 4.4). Hair et al. (1998) recommend the evaluation of construct validity using convergent and discriminant validities. The average variance extracted (AVE) values, which should be greater than 0.50, were used to determine convergent validity (Bagozzi & Yi, 1998). The CFA findings were that all AVE values exceeded the cutoff value 0.50.

3.5 Measurement Model Fitness

The measurement model has three latent variables: Digital Transformation, competitive advantage and market-based firm performance. Anderson and Gerbing (1988) suggested that measurement model fitness precedes moving on to hypothesis testing. CFA for the model's fitness assessment results is in Table 5 below. Following the model fitness criteria recommended by Hu and Bentler (1999), the most commonly used fitness indices, namely the Chi-square (χ^2 /df), Tucker-Lewis index (TLI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Root Mean Square Error of Approximation were used (RMSEA). The results showed that the four-factor measurement model had excellent fitness, meeting all criteria (χ^2 /df = 1.437, RMSEA = 0.25, NFI = 0.987, TLI = 0.994, and CFI = 0.996).

Table 4: SEM's Goodness of Fit Indices

Measurement model	χ^2 /df	RMSEA	NFI	TLI	CFI
Factor Hypothesized Model	1.391	0.022	0.990	0.995	0.997
Model Fit Criteria	< 3.00	<0.080	>0.90	>0.90	>0.90

N = 346

The data fitted well to the measurement items used in the study, as indicated by the goodness of fit indices in Table 3. In the next section, Figure 2 shows the SEM output model.

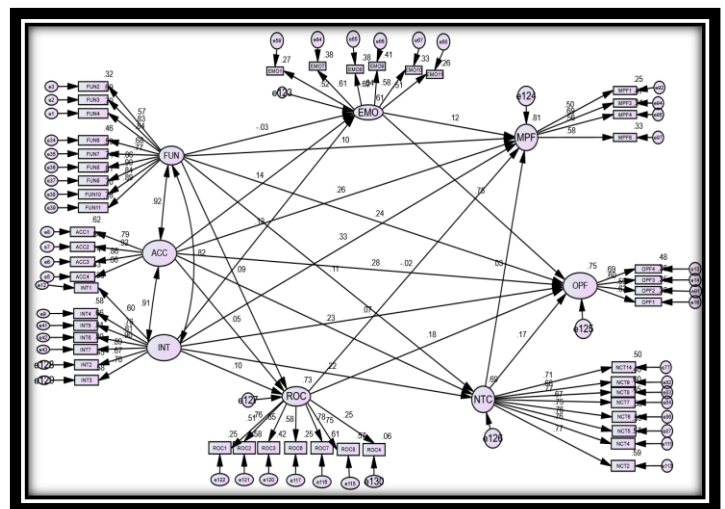


Figure 2: SEM with Coefficients (SPSS-AMOS)

4. Results

The structural equation modelling (SEM) technique tested the study hypotheses for the direct and mediating effects. Three direct relationships and one indirect/mediating relationship were hypothesized in our study. The direct relationships were DT support for the firm's core competencies, which have three explanatory variables: functionality (FUN), integrity, and market access. The firm performance (FP) is the operating performance of

the Firm (OPF) and market-based profitability of the Firm (MPF). First is the relationship between DT and FP. Second, DT and sustainable competitive advantage (CADV). Third, CADV and FP. Fourth, the indirect relationship had CADV mediating between ICT and FP.

4.1 Direct effect hypotheses testing DT →FP

Table 4 shows the direct effect of ICT and FP results, which offer a significant and positive relationship between Digital Transformation and firm performance. For instance, the FUN → OPF path report ($\beta= 0.24$; $p = 0.000$) implies that for every unit change in digital transformation (DT) support for functionality-related competencies, the firm's operating performance will be twenty-four (24 %) per cent. For market-based profitability of the Firm (MPF), results support the hypothesis ($\beta= 0.10$; $p = 0.003$). Because of these significant findings, hypotheses H1 and all the sub-hypotheses are accepted.

Table 5: H1 Digital transformation core competencies support and firm performance

Hypothesis	Relationships	Estimate β	t-value	p-value	Decision
H _{1.1.1}	FUN →OPF	0.24	12.388	0.000	Supported
H _{1.1.2}	FUN→ MPF	0.10	2.956	0.003	Supported
H _{1.2.1}	INT →OPF	0.07	3.276	0.001	Supported
H _{1.2.2}	INT→ MPF	0.33	2.739	0.006	supported
H _{1.3.1}	ACC →OPF	0.26	3.145	0.002	supported
H _{1.3.2}	ACC→ MPF	0.28	4.586	0.001	supported

*** $p < 0.001$; N = 782.

4.2 Direct effect hypotheses testing ICT →CADV

Table 6 reports the direct results of Digital Transformation and competitive advantage. Competitive advantage has three predictors: exploiting market opportunities (EMO), neutralizing competitive threats (NCT), and reducing costs (ROC). For instance, FUN-ROC ($\beta=0.09$; $p=0.001$) and INT with all dimensions of CADV are supported by the results that DT support for integrity (INT) has a better positive and significant relationship for all predictors of CADV. Because of these critical findings, hypothesis H2 is accepted as a basis for developing a better alignment of information systems with business strategy and models. This concentrated managerial bias on (INT) intellectual capital investment could be due to a misalignment in the strategic application of digital transformation strategies. Service-based businesses do not seem to embrace information systems for competitiveness, implying usage inclined to meet compliance requirements.

Table 6: H2 DT Core Competencies Support and Competitive Advantage

Hypothesis	Relationships	Estimate β	T	P	Decision
H _{2.1.1}	FUN → EMO	-0.03	-0.917	0.359	Not supported
H _{2.1.2}	FUN → NCT	0.11	1.667	0.096	Not supported
H _{2.1.3}	FUN → ROC	0.09	3.223	0.001	Supported
H _{2.2.1}	INT → EMO	0.13	1.985	0.044	supported
H _{2.2.2}	INT → NCT	0.22	9.845	0.000	supported
H _{2.2.3}	INT → ROC	0.10	2.589	0.010	Supported
H _{2.3.1}	ACC → EMO	0.14	1.208	0.227	Not supported
H _{2.3.2}	ACC → NCT	0.23	0.389	0.697	Not supported
H _{2.3.3}	ACC → ROC	0.05	1.517	0.129	Not Supported

*** $p < 0.001$; N = 782.

4.3 Direct effect hypotheses testing CADV →FP

Table 7 shows the direct effect results for competitive advantage and firm performance explained indicators. EMO and NCT relationships were all supported by the firm performance results. Hence, a significant and positive relationship exists between ICT core competencies and firm performance. For instance, the EMO→OPF ($\beta=0.75$; $p=0.000$) results imply a seventy-five (75%) per cent change in operating performance for every unit effort in actions targeted at exploiting market opportunities. Whereas NCT→OPF ($\beta=0.12$; $p=0.004$). Because of these significant findings, hypothesis H3 is accepted with inferences that business managers perceive ICT as more of a competitive positioning tool. Strategically, ICT systems could be considered value-enhancing with positive returns even though cost reduction (ROC) has little support as a competitive edge operational tactic. More effort to address a lack of infrastructure investment to enable significant investment and alignment of national ICT policies could be welcome. A business must build dynamic capabilities to gain sustainable competitive advantage and emphasise long-term capital investment projects that embed information systems.

Table 7: H3 Sustainable Competitive Advantage on Firm Performance

Hypothesis	Relationships	Estimate β	T	p	Decision
H _{3.1.1}	EMO→OPF	0.75	8.827	0.000	supported
H _{3.1.2}	EMO→ MPF	0.12	2.889	0.004	supported
H _{3.2.1}	NCT → OPF	0.17	2.793	0.005	supported
H _{3.2.2}	NCT → MPF	0.03	7.025	0.000	supported
H _{3.3.1}	ROC → OPF	0.18	0.458	0.647	Not supported
H _{3.3.2}	ROC →MPF	-0.02	-	0.816	Not supported
			1.002		supported

*** $p < 0.001$; N = 782.

4.4 Indirect Mediating Relationship DT →CADV →FP

Table 8 shows the mediating effect of competitive advantage on the relationship between DT core competencies and firm performance. The findings showed that competitive advantage had a significant mediating impact, albeit with a partial mediation effect, because the direct result of DT core competencies on firm performance was also highly influential. All the relationships relating to integrity-related results support the study claim. Hypothesis H4 is also generally acceptable.

Table 8: H4 CADV mediating on DT and Firm Performance (indirect effect).

Hypot heis	Relationship	Coeff icient	T Statistics	p- Values	Decision
H _{4.1.1}	FUN → EMO →PF	-.19	-1.684	.092	Not Supported
H _{4.1.2}	FUN → NTC →PF	.45	2.256	.024	Supported
H _{4.1.3}	FUN → ROC →PF	.11	.892	.373	Not Supported
H _{4.2.1}	INT → EMO →PF	.23	2.673	.008	Supported
H _{4.2.2}	INT → NTC → PF	.14	7.062	.000	Supported
H _{4.2.3}	INT → ROC → PF	.06	2.606	.009	Supported
H _{4.3.1}	ACC → EMO → PF	.29	2.741	.006	Supported
H _{4.3.2}	ACC → NTC → PF	.10	1.396	.163	Not Supported
H _{4.3.3}	ACC → ROC →PF	.22	9.650	.000	Supported

5. Discussion of Results

Modern information technology adoption or utilization is becoming an increasingly important criterion for organizational development; however, the associated requirements and implications of adopting this technology present challenges for most organizations. Despite the challenges, organizations are motivated to deal with modern information technology to maintain competitiveness in their respective business sectors. Furthermore, businesses spend significant money on information technology (Mataruka et al. (2023) and Mataruka (2022) as they constantly face new types of transformation, specifically digitalization-related, associated with the emergence of digital technologies that change operational processes. The digital transformation of business processes allows for the adaptability of more practical information systems and operating procedures. It has also increased organizational innovation (Lee & Trimi, 2021) by instilling an entrepreneurial mindset in businesses and accelerating their innovative capabilities.

Many studies on digital transformation have focused on manufacturing firms (Mataruka et al., 2023; Shehadeh et al., 2023) and ignore the applications and implications of digital transformation in the service sector. This observation underplays the statistics depicting the contribution of economic sectors to Zimbabwe's GDP from 2011 to 2021. Agriculture (including forestry and fishing) contributed 8.85 per cent of Zimbabwe's GDP in 2021, the manufacturing-related industry, including construction, contributed approximately 28.81 per cent, and the services sector contributed roughly 56.64 per cent (Statista (2023)). Though the service sector accounts for 57% of Zimbabwe's GDP, it faces challenges due to the country's intense competition; the most significant of these challenges is gaining a competitive advantage for improved firm performance.

This study concentrated on the least-studied aspect of digital transformation: the service sector. As a result, it has contributed to the literature on information system resources and capabilities, competitive advantage, and operational performance of Zimbabwean firms.

This research has conceptualized information resources and capabilities that support core competencies as a digital transformation strategy in business. Digitalization is a change process leveraging DT technologies, instruments, managerial abilities, and business models to sustain firm performance through competitive advantage. In their study of digital transformation in the service industry in Canada, (Dong et al. (2017) noted that businesses were increasing their investments in digital technologies to enhance the overall customer experience or boost operational effectiveness. Service-based businesses can gain a competitive edge over their rivals by investing in digital technologies or strongly emphasizing digital transformation. As a result, the first hypothesis of this research (H1) sought to explore the association between core competencies from DT support and firm performance. The findings corroborated this hypothesis and showed that service-oriented businesses in Zimbabwe should concentrate on information systems' digital transformation strategies to perform better. These findings align with Mataruka et al. (2023) and Shehadeh et al. (2023), who showed that digital

transformation is increasingly used in this volatile market environment to gain a competitive edge.

This study's second hypothesis (H2) was to examine the impact of Digital Transformation on competitive advantage. According to the trends reviewed by Rha and Lee (2022), digital transformation has influenced the value chain operations of both manufacturing and service firms. Digitalization is also regarded as a source of organizational sustainability, as it enables businesses to continuously pursue internal efficiency and external opportunities to create value and increase market share (Parviainen et al., 2017; Kamalaldin et al., 2020). They emphasized that while this transformation did not affect the value chain operations of service-based companies, it significantly impacted service organizations. Furthermore, due to the significant advancement of digital technologies, product-oriented companies can now focus on digital servitisation by developing service-oriented business models. This study's findings reveal that businesses can gain a competitive advantage by emphasizing DT support for market-access-related directions within a service orientation lens.

Further, the quantitative approach examined the extent of the relationship between Digital Transformation and firm performance in Zimbabwe. Mataruka et al. (2023) and Mataruka (2022) had previously drawn attention to the fact that businesses more interested in digitizing their operations are more likely to favor marketing orientation business strategies. As a result, a high level of digitalization that embeds ICT will provide long-term performance through competitive advantage. In addition, our research has revealed that embedding digital tools to support core competencies enables Zimbabwean service-based organizations to, directly and indirectly, improve their performance (i.e., with competitive advantage).

Establishing a connection between competitive advantage and effective firm operations was the goal of the third hypothesis (H3). The results emphasized the importance of studying market dynamics, fending off threats from competitors, and cutting costs as they help to achieve operational performance. The results of this study, like those of Dzindikwa and Kabanda (2022), highlight how information capabilities and resources favor the adoption of E-commerce in Zimbabwe's service sector and how Zimbabwean businesses and the government should invest in creating reliable and efficient strategic infrastructure assets for digitalization. The fourth premise (H4) examined how competitive advantage mediates the relationship between core competencies supported by digital capabilities and firm performance. The findings supported the dynamic capabilities theory and demonstrated that competitive advantage significantly mediates the relationship between digital tools supporting core competencies and firm performance. To perform better, service-based organizations in Zimbabwe should adopt digital transformations. Dynamic capability heavily influences performance, and this relationship highlights the catalytic influence of an ordinary capability or innovation capability embedded in information systems (Zhou et al., 2019).

Today, many businesses, managers, and researchers are involved in digital transformation, an inevitable trend in business development (see Rha & Lee (2022), Lee & Trimi (2021), Dong et al. (2017). Furthermore, it affects the

company's competitiveness through cost reduction, efficiency, and innovation (Parviainen et al., 2017; Kamalaldin et al., 2020; Mataruka et al., 2023; Mataruka, 2022). Thus, by emphasizing the importance of digital transformation and market positioning competitiveness using firm-specific resources and capabilities and associating them with the competitive advantage and performance of service-based companies in Zimbabwe, this research has piqued the interest of researchers and academics. However, a substantial body of literature on information systems, their application and their significance in the service sector exists (Dong et al., 2017; Leão & da Silva, 2021). However, developing countries' perspectives lack adequate knowledge to exploit the potential benefits of digital tools obtained from globalization. In the following ways, this study has significantly contributed to the literature on digital transformation, innovation capabilities, and competitive advantage.

To begin, we designed a framework in this study based on the theory of dynamic capabilities (DCT) and the Resource-Based View (RBV) to show the predictors of competitive advantage and firm performance. RBV is relevant when considering the impact of organizational capabilities on performance, as organizations require dynamic capabilities for digital-enabled core competencies embedded in digital transformation. Ordinary capabilities, in addition to dynamic capabilities, improve performance. Similarly, Zhou et al. (2019) stated that innovation capability was a standard capability and identified a positive relationship between it and the company's financial performance. As a result, this study has made an essential contribution to the literature on dynamic capability (i.e., ICT as a digital transformation enabler) and ordinary capabilities related to the quest for sustainable competitive advantages (i.e., innovation capability). It also looked into the relationship between dynamic capability and the competitive advantage of service-based businesses in Zimbabwe. Such dynamic capabilities continually enhance the firm's sensing of competitive threats, seizing market opportunities and reconfiguring resources and capabilities (Teece, 2014).

Second, literature on the relationships highlighted by this study is scarce, and the findings of our study are an excellent source of literature for future research. The study has added to the literature on competitive advantage and information system resources and capabilities in service-based businesses. Sustainable Competitive advantage is a go-between for digital-enabled core competencies and has added operational performance value. Like Dzindikwa and Kabanda (2022) and Mataruka (2022), the findings revealed that ICT-enabled core competencies, combined with a competitive advantage, can assist service-oriented organizations in achieving high operational performance.

Third, the study's findings shed light on potential factors to help Zimbabwean service-based organizations develop a competitive advantage and improve their overall performance. As a result, the findings of this study can provide researchers with helpful information for developing guidelines or strategies.

The study also revealed that service business managers could anticipate gaining a competitive advantage through successful digital transformation. A service provider's ability

to innovate and attitude toward running a business as an entrepreneurial venture may be critical to their survival. As a result, managers should develop cutting-edge digital transformation strategies that will provide a competitive advantage by encouraging an entrepreneurial mindset and innovation capabilities. Understanding the significance of digital transformation and the need to strike a balance between their innovation capabilities should be a priority for service company managers concerned about the company's future and seeking a competitive advantage. According to the research's practical implications, service-based business managers, owners, and executives should focus on digital transformation and entrepreneurial orientation to outperform their competitors. There have been numerous studies on digital transformation in the manufacturing sector, but there is still a shortage of literature in the service sector. The findings of this study can assist managers in developing policies to achieve competitive advantage in this competitive digital era, making it especially important for practitioners working in Zimbabwe service companies.

6. Conclusions and recommendations

Nonetheless, the primary focus of this research has been the implementation of digitalization in Zimbabwe's service sector. Manufacturing is perceived to benefit from embedding digital automated solutions compared to the service-based industry, which could benefit equally from digitalization. Accordingly, service-based businesses must prioritize digital transformation and competitive advantage to achieve improved operational performance, as revealed in this study. This quest to embed digital tools in business is due to their digital ability to generate sustainable competitive agility effectively. Furthermore, digital systems must possess ordinary functional, intellectual and social competencies. These ordinary resources and capabilities must match with dynamic capabilities of seizing market possibilities, sensing a competitive threat, and reconfiguring operations for cost efficiencies to create a strategic fit among the many different business environments. This mix of ordinary innovation and dynamic capabilities arises from their ability to strengthen the link between digital transformation approaches and competitive advantage. Thus, the resultant impact is the fostering and fortification of operational performance within an entrepreneurial mindset in the organization.

The research has revealed essential factors that can help service-based firms gain a lasting competitive edge, but it has some limitations that need consideration in future studies. The study only looked at service-based businesses; future research could look at the manufacturing sector or compare findings from both. Second, while the data for this study came from Jordan, future studies could focus on other developing or emerging countries still in the early stages of digital transformation. Third, in terms of design, this study used subjective scores from managers of service-based businesses to assess digital transformation, entrepreneurial orientation, innovation capability, and competitive advantage. Even though numerous methods are used to avoid the shortcomings of subjective data in questionnaire collection and data processing, deviation from the actual is unavoidable. Future studies could combine objective and

subjective data to improve the research's reliability and accuracy. The fourth drawback is that the research only examined ordinary capabilities in three predictors of core competencies that support digital transformation and dynamic capabilities in the form of three antecedents of

competitive advantage. New organizational capabilities could contribute to competitive advantage and significantly impact performance in future studies, either as mediators or moderators.

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Author Contributions

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Ethical considerations

The article followed all ethical standards appropriate for this kind of research.

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