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Digital Transformation and Competitive Advantage to Local Businesses in Rwanda. A Case of Zamura Ltd

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Abstract

The main purpose of this study was to assess the influence of Digital transformation and competitive advantage to local businesses in Rwanda, using Zamura Ltd as the focal case. The research was guided by three objectives: to determine how the adoption of digital technologies influenced the company's competitive position; to evaluate the contribution of digitalized business processes to its competitive advantage; and to examine how the use of digital data and analytics supported competitiveness within Zamura Ltd. In addition, the study allowed the researcher to enhance practical academic skills, including collecting, analyzing, interpreting data, and developing academic writing abilities. The findings were expected to provide insights that would help business managers recognize areas where digital transformation could reduce operational expenses, improve product quality, streamline production activities, and strengthen customer satisfaction. The study drew on several theoretical frameworks; The Resource-Based View (RBV) and Dynamic Capabilities Theory. A descriptive research design was applied to address the research questions. The study targeted a population of 150 employees from Zamura Ltd, selected through a census approach. Both primary and secondary data were utilized. Questionnaires served as the primary data collection tool, while secondary information was obtained through document reviews. The data were analyzed using descriptive statistics such as frequencies, percentages, means, and standard deviations and inferential methods including Pearson correlation and multiple linear regression. The results were organized and presented in tables. A pilot test was carried out to confirm the reliability and validity of the research instruments. The findings indicate that digital technology adoption is positively correlated with competitive advantage at $r = 0.921$, $p < 0.01$; Digital business processes also show a strong positive correlation with competitive advantage ($r = 0.918$, $p < 0.01$). Further, the digital data utilization and analytics has the strongest positive correlation with competitive advantage ($r = 0.935$, $p < 0.01$). The study concluded that adoption of digital technologies, digital business processes, and data analytics significantly enhances the competitive advantage of local businesses in Rwanda. In recommendations, the study recommended that local businesses to invest in upgrading their internal processes by integrating digital solutions that reduce delays, improve coordination, and support smooth workflow.

Keywords: *Digital Transformation, Competitive Advantage, Local Businesses, Rwanda, Zamura Ltd*

1.0 Introduction

Digital transformation has become an essential driver of competitive advantage for businesses across the globe. As firms integrate digital technologies such as cloud computing, data analytics, enterprise systems, and automation into their operations, they are able to enhance efficiency, innovate products and services, and expand market reach. Research done by Zheng and Zhou (2025) in China showed that digital adoption significantly influences firm performance by enabling data-driven decision-making, improving operational processes, and strengthening responsiveness to market changes. Shankhpal (2024) explained the competitive advantage as the unique strengths or capabilities that allow a firm to perform better than rivals in the marketplace. On the other hand, the competitive advantage is reflected in superior operational efficiency, product quality, customer service, innovation potential, and sustained market positioning. Research shows that firms with advanced digital capabilities are better positioned to differentiate their products and services, achieve cost leadership, and respond swiftly to market demands (Muturi, 2026).

In the manufacturing sector in Japan and Germany, digital transformation has a pronounced effect on competitiveness beyond mere automation (Kahveci, 2025). Further, In Africa, businesses are increasingly recognizing the importance of digital transformation as a driver of firm performance and competitiveness. Research in Zimbabwe found that digital transformation positively influences multiple dimensions of competitive advantage, including agility, innovation, and operational efficiency within SMEs (Shinga & Chiutsi, 2025). In the East African context, the research done by Muturi (2026) in Kenya indicated that digital technologies significantly improve competitive positioning by expanding market reach, enhancing efficiency, and enabling process innovation in SMEs. According to Clare (2023) small and medium enterprises (SMEs) contribute a significant portion of employment and economic activity but often face challenges in realizing the full potential of digital transformation due to infrastructural constraints, limited digital skills, and uneven access to digital tools. Despite these barriers, research of Cenfri (2025) highlighted that SMEs with stronger digital capabilities show improved innovation performance and operational efficiencies compared to peers with lower digital adoption. In Rwanda, digital transformation has been embedded into national development visions such as Vision 2050 and the Smart Rwanda Master Plan, where the government has invested heavily in digital infrastructure, digital literacy initiatives, and e-government services to catalyze economic growth and private sector competitiveness. Rwanda's digital agenda has contributed to broader digital adoption across sectors, including financial services and telecommunications, with research showing that enhanced digital capabilities improve efficiency and strategic performance in local firms (Bagwaneza & Athanas, 2025).

Zamura Ltd is a Rwandan manufacturing business operating within this evolving digital landscape, exemplifies the potential and challenges of digital transformation in a local context. While large multinational and regional firms increasingly leverage digital technologies to optimize supply chains, enhance product quality, and foster customer engagement, the extent to which local firms such as Zamura Ltd harness digital transformation to secure competitive advantage remains under-examined. This study therefore examines the influence of digital transformation on competitive advantage at Zamura Ltd.

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1.1 Problem Statement

In today's global marketplace, strengthening business competitiveness has become essential for long-term success. Digital transformation serves as a powerful enabler of this goal, allowing companies to enhance operational efficiency, reduce costs, accelerate innovation, and improve their responsiveness to shifting market conditions. When effectively implemented, these improvements translate directly into stronger business performance. However, despite its importance, many businesses still struggle to fully harness the potential of digital tools to achieve meaningful competitive advantage. Recent global surveys show that while 72% of firms that successfully implemented digital transformation initiatives reported higher profitability, nearly 70% of digital transformation projects fail due to poor integration of digital systems, limited employee skills, and lack of strategic alignment (Deloitte, 2022). Similarly, a study in South Africa by Nkosi and Moyo (2022) found that 48% of manufacturing SMEs lost market share between 2019 and 2022 as competitors with stronger digital capabilities entered the market. In Kenya, Muturi (2026) observed that although digital transformation enhances competitive advantage, 46% of local businesses fail to sustain competitiveness due to fragmented digital processes and limited technology integration.

In Rwanda, although the government has invested heavily in digitalization through initiatives such as the Smart Rwanda Master Plan and Vision 2050, the adoption of digital transformation among local businesses particularly manufacturing companies remains insufficient. According to the National Institute of Statistics of Rwanda (NISR, 2023), 39% of local businesses reported a decline in operational efficiency due to limited digital system integration, while 43% acknowledged losing competitive advantage to competitors with stronger digital capabilities. Additionally, the Private Sector Federation (PSF, 2024) revealed that 52% of Rwandan manufacturing firms still rely on manual production, inventory, and customer management processes, leading to delays, higher costs, and reduced responsiveness to market shifts. At Zamura Ltd, a prominent local business in Rwanda's manufacturing sector, preliminary observations indicate challenges related to outdated business processes, limited use of data analytics, and partial adoption of digital technologies. These limitations affect production efficiency, innovation potential, customer service responsiveness, and overall market competitiveness. Despite the recognized importance of digital transformation, there is limited empirical evidence in Rwanda assessing how digital technology adoption, digital business processes, and data utilization specifically influence competitive advantage within local manufacturing firms specifically Zamura Ltd. Therefore, the purpose of this study is to examine the influence of digital transformation on competitive advantage among local businesses in Rwanda, using Zamura Ltd as a case study.

1.2 Research Objectives

1.3 Objective of the Study

- i. To determine influence of digital technology adoption on the competitive advantage of Zamura Ltd.
- ii. To evaluate the influence of digital business processes on the competitive advantage of Zamura Ltd.
- iii. To assess the influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd.

1.4. Research Hypothesis

H0₁: There is no significance influence of digital technology adoption on the competitive advantage of Zamura Ltd.

H0₂: Digital business processes has no influence on the competitive advantage of Zamura Ltd.

H0₃: There is no significance influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd.

2.1 Theoretical Framework

2.1.1 Resource-Based View (RBV) Theory

The Resource-Based View (RBV) theory was developed by Barney in 1991. The theory posits that firms achieve sustainable competitive advantage through the acquisition, management, and deployment of unique resources that are valuable, rare, inimitable, and non-substitutable. In the context of digital transformation, RBV emphasizes that technology assets, skilled human capital, and advanced data analytics capabilities can serve as strategic resources that differentiate a business from competitors (Li & Zhang, 2020). For Zamura Ltd, the adoption of digital tools such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems represents resources that enhance operational efficiency and market responsiveness. RBV further stresses that resources alone are insufficient unless the firm develops the capability to exploit them effectively. At Zamura Ltd, employees' ability to use digital technologies for real-time decision-making, process automation, and customer insights creates value that competitors cannot easily replicate. By combining tangible assets like software with intangible capabilities such as organizational knowledge, the company strengthens its overall competitive positioning within the Rwandan market.

2.1.2. Dynamic Capabilities Theory

Teece, Pisano & Shuen (1997) introduced the theory of Dynamic Capabilities. Dynamic Capabilities Theory indicated that a firm's ability to integrate, build, and reconfigure internal and external competencies in response to changing market conditions determines its long-term competitive advantage. For Zamura Ltd, this implies that adopting digital technologies alone is not enough; the company must also develop the capacity to adapt processes, restructure operations, and leverage digital insights in line with evolving customer demands and market trends (Silva & Santos, 2019). The theory emphasizes three core elements: sensing opportunities, seizing them, and transforming resources to meet strategic goals. Zamura Ltd can apply these elements by using digital analytics to identify market demands, automating business processes to reduce inefficiencies, and continuously upgrading its IT systems to maintain operational agility. These dynamic capabilities allow the firm to respond proactively to competitive pressures and capture emerging opportunities in the Rwandan local market (Oliveira & Martins, 2011).

2.2 Empirical Literature

This section details the specific objectives based on various researchers and scholars wrote about Digital transformation and competitive advantage to local businesses. Empirical literature is structured as follows:

2.2.1 The influence of digital technology adoption on the competitive advantage of Local Business.

Schmidt and Weber (2018) conducted a study on the impact of digital technology adoption on small and medium-sized enterprises (SMEs) in Germany. The objective was to examine how the integration of ERP and MIS systems influences operational efficiency and competitive positioning. The study used a survey design with 210 participants drawn from SMEs in the manufacturing sector. Data were collected using structured questionnaires and analyzed using regression analysis. Results indicated that 82% of businesses that adopted ERP and MIS systems experienced improved decision-making, reduced operational delays, and enhanced customer satisfaction. The study concluded that digital technology adoption enabled these firms to gain a competitive edge by optimizing internal processes and responding more effectively to market demands. The researchers recommended that German SMEs fully integrate digital systems across all business functions to maintain long-term competitiveness.

Omondi (2020) explored the relationship between digital technology adoption and competitive advantage in Kenyan retail businesses. The study aimed to assess how tools such as POS systems, MIS, and e-commerce platforms influence market performance. A mixed-method approach was applied, with 150 retail managers selected using stratified random sampling. Data were collected through questionnaires and interviews, and analyzed using both descriptive and inferential statistics. Findings revealed that 74% of respondents reported significant improvements in operational efficiency, inventory management, and customer service due to digital technology adoption. The study concluded that businesses that embraced digital tools gained a competitive advantage by reducing costs, improving service delivery, and enhancing responsiveness to consumer needs. The researcher recommended that Kenyan retail firms adopt integrated digital solutions to strengthen competitiveness.

2.2.2 The influence of digital business processes on the competitive advantage of local business

Silva and Santos (2019) conducted a study on the impact of digital business process adoption on the competitiveness of small and medium enterprises (SMEs) in Brazil's manufacturing sector. The study aimed to evaluate how ERP systems, automated supply chains, and customer relationship management tools influence operational performance and market positioning. Using a quantitative survey design, data were collected from 180 SMEs through structured questionnaires. The findings revealed that 79% of firms reported improvements in production efficiency, decision-making, and responsiveness to customer demands. The study concluded that digital business process adoption allows Brazilian SMEs to reduce production delays, lower

operational costs, and improve market competitiveness. It recommended full integration of digital systems across operational units to sustain competitive advantage.

In Ghana, Mensah and Boateng (2020) investigated how digital business process management influences the competitive advantage of local retail and service businesses. The study employed a mixed-methods design with 150 participants, including managers and IT officers, selected through stratified random sampling. Data were collected using questionnaires and semi-structured interviews and analyzed using regression and descriptive statistics. The results indicated that 72% of businesses adopting digital workflow systems, automated accounting, and online customer service platforms reported enhanced operational efficiency, better coordination, and improved market positioning. The study concluded that digital business processes enable Ghanaian businesses to gain a competitive edge by streamlining operations and improving service delivery.

2.2.3 The influence of digital data utilization and analytics on the competitive advantage of local business

Li and Zhang (2020) investigated the influence of big data analytics on the competitive advantage of local manufacturing enterprises in China. The study aimed to explore how data-driven decision-making impacts productivity, market responsiveness, and customer satisfaction. A quantitative research design was employed with 200 managers and employees from 50 manufacturing firms, selected through stratified random sampling. Data were collected via structured questionnaires and analyzed using regression and correlation analysis. The study found that 81% of firms that adopted data analytics reported significant improvements in operational efficiency and strategic decision-making. The research concluded that digital data utilization allows Chinese businesses to optimize resource allocation, identify market opportunities, and gain a competitive edge over rivals. Moshi and Msuya (2021) examined the role of data analytics in enhancing the competitiveness of Tanzanian SMEs in the retail and service sectors. The study used a mixed-method approach involving 120 participants, including managers and IT specialists, selected through purposive sampling. The study concluded that SMEs utilizing digital data analytics were more capable of responding to market changes, reducing operational inefficiencies, and sustaining competitive advantage. It further recommended that Tanzanian businesses invest in analytics training and digital infrastructure to fully leverage data insights.

2.3 Conceptual framework

Figure 1 shows independent, digital transformation as independent and dependent, competitive advantage to local businesses variables.

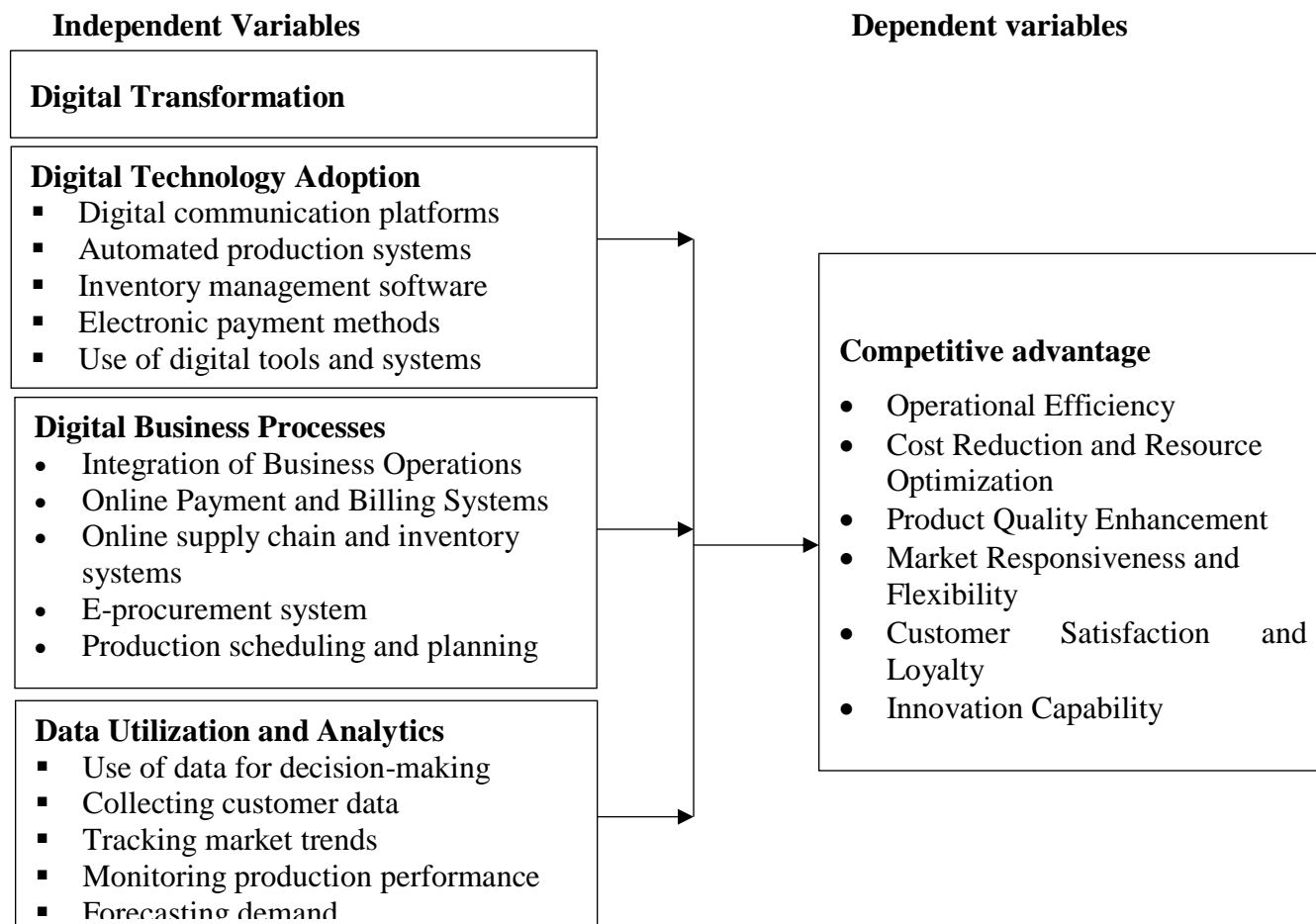


Figure 2. 1: Conceptual Framework

Source: Researcher (2026)

3.0. Methodology

A Glass and Hopkins (2015) defined research design as a structured plan developed to address research questions and achieve the study’s objectives and hypotheses. For this study, a descriptive research design was adopted, using a quantitative approach. Descriptive statistical tools, including frequencies and percentages, were employed to summarize the data. Measures of central tendency were also applied. Additionally, inferential statistics, specifically Pearson correlation (r) and multiple linear regression analysis, were used to examine the effects of independent variables on the dependent variable. In this study, the target population comprised 150 participants from Zamura Ltd. The sample size refers to the smaller group of individuals, items, or events that the researcher believed could accurately represent the larger population. In this study, the sample size consisted of 150 participants, which was equal to the total target population. To determine the number of participants, a census sampling approach was used, in which all members of the population were asked to complete the questionnaire.

For data collection, both primary and secondary data were employed in the study. Secondary data were obtained through a review of published sources, including books, journals, articles, e-books,

and brochures. Primary data were collected using structured questionnaires. After completing the data collection process, the researcher conducted a thorough check to ensure that all responses were complete. The data were then coded and entered into SPSS Version 25 for analysis. Descriptive statistics were calculated and presented in tables for each variable to confirm data accuracy. These statistics included frequencies, percentages, means, and standard deviations. In addition, inferential statistics such as Pearson correlation coefficients and regression analysis were computed.

The regression model that can be seen below as it was utilized.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where: - Y = Project Performance

X1 = Project risk planning strategy

X2= Risk assessment strategy

X3= Risk responses

β_0 = Intercept,

ε = error term.

4.0 Findings and Discussion

For demographic characteristics, the first section of the analysis focused on the respondents' socio-demographic characteristics, specifically age, gender, and educational background. Based on the findings, the largest proportion of respondents fell within the 31–40 age bracket, representing 33.3% of the sample. This was followed by 26.7% aged between 18–30 years, while 23.3% were between 41–50 years. The remaining 16.7% were above 50 years. This distribution shows that the study captured views from a wide age range, with a notable concentration in early and mid-adulthood. Regarding gender, the results indicate that male participants made up 53.3%, slightly outnumbering female respondents at 46.7%. This suggests a relatively balanced representation of gender in the study. The last demographic variable examined was education level. The majority of participants, 46.7%, held a bachelor's degree, reflecting a well-educated group. Additionally, 30% had completed secondary education, while 23.3% possessed a master's degree or higher.

4.1 Descriptive Statistics

In this section, the research objectives are dissected, analysed, understood, and discussed in light of the study's findings. Research data is analysed using a wide variety of statistical methods, including percentages, means, variances, and multiple regression. The results were illustrated in accordance with the following objective.

4.1.1 The influence of digital technology adoption on the competitive advantage of Zamura Ltd

This part provides responses related to the influence of digital technology adoption on the competitive advantage of Zamura Ltd.

Table 1: The influence of digital technology adoption on the competitive advantage of Zamura Ltd

Responses	SD	D	A	SA	Mean	St. Dev
The use of digital communication platforms has enhanced Zamura Ltd's responsiveness to customers and strengthened its competitive position in the market.	3.0	7.0	35.0	55.0	3.42	0.66
Automated production systems have improved product consistency and efficiency, giving Zamura Ltd a stronger competitive advantage.	3.0	7.0	37.0	53.0	3.40	0.68
Inventory management software helps the company reduce stock shortages and excess items, thereby improving operational competitiveness.	4.0	6.0	32.0	58.0	3.44	0.70
Electronic payment methods have simplified transactions for customers and improved the company's competitive edge.	4.0	6.0	30.0	60.0	3.46	0.72
The use of digital tools and systems has increased organizational effectiveness and supported Zamura Ltd in maintaining a competitive advantage.	4.0	6.0	33.0	57.0	3.43	0.69

The researcher sought to assess whether the use of digital communication platforms has strengthened Zamura Ltd's responsiveness to customers and improved its competitive position, 55.0% strongly agreeing and 35.0% agreeing. Only 7.0% disagreed and 3.0% strongly disagreed. The high mean score of 3.42 and a standard deviation of 0.66 indicate a strong consensus that digital communication tools significantly enhance the company's market responsiveness. The study further examined whether automated production systems strengthen Zamura Ltd's competitive advantage through improved product quality and operational efficiency. The results show that 53.0% strongly agreed and 37.0% agreed with the statement. Meanwhile, 7.0% disagreed and 3.0% strongly disagreed. The mean of 3.40 and standard deviation of 0.68 confirm that respondents generally recognize the positive contribution of automation. Regarding the role of inventory management software in reducing stock shortages and minimizing excessive inventory, the data reveal that 58.0% strongly agreed and 32.0% agreed, indicating overwhelming support for the statement. Only 6.0% disagreed and 4.0% strongly disagreed. With a mean score of 3.44 and a standard deviation of 0.70, the results suggest that digital inventory systems are viewed as essential in enhancing operational competitiveness.

The study also evaluated whether electronic payment methods simplify customer transactions and contribute to Zamura Ltd's competitive edge. The findings indicate that 60.0% strongly agreed and 30.0% agreed, while only 6.0% disagreed and 4.0% strongly disagreed. The high mean of 3.46 and standard deviation of 0.72 show a strong perception that digital payment systems offer convenience, speed, and security. Lastly, respondents were asked whether digital tools and systems improve organizational effectiveness and help Zamura Ltd maintain a competitive advantage. The results show that 57.0% strongly agreed and 33.0% agreed, while 6.0% disagreed and 4.0%

strongly disagreed. The mean score of 3.43 and standard deviation of 0.69 support a high level of agreement. These findings are consistent with the study done by Souza & Alves (2021) who argued that digital technologies ranging from communication platforms to automated systems enhance organizational agility, improve efficiency, and create opportunities for firms to differentiate themselves in competitive markets.

4.1.2 The influence of digital business processes on the competitive advantage of Zamura Ltd.

This part indicates the the influence of digital business processes on the competitive advantage of Zamura Ltd. The researcher asked this question to assess how digital business processes the influences the competitive advantage of Zamura Ltd.

Table 2: The influence of digital business processes on the competitive advantage of Zamura Ltd.

Responses	SD	D	A	SA	Mean	St. Dev
The integration of business operations through digital systems has improved coordination and strengthened Zamura Ltd’s competitive position.	4.0	8.0	40.0	48.0	3.32	0.78
Online payment and billing systems have enhanced customer convenience, contributing to Zamura Ltd’s market competitiveness.	3.0	7.0	38.0	52.0	3.39	0.74
Online supply chain and inventory systems have increased efficiency in stock management, boosting the company’s competitive advantage.	3.0	7.0	35.0	55.0	3.42	0.72
The use of an e-procurement system has streamlined purchasing processes, giving Zamura Ltd improved control and competitiveness.	4.0	6.0	37.0	53.0	3.39	0.76
Digital production scheduling and planning tools have enhanced accuracy and productivity, helping Zamura Ltd maintain a competitive advantage.	3.0	7.0	33.0	57.0	3.44	0.70

Table 2 presents the respondents’ views on the influence of digital business processes on the competitive advantage of Zamura Ltd. The first statement explored whether the integration of business operations through digital systems improves coordination and strengthens the company’s competitive position. The findings show that 48.0% of respondents strongly agreed and 40.0% agreed, whereas 8.0% disagreed and 4.0% strongly disagreed. The statement recorded a mean of 3.32 and standard deviation of 0.78, indicating that respondents generally agree that digital integration enhances internal coordination and competitive positioning. The study further examined the impact of online payment and billing systems on customer convenience and market competitiveness. Results reveal that 52.0% strongly agreed and 38.0% agreed, with only 7.0% disagreeing and 3.0% strongly disagreeing. The mean of 3.39 and standard deviation of 0.74 suggest a strong consensus that digital payment solutions simplify transactions and strengthen customer relationships, thereby improving competitiveness. This aligns with findings by Chae, Koh, and Prybutok (2014), who noted that online payment systems enhance customer satisfaction, streamline processes, and provide a strategic edge for firms in competitive markets.

Respondents were also asked whether online supply chain and inventory systems increase efficiency in stock management and contribute to competitive advantage. The results show 55.0% strongly agreed and 35.0% agreed, while 7.0% disagreed and 3.0% strongly disagreed. The mean of 3.42 and standard deviation of 0.72 indicate that digital supply chain systems are widely recognized for reducing inefficiencies and supporting operational competitiveness. Empirical research by Gunasekaran, Subramanian, and Papadopoulos (2017) highlights that digitally enabled supply chain systems improve inventory visibility, reduce delays, and enhance decision-making, all of which strengthen market performance. The study also investigated the effect of e-procurement systems on purchasing processes and organizational control. The findings reveal that 53.0% strongly agreed and 37.0% agreed, with only 6.0% disagreeing and 4.0% strongly disagreeing. The statement recorded a mean of 3.39 and standard deviation of 0.76, suggesting that respondents perceive e-procurement as a tool that improves control, reduces procurement delays, and supports competitive performance. Finally, the research examined whether digital production scheduling and planning tools enhance productivity and accuracy. The findings indicate that 57.0% strongly agreed and 33.0% agreed, while 7.0% disagreed and 3.0% strongly disagreed. With a mean of 3.44 and standard deviation of 0.70, the results confirm that respondents acknowledge the positive role of digital planning tools in improving workflow efficiency and maintaining competitive performance. This finding is consistent with the work of Li, Hou, and Wu (2018), who found that digital production planning increases operational accuracy, reduces waste, and enables firms to respond rapidly to market changes.

4.1.3 The influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd.

This subsection shows the information related to the influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd. The findings were analysed using percentage, mean and standard deviation.

Table 3: The influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd.

Responses	SD	D	A	SA	Mean	St. Dev
The use of digital data in decision-making has strengthened Zamura Ltd’s ability to compete effectively in the market.	3.0	6.0	36.0	55.0	3.46	0.71
Collecting customer data through digital platforms has improved product customization and enhanced Zamura Ltd’s competitive advantage.	4.0	7.0	35.0	54.0	3.44	0.73
Tracking market trends using digital analytics has enabled the company to respond quickly to changes, improving its competitiveness.	3.0	6.0	34.0	57.0	3.48	0.70
Monitoring production performance through digital tools has increased operational efficiency and reinforced Zamura Ltd’s competitive position.	4.0	6.0	33.0	57.0	3.46	0.72
Forecasting demand using data analytics has helped the company plan more effectively and maintain a stronger competitive advantage.	3.0	7.0	32.0	58.0	3.49	0.69

Table 3 presents the respondents' views on the influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd. The research examined whether the use of digital data in decision-making strengthens the company's ability to compete effectively in the market. The results show that 55.0% of respondents strongly agreed and 36.0% agreed, while 6.0% disagreed and 3.0% strongly disagreed. The mean score of 3.46 and standard deviation of 0.71 indicate that respondents generally agree that integrating data into decision-making improves strategic competitiveness. Respondents were also asked whether collecting customer data through digital platforms improves product customization and enhances competitive advantage. The findings reveal that 54.0% strongly agreed and 35.0% agreed, while 7.0% disagreed and 4.0% strongly disagreed. The mean of 3.44 and standard deviation of 0.73 suggest strong agreement that customer data collected digitally enables tailored products and services, thereby improving market positioning. The third statement sought to determine whether tracking market trends using digital analytics enables the company to respond quickly to changes and maintain competitiveness. The results indicate that 57.0% strongly agreed and 34.0% agreed, while 6.0% disagreed and 3.0% strongly disagreed. The mean of 3.48 and standard deviation of 0.70 show that respondents recognize the importance of market analytics in enhancing organizational agility. Monitoring production performance through digital tools was another area of investigation. Findings reveal that 57.0% strongly agreed and 33.0% agreed, while 6.0% disagreed and 4.0% strongly disagreed. The mean score of 3.46 and standard deviation of 0.72 indicate that digital monitoring contributes significantly to operational efficiency and productivity.

Lastly, respondents evaluated whether forecasting demand using data analytics supports better planning and sustains competitive advantage. The results show 58.0% strongly agreed and 32.0% agreed, while 7.0% disagreed and 3.0% strongly disagreed. The mean of 3.49 and standard deviation of 0.69 confirm that data-driven demand forecasting is perceived as crucial for maintaining operational and strategic efficiency. The findings are consistent with the study by Chen, Chiang, and Storey (2012), which emphasized that leveraging customer data through analytics allows firms to offer personalized solutions that increase customer satisfaction and loyalty. According to Wamba et al. (2015), firms that actively analyze market trends anticipate customer demands and adapt strategies faster than competitors, which directly strengthens competitive advantage. The findings indicate that digital data utilization and analytics play a significant role in enhancing Zamura Ltd's competitive advantage.

4.1.4 The influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd.

This subsection shows the information related to the influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd.

Table 4: The influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd.

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Monitoring production performance through digital tools has increased operational efficiency and reinforced Zamura Ltd’s competitive position.	4.0	6.0	33.0	57.0	3.46	0.72
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that leveraging customer data through analytics allows firms to offer personalized solutions that increase customer satisfaction and loyalty.

4.2 Inferential Statistics

Researcher applied correlational analysis to measure the relationship between independent variables and dependent variable. Independent variables were constituted by digital technology adoption, digital business processes, digital data utilization and analytics while dependent variable is competitive advantage to local businesses. The results are shown in the below Table.

Table 5: Pearson Correlation Matrix

		Digital technology adoption	Digital business processes	Digital data utilization and analytics	Competitive advantage
Digital technology adoption	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	150			
Digital business processes	Pearson Correlation	.876**	1		
	Sig. (2-tailed)	.000			
	N	150	150		
Digital data utilization and analytics	Pearson Correlation	.902**	.894**	1	
	Sig. (2-tailed)	.000	.000		
	N	150	150	150	
Competitive advantage	Pearson Correlation	.921**	.918**	.935**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	150	150	150	

** . Correlation is significant at the 0.01 level (2-tailed).

The researcher computed the Pearson Correlation Coefficient to determine the relationship between the components of digital transformation and the competitive advantage of local businesses. The results show that all independent variables digital technology adoption, digital business processes, and digital data utilization and analytics have a positive and strong relationship with the dependent variable, which is competitive advantage. The findings indicate that digital technology adoption is positively correlated with competitive advantage at $r = 0.921$, $p < 0.01$, demonstrating that businesses that adopt digital technologies effectively are more likely to experience improved competitiveness. This shows that embracing digital tools and platforms supports operational efficiency, decision-making, and market responsiveness, thereby strengthening the firm’s competitive position. Digital business processes also show a strong positive correlation with competitive advantage ($r = 0.918$, $p < 0.01$). This confirms that businesses with well-structured and optimized digital processes can achieve higher performance and maintain an edge in the market. Efficient digital workflows reduce operational bottlenecks, improve service delivery, and contribute to organizational success. The analysis further reveals that digital data utilization and analytics has the strongest positive correlation with competitive advantage ($r = 0.935$, $p < 0.01$). This result highlights the importance of data-driven decision-making, as businesses that collect, analyze, and apply digital data are better equipped to understand customer needs, anticipate market trends, and respond proactively. Moreover, the independent variables are highly interrelated, with correlations ranging from $r = 0.876$ to $r = 0.902$, showing that the

components of digital transformation are interconnected. This implies that effective digital technology adoption, robust digital business processes, and strategic use of analytics work together to enhance competitive advantage.

4.3 Regression analysis

This section illustrates the relationship between independent variable (Digital transformation) and dependent variable which is and competitive advantage to local businesses. Analysis was done using regression linear to find out the influence of and competitive advantage to local businesses.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.955a	0.913	0.910	1.183

Predictors: Digital Technology Adoption, Digital Business Processes, Digital Data Utilization and Analytics

Dependent Variable: Competitive Advantage

The model summary shows that the independent variables collectively explain 91.3% of the variance in competitive advantage ($R^2 = 0.913$), with an adjusted R^2 of 0.910. This indicates that digital transformation components technology adoption, business processes, and data analytics are strong predictors of competitive advantage among local businesses. The high R value ($R = 0.955$) demonstrates a strong positive relationship between the independent variables and the dependent variable.

Table 7: Analysis of Variance (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1480.863	4	493.621	352.767	0.000b
Residual	141.328	101	1.399		
Total	1622.190	105			

Predictors: Digital Technology Adoption, Digital Business Processes, Digital Data Utilization and Analytics

Dependent Variable: Competitive Advantage

The ANOVA results indicate that the regression model is statistically significant ($F = 352.767$, $p < 0.001$), meaning that the combined effect of digital technology adoption, digital business processes, and digital data utilization and analytics significantly predicts competitive advantage. This confirms that the model fits the data well, and digital transformation is a key factor driving competitiveness in local businesses.

Table 1: Regression coefficients

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
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(Constant)	1.383	0.603	2.293	0.000
Digital Technology Adoption	0.245	0.161 0.125	1.523	0.000
Digital Business Processes	0.550	0.062 0.702	8.887	0.000
Digital Utilization & Analytics	0.348	0.142 0.390	2.462	0.000

Source: Primary data, 2026

The constant term (B = 1.383, p < 0.001) represents the baseline competitive advantage when all independent variables are zero.

Digital Technology Adoption has a positive and significant effect (B = 0.245, Beta = 0.125, p < 0.001), showing that adopting digital tools contributes to higher competitive advantage. Furthermore, digital Business Processes have the strongest effect (B = 0.550, Beta = 0.702, p < 0.001), indicating that streamlined digital processes greatly enhance operational efficiency and market position. On the other hand, digital Data Utilization and Analytics also has a significant positive effect (B = 0.348, Beta = 0.390, p < 0.001), suggesting that leveraging data for decision-making is crucial for sustaining competitiveness.

4.4 Results of Hypotheses Testing

This section indicates the linear regression model summary. Hence, the table indicates (R²), the essential effects so as to confirm whether hypotheses are acceptable or reject according to the results of hypothesizes test.

Table 9: Results of Hypotheses Testing

Hypothesis Formulated	Beta (β)	P-values	Decision on Ho	R ²
Digital technology adoption,	.125	.000	Rejected	.913
Digital business processes	.702	.000	Rejected	
Digital data utilization and analytics	.390	.000	Rejected	

Table 9, is designed to examine whether the formulated hypothesizes are accepted or rejected basing on the results of Beta and P-values. The following hypothesizes were formulated in chapter one. The first hypothesis tested where There is no significance influence of digital technology adoption on the competitive advantage of Zamura Ltd. The second hypothesis related to digital business processes has no influence on the competitive advantage of Zamura Ltd. The third one reveals whether there is no significance influence of digital data utilization and analytics on the competitive advantage of Zamura Ltd. All hypothesizes are rejected because p-value were less than 0.005 which means that all variables have significantly on the competitive advantage to local

businesses in Rwanda. The findings showed that influence of Digital transformation and competitive advantage to Zamura ltd in consideration of digital technology adoption, digital business processes, digital data utilization and analytics.

5.0 Conclusions

The study specifically examined the influence of digital technology adoption, digital business processes, and digital data utilization, all of which were found to meaningfully shape how local enterprises position themselves and compete in the modern market. The study concluded that the adoption of digital technologies such as online communication tools, digital payment systems, and automated operational systems greatly enhances efficiency, responsiveness, and service delivery. These tools enable businesses to operate more effectively, reach customers faster, and provide improved value, thereby contributing to a stronger competitive advantage. Further, the study found that digital business processes significantly influence competitiveness among local enterprises. The use of digital platforms in areas such as inventory management, supply chain coordination, procurement, and production planning leads to improved accuracy, reduced operational delays, and smoother internal workflows. The study concludes that the combined adoption of digital technologies, digital business processes, and data analytics significantly enhances the competitive advantage of local businesses in Rwanda. These elements work together to improve efficiency, strengthen customer relationships, and support informed decision-making. The results therefore highlight that embracing digital transformation is essential for local enterprises seeking to achieve sustainable growth and maintain strong competitiveness in an increasingly digital economy.

6.0 Recommendations

The research further indicated that digital business processes such as inventory management systems, online supply chain tools, and e-procurement platforms significantly improve efficiency and performance. Based on this, the study recommends that local businesses invest in upgrading their internal processes by integrating digital solutions that reduce delays, improve coordination, and support smooth workflow. Findings also showed that digital data utilization and analytics contribute to better decision-making and overall performance. Therefore, the study recommends that businesses adopt simple and affordable data analytics tools to monitor sales trends, customer behavior, and operational performance.

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