

Data-Driven Decision-Making, Organisational Agility and Competitive Advantage of Telecommunication Firms in South Sudan

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Abstract

The study examined the effect of data-driven decision-making and organisational agility on the competitive advantage of telecommunication firms in South Sudan. The study was based on positivist philosophy that informed the adoption of a cross-sectional research design. The target population constituted 11 active telecommunication firms that formed the unit of analysis. The study targeted 148 employees drawn from the board, executive, departments, middle management, and technical levels of each firm. Thereafter, a sample of 108 respondents was determined using Yamane's 1967 formula before proportionate stratified sampling was adopted to ensure each staff category was represented in line with its population share. The achieved response rate was 92 (85.2%). Structured questionnaires were adopted in sourcing data before analysis was undertaken with the aid of the Statistical Package for Social Sciences. The regression analysis revealed that data-driven decision-making significantly affected the competitive advantage of telecommunication firms in South Sudan ($\beta_1 = 0.273$, $t = 3.285$, $p = .001$). However, the effect of organisational agility on the competitive advantage of firms in the study was not significant ($\beta_2 = -0.047$, $t = -0.665$, $p = .508$). The study thus concluded that data-driven decision-making elements, including data access and utilisation, data interpretation skills, and decision-making confidence, were strongly and positively associated with competitive advantage of telecommunication firms in South Sudan. Consequently, the study recommends that managers and policymakers should prioritise initiatives aimed at strengthening data accessibility, analytics capabilities, and a culture of evidence-based decision-making. Future research should explore additional organisational and environmental factors that may influence the dependent variable.

Key Words: Data-driven decision making, Competitive advantage, Data access and utilisation, Data interpretation skills, Decision-making confidence.

Introduction

The global telecommunications industry is undergoing rapid restructuring driven by digital transformation, fundamentally reshaping how firms compete and create value in increasingly data-intensive markets. Competitive advantage is traditionally conceptualised as superior value creation through cost leadership or differentiation (Porter, 1985), yet contemporary competition is now

deeply embedded in digital capabilities, data analytics, and adaptive organisational systems (Verhoef et al., 2021). The Resource-Based View further emphasises that sustained advantage depends on valuable, rare, and inimitable resources such as data capabilities and dynamic managerial processes (Barney, 1991). In this context, data-driven decision-making and organisational agility has emerged as critical strategic capabilities that enable firms to respond rapidly to market volatility and technological disruption (Venkatesh et al., 2003; Argyris & Schön, 1978). However, global disparities remain pronounced, particularly in emerging economies where digital infrastructure constraints limit the effective use of advanced analytics (ITU, 2023). In Sub-Saharan Africa, telecommunications performance gaps persist, with low internet penetration, high operational inefficiencies, and uneven digital adoption undermining competitiveness (GSMA, 2024; World Bank, 2024). Firms such as MTN Group have demonstrated partial gains through digital investments, yet structural limitations remain significant (MTN Group, 2023). Studies further show that while digital transformation improves efficiency, its impact is contingent on organisational readiness and data utilisation maturity (Accenture, 2021; Matt et al., 2015). Consequently, in fragile and post-conflict environments like South Sudan, where institutional weaknesses and infrastructure deficits are severe, the translation of data capabilities into competitive advantage remains highly uncertain and underexplored.

The reviewed literature demonstrates a growing consensus that data-driven decision-making is a critical driver of competitive advantage in contemporary organisations. Studies by Fast et al. (2023), Liébana-Cabanillas and Blanco-Encomienda (2024), Vafaei-Zadeh et al. (2020) and Mugane (2018) consistently report that the effective utilisation of data analytics enhances organisational performance, innovation, customer engagement, and strategic positioning. Despite this convergence, while some studies report a direct positive relationship between data analytics and competitive performance (Liébana-Cabanillas & Blanco-Encomienda, 2024; Mugane, 2018), others argue that the effect is indirect and mediated by organisational capabilities such as innovation (Ramadan et al., 2020). Several knowledge gaps emerge from the literature. First, most studies are concentrated in developed or relatively advanced emerging economies such as Brazil, Malaysia, Saudi Arabia, and Kenya, limiting the generalizability of findings to less developed contexts such as South Sudan. Second, telecommunications-focused evidence remains limited, particularly in fragile and emerging markets such as South Sudan. Third, prior studies largely examine big data analytics in isolation, with insufficient attention to broader dimensions of digital transformation and organisational readiness. Additionally, the reviewed studies collectively highlight the critical role of organisational agility towards competitive advantage. However, several gaps and limitations highlight the need for more context-specific research, particularly in the telecommunication sector of South Sudan. While Troise et al. (2022) and Nguyen et al. (2020) provide foundational insights into the antecedents and drivers of organisational agility, their findings may not fully apply to the unique challenges of South Sudan. Zhang et al. (2023) and AlNuaimi et al. (2022) emphasise the importance of agility in public sector contexts, but their applicability to competitive industries like telecommunications remains uncertain.

This study addresses the identified gap by empirically examining the relationship between data-driven decision-making, organisational agility, and competitive advantage among telecommunications firms in South Sudan. The study is grounded in the Resource-Based View and dynamic capability perspective, and adopts a quantitative cross-sectional research design to test hypothesised relationships using survey data from telecom firms operating in the country. The focus is delimited to licensed telecommunications operators, excluding regulatory bodies and informal service providers, to ensure analytical precision. By integrating data-

driven decision-making and organisational agility within a unified analytical framework, the study provides a context-specific explanation of competitive performance in fragile digital ecosystems. The findings are expected to contribute to theory by extending digital transformation literature to post-conflict environments and to practice by informing managerial and policy interventions aimed at strengthening data capability utilisation, enhancing organisational responsiveness, and improving sector competitiveness in South Sudan's telecommunications industry. The study thus sought to test these hypotheses:

H₀₁: Data-driven decision-making has no significant effect on the competitive advantage of telecommunication firms in South Sudan.

H₀₂: Organisational agility has no significant effect on the competitive advantage of telecommunication firms in South Sudan.

Methodology

A positivist philosophy was adopted to examine the effects of digital transformation on competitive advantage through objective, measurable indicators and statistical analysis (Creswell & Creswell, 2022). This approach supports hypothesis testing and generalisation, while minimising bias. The positivist philosophy informed the adoption of a cross-sectional research design to capture data from multiple telecommunication firms at a single point in time, enabling assessment of relationships between digital infrastructure, organisational agility and competitive advantage (Saunders et al., 2022). The study targeted management and technical personnel in telecommunication firms operating in South Sudan, a sector characterised by a small number of firms due to its emerging nature and infrastructural constraints (Dun & Bradstreet, 2024). The unit of analysis comprised eleven active telecommunication firms, following the exclusion of one firm that declined participation, while the unit of observation consisted of 148 employees drawn from board, executive, departmental, middle management, and technical levels. This hierarchical structure ensured coverage of both strategic decision-makers and operational staff involved in digital transformation processes. A sample of 108 respondents was determined using Yamane's (1967) formula at a 5% margin of error, providing statistically adequate representation of the finite population. Proportionate stratified sampling was adopted to ensure each staff category was represented in line with its population share, enhancing representativeness and reducing sampling bias (Saunders et al., 2022). Within each stratum, simple random sampling was applied to ensure equal selection probability and strengthen internal validity.

Data for this study were collected using a structured, self-administered questionnaire designed to capture quantitative responses from employees of telecommunication firms in South Sudan. The instrument comprised predominantly closed-ended questions measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), alongside limited open-ended items that provided supplementary qualitative insights. The questionnaire was organised into thematic sections covering demographic characteristics, digital infrastructure development, digital literacy and skills, organisational change, data-driven decision-making, organisational agility, and competitive advantage. This structure ensured systematic measurement of all study constructs using standardised indicators. Before full deployment, a pilot study was conducted involving 11 respondents drawn from three telecommunication firms, representing approximately 10% of the intended sample. These participants, who were excluded from the final study, included management, technical staff, and customer service personnel. The pilot exercise assessed the clarity, timing, and feasibility of the instrument, leading to confirmation of its adequacy without major revisions. Reliability testing using Cronbach's Alpha confirmed

acceptable internal consistency across all constructs, with values ranging from 0.734 to 0.823, exceeding the 0.70 threshold recommended in social science research (Field, 2023). Validity was established through expert review and Content Validity Ratio (CVR) analysis. Six experts assessed face validity, while three independent raters evaluated content validity using Lawshe's method, yielding CVR values between 0.60 and 1.00, indicating satisfactory construct coverage and relevance. Data analysis was conducted using SPSS version 23. Descriptive statistics (means and standard deviations) were first generated to summarise respondent characteristics and variable distributions. Before regression-based interpretations, diagnostic tests for normality, linearity, homoscedasticity, and multicollinearity were undertaken to ensure statistical assumptions were satisfied. Multiple regression analysis was employed to test the first and the second null hypotheses as given in equation 1.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon \dots \dots \dots [1]$$

Where: Y = Competitive advantage, β_0 = Constant term, β_1, β_2 , = Regression coefficients, X_1 = data driven decision making, X_2 = Organisational agility, ε = Random error term. For the first and second hypotheses, the decision to reject or fail to reject the null hypotheses was based on the p-value associated with the regression coefficients. A significance level of 0.05 was used as the threshold for hypothesis testing. If the p-value was less than 0.05, the null hypothesis was rejected, indicating a statistically significant relationship or effect. Conversely, if the p-value was greater than or equal to 0.05, the null hypothesis failed to be rejected, suggesting insufficient evidence to conclude a significant relationship or effect. Ethical clearance was obtained from the Institutional Review Board of the United States International University [USIU-A/ISERC/US716-2025]. Further, the study obtained authorisation permit from the Ministry of Education, Science and Technology of the Republic of South Sudan [RSS/MoHEST/USO/J/IM]. Informed consent, confidentiality, anonymity, and voluntary participation were strictly upheld throughout the study, with secure data handling procedures implemented to protect respondent information.

Results

A total of 92 questionnaires were completed and returned from the 108 issued. As such, the study achieved a response rate of 85.2%. According to Creswell and Creswell (2022), response rates above 70% are generally considered sufficient to ensure reliability and representativeness in survey research; thus, the response rate for this study was satisfactory. The high response was due to follow-up reminders and the engagement of respondents from different levels of management and technical staff. The high response implies that the findings are adequately representative of the target population and enhances the validity of subsequent descriptive and inferential analyses.

Descriptive Statistics

Data-Driven Decision Making

Descriptive statistics for data-driven decision-making among telecommunication firms in South Sudan, measured through three dimensions: data access and utilisation, data interpretation skills, and decision-making confidence. The findings (Table 1) indicate that respondents generally agreed that their organisations have embraced data-driven decision-making, as evidenced by the high mean scores across all dimensions, with relatively low standard deviations indicating consistency in responses. The findings reveal that telecommunication firms have established a strong foundation for data access and utilisation, with an overall mean score of 4.08 (SD = 0.26). This suggests that employees perceive data as readily available and actively integrated into organisational operations. The highest-rated statement was that the company provides tools that facilitate the use of data in everyday operations (M = 4.15, SD = 0.57), indicating substantial investment in technological systems that support data usage. Similarly, employees reported having easy access to data necessary for informed decision-making (M = 4.13, SD = 0.56) and that data is accessible across departments to facilitate collaboration (M = 4.12, SD = 0.61). The findings further show that employees regularly incorporate data analysis into their decision-making tasks (M = 4.05, SD = 0.62) and perceive organisational data as accurate and up-to-date (M = 4.02, SD = 0.59). Although the statement regarding frequent use of data to guide decision-making processes recorded the lowest mean within this dimension (M = 3.99, SD = 0.66), the score still indicates agreement among respondents. The second dimension assessed employees' capabilities in analysing and interpreting data. The overall mean score of 4.04 (SD = 0.25) indicates that respondents generally believe employees possess the skills necessary to transform data into actionable insights. The highest-rated item was that employees are trained to use advanced data visualisation tools to present insights clearly (M = 4.13, SD = 0.56), suggesting that organisations recognise the importance of visual analytics in supporting decision-making. Respondents also agreed that training sessions on data analysis and interpretation are readily available and useful (M = 4.10, SD = 0.61), demonstrating organisational commitment to capacity building. Additionally, employees reported being encouraged to apply statistical methods when validating insights (M = 4.05, SD = 0.67) and being capable of identifying patterns, trends, and insights from complex datasets (M = 4.03, SD = 0.54). Although comparatively lower, the ratings for employees' ability to communicate data-driven insights (M = 3.99, SD = 0.60) and to possess strong analytical skills (M = 3.92, SD = 0.56) still reflect positive perceptions. These findings imply that telecommunication firms have invested in developing analytical competencies, enabling employees to interpret data effectively and support evidence-based decision-making.

The findings further indicate a high level of confidence in data-driven decision-making, with an overall mean score of 4.03 (SD = 0.25). The highest-rated statements were that employees trust data-driven decisions to produce better business outcomes than intuition-based decisions (M = 4.12, SD = 0.59) and that the company values and encourages data-driven decision-making at all organisational levels (M = 4.12, SD = 0.55). These results suggest a strong organisational culture that supports evidence-based management practices. Employees also reported feeling empowered to challenge decisions lacking data-driven evidence (M = 4.07, SD = 0.64), indicating openness and accountability within organisational decision-making processes. Furthermore, respondents agreed that data-driven decisions are more reliable and trustworthy (M = 3.97, SD = 0.60). The statements regarding organisational recognition of successful data-driven decisions and employee confidence in making decisions based on data-

driven insights both recorded mean scores of 3.95, suggesting moderate room for improvement in strengthening confidence and reinforcing a culture of learning from data-based outcomes. Collectively, the findings demonstrate that telecommunication firms in South Sudan exhibit a relatively strong orientation toward data-driven decision-making. The highest overall score was recorded for data access and utilisation (M = 4.08), followed by data interpretation skills (M = 4.04) and decision-making confidence (M = 4.03). The close similarity among these scores suggests that organisations have not only invested in data infrastructure but have also developed employee capabilities and fostered a culture that values evidence-based decisions. The low standard deviations across all dimensions further indicate a high degree of consensus among respondents regarding the presence of data-driven practices within their firms. These findings imply that data-driven decision-making is becoming an important strategic capability among telecommunication firms in South Sudan, potentially enhancing organisational responsiveness, operational efficiency, and competitive advantage.

Table 1

Descriptive Statistics for Data-Driven Decision Making

Statement (n=92_	Mean	SD
Data Access and Utilisation		
Our company provides tools that facilitate the use of data in everyday operations	4.15	0.57
Employees have easy access to the data necessary for making informed decisions in their roles	4.13	0.56
Data is accessible across departments to enable collaborative decision-making	4.12	0.61
Employees regularly incorporate data analysis into their decision-making tasks	4.05	0.62
Our company ensures that data is accurate and up-to-date to support effective decision-making	4.02	0.59
Data is frequently used to guide decision-making processes within the company	3.99	0.66
Overall Score for Data Access and Utilisation	4.08	0.26
Data Interpretation Skills		
Employees are trained to use advanced data visualisation tools to present insights clearly	4.13	0.56
Training sessions on data analysis and interpretation are readily available and useful	4.10	0.61
Our company encourages employees to apply statistical methods to validate data-driven insights	4.05	0.67
Employees can identify patterns, trends and insights from complex data sets	4.03	0.54
Employees can effectively communicate data-driven insights to colleagues and superiors	3.99	0.6

Employees in our company possess strong skills in analysing and interpreting data	3.92	0.56
Overall Score for Data Interpretation Skills	4.04	0.25
Decision-making Confidence		
Employees trust that data-driven decisions lead to better business outcomes compared to intuition-based decisions	4.12	0.59
Our company values and encourages data-driven decision-making at all levels	4.12	0.55
Employees feel empowered to challenge decisions that are not supported by data-driven evidence	4.07	0.64
Data-driven decisions are perceived as more reliable and trustworthy within our company	3.97	0.6
Our company has a culture that celebrates successful data-driven decisions and learns from failures	3.95	0.67
Employees are confident in making decisions based on data-driven insights	3.95	0.55
Overall Decision-Making Confidence	4.02	0.24

Organisational Agility

The descriptive statistics (Table 2) indicate that telecommunication firms in South Sudan exhibit a relatively high level of organisational agility, as reflected by the overall mean scores for both flexibility in resource allocation ($M = 4.00$, $SD = 0.25$) and innovation culture ($M = 3.995$, $SD = 0.236$). Since all mean scores are close to 4.0 on a five-point Likert scale, respondents generally agreed that their organisations possess agile characteristics that enable them to respond effectively to changing market conditions and operational challenges. The findings show that respondents perceived their organisations as having strong capabilities in resource flexibility. The highest-rated statement was that the company has contingency plans to reallocate resources during unexpected disruptions ($M = 4.07$, $SD = 0.55$), suggesting that firms have established mechanisms to maintain operational continuity during crises or unforeseen circumstances. Similarly, employees reported being empowered to make decisions and allocate resources in a timely manner ($M = 4.02$, $SD = 0.63$), indicating the presence of decentralised decision-making structures that facilitate rapid responses to emerging issues. The findings further reveal that employees have flexibility to adjust priorities based on changing business needs ($M = 4.02$, $SD = 0.66$) and that organisations use digital tools to monitor and optimise resource allocation in real time ($M = 4.00$, $SD = 0.59$). These results suggest that firms are leveraging digital technologies to enhance responsiveness and operational efficiency. Although the statement regarding streamlined and efficient decision-making processes recorded the lowest mean score ($M = 3.94$, $SD = 0.68$), the score still reflects agreement among respondents, indicating that decision-making structures generally support agile resource deployment. The relatively low overall standard deviation ($SD = 0.25$) demonstrates a high degree of consensus among respondents concerning the organisation's flexibility in resource allocation.

The results also demonstrate a positive innovation culture within telecommunication firms. The highest mean score was recorded for the statement that there is a culture of experimentation and risk-taking within the company (M = 4.04, SD = 0.57), implying that organisations encourage employees to explore new approaches and solutions. Respondents also agreed that employees are encouraged to learn from failed experiments without fear of punishment (M = 4.02, SD = 0.63), which reflects the existence of a psychologically safe environment that promotes learning and continuous improvement. The findings further indicate that organisations celebrate and reward successful innovations (M = 4.01, SD = 0.73) and encourage innovative ideas from all levels of employees (M = 3.99, SD = 0.67). These practices are important drivers of organisational creativity and adaptability. Additionally, respondents agreed that employees are given the freedom and resources to explore creative solutions (M = 3.96, SD = 0.65) and that pilot projects are used to test innovative ideas before full-scale implementation (M = 3.95, SD = 0.56). The overall mean score of 3.995 and low standard deviation of 0.236 suggest that innovation-oriented practices are widely embedded across the surveyed organisations. Overall, the findings suggest that telecommunication firms in South Sudan possess a substantial degree of organisational agility characterised by flexible resource allocation and a supportive innovation culture. These capabilities are likely to enhance firms' ability to adapt to technological changes, respond to market uncertainties, and exploit emerging opportunities. The high levels of agreement among respondents indicate that organisational agility is a well-established organisational attribute within the sector, potentially positioning firms to achieve improved operational performance and sustainable competitive advantage. These findings support the dynamic capabilities perspective, which argues that organisations that can rapidly reconfigure resources and foster innovation are better positioned to maintain competitiveness in turbulent business environments.

Table 2
Descriptive Statistics for Organisational Agility

Statement (n=92)	Mean	SD
Flexibility in Resource Allocation		
Our company has contingency plans to reallocate resources during unexpected disruptions	4.07	0.55
Employees are empowered to make decisions and allocate resources promptly	4.02	0.63
Employees have the flexibility to adjust their priorities based on changing business needs	4.02	0.66
Our company uses digital tools to monitor and optimise resource allocation in real time	4.00	0.59
Our company can rapidly reallocate resources to address emerging needs or opportunities	3.99	0.67
Decision-making processes related to resource allocation are streamlined and efficient	3.94	0.68
Overall Score of Flexibility in Resource Allocation	4.00	0.25
Innovation culture		
There is a culture of experimentation and risk-taking within our company	4.04	0.57
Employees are encouraged to learn from failed experiments without fear of punishment	4.02	0.63
Our company celebrates and rewards successful innovations	4.01	0.73

Our company encourages innovative ideas from all levels of employees	3.99	0.67
Employees are given the freedom and resources to explore new and creative solutions	3.96	0.65
Our company uses pilot projects to test innovative ideas before full-scale implementation	3.95	0.56
Overall Score for Innovation Culture	3.99	0.23

Competitive Advantage

The descriptive statistics for the competitive advantage construct, measured through three dimensions: market position, product differentiation, and market responsiveness. The findings presented in Table 3 indicate that telecommunication firms in South Sudan generally perceive themselves as possessing a strong competitive advantage, as evidenced by the high mean scores across all dimensions. Since all mean values exceed 4.0 on a five-point Likert scale, respondents largely agreed that their firms have established favourable positions relative to competitors in the market. Regarding market position, the overall mean score was 4.15 (SD = 0.26), indicating a high level of agreement among respondents that their organisations enjoy a strong market standing. The statement with the highest mean score was “Our company consistently outperforms competitors in customer satisfaction surveys” (M = 4.27, SD = 0.59). The second-highest rated statement was “Our pricing strategy provides better value for customers compared to our competitors” (M = 4.17, SD = 0.66), indicating that respondents believe their firms are able to offer competitive pricing while maintaining customer value. Similarly, respondents agreed that their companies hold a strong market share within their primary industry segments (M = 4.15, SD = 0.57), reflecting confidence in their organisations’ ability to attract and retain customers. Other highly rated indicators included customer loyalty (M = 4.11, SD = 0.62), brand leadership recognition (M = 4.10, SD = 0.56), and being considered among the top-tier firms by industry analysts and customers (M = 4.08, SD = 0.70).

The second dimension, product differentiation, recorded an overall mean score of 4.14 (SD = 0.27), demonstrating that respondents perceive their firms as effectively differentiating their products and services from competitors. The highest-rated statement under this dimension was “Our products or services are perceived as unique from those of our competitors” (M = 4.21, SD = 0.64). This suggests that uniqueness remains a critical source of competitive advantage in the telecommunications sector. Respondents also agreed that their companies continuously introduce innovative features and enhancements to products and services (M = 4.18, SD = 0.61), reflecting a strong commitment to innovation and continuous improvement. The use of customer feedback to develop differentiated offerings was also highly rated (M = 4.16, SD = 0.54), implying that firms actively incorporate customer insights into product development processes. Furthermore, respondents acknowledged that their organisations leverage digital technologies to create unique products and services (M = 4.12, SD = 0.68), highlighting the growing importance of digital transformation in achieving differentiation. Additional indicators, including customer perceptions of superior value (M = 4.10, SD = 0.63) and organisational reputation for quality and innovation (M = 4.08, SD = 0.63), further reinforce the conclusion that telecommunication firms are successfully distinguishing themselves from competitors.

With respect to market responsiveness, the overall mean score was 4.14 (SD = 0.22), indicating that firms possess strong capabilities for sensing and responding to market changes. The highest-rated item was “Our company collaborates with external partners to enhance market responsiveness” (M = 4.24, SD = 0.58). This finding underscores the importance of strategic

partnerships in improving organisational flexibility and responsiveness to changing market conditions. Closely following was the statement “Our company has a strong ability to anticipate and respond to market trends and shifts in customer preferences” (M = 4.23, SD = 0.63), suggesting that firms actively monitor market dynamics and customer behaviour. Respondents also agreed that their companies are faster than competitors in introducing new offerings to the market (M = 4.13, SD = 0.60) and are quick to introduce products or services in response to changing customer needs (M = 4.10, SD = 0.66). The use of data analytics to predict emerging customer needs (M = 4.09, SD = 0.57) and the frequent updating of products and services to meet evolving market demands (M = 4.09, SD = 0.59) further demonstrate the firms’ commitment to maintaining relevance in a dynamic business environment. The relatively low standard deviation for the overall dimension indicates a high degree of consistency in respondents’ perceptions of their firms’ responsiveness capabilities. The findings reveal that telecommunication firms in South Sudan exhibit strong levels of competitive advantage across all three dimensions. Market position emerged as the highest-rated dimension (M = 4.15), followed closely by product differentiation (M = 4.14) and market responsiveness (M = 4.14). The high mean scores and low standard deviations suggest that respondents consistently perceive their organisations as customer-focused, innovative, and responsive to market changes.

Table 3

Descriptive Statistics for Competitive Advantage

Statement (n=92)	Mean	SD
Market Position		
Our company consistently outperforms competitors in customer satisfaction surveys	4.27	0.59
Our pricing strategy provides better value for customers compared to our competitors	4.17	0.66
Our company holds a strong market share in our primary industry segment	4.15	0.57
We have a high level of customer loyalty compared to our competitors	4.11	0.62
Customers recognise our brand as a leader in the telecommunications sector	4.1	0.56
Our firm is often considered in the top tier by industry analysts and customers	4.08	0.7
Overall Score for Market Position	4.15	0.26
Product Differentiation		
Our products or services are perceived as unique from those of our competitors	4.21	0.64
Our company continuously introduces innovative features and enhancements to our products or services	4.18	0.61
Our company uses customer feedback to develop differentiated products or services	4.16	0.54
Our company leverages digital technologies to create unique product or service offerings	4.12	0.68
Customers perceive our products or services as superior and more valuable compared to alternatives in the market	4.1	0.63
Our company has a reputation for delivering high-quality and innovative products or services	4.08	0.63
Overall Score for Product Differentiation	4.14	0.27
Market Responsiveness		

Our company collaborates with external partners to enhance market responsiveness	4.24	0.58
Our company has a strong ability to anticipate and respond to market trends and shifts in customer preferences	4.23	0.63
Compared to our competitors, we are faster in bringing new offerings to the market	4.13	0.6
Our company is quick to introduce new products or services in response to changing customer needs	4.1	0.66
Our company uses data analytics to predict and respond to emerging customer needs	4.09	0.57
We frequently update and enhance existing products or services to meet evolving market demands	4.09	0.59
Overall Score for Market Responsiveness	4.14	0.22

Diagnostic Tests

The study conducted diagnostic tests for normality, linearity, homoskedasticity, and multicollinearity before performing the final regression analysis. P–P plot showed that the residuals generally followed the diagonal reference line, with a few slight deviations at certain points. The scatterplots test for linearity displayed the relationships between data-driven decision making and competitive advantage, as well as between organisational agility and competitive advantage. Across the two plots, the point clouds form relatively clear elliptical or oval shapes with a positive central tendency and no strong evidence of systematic curvature or U-shapes. While some plots (particularly vs. digital infrastructure development and digital literacy and skills). Therefore, based on the bottom-row scatterplots, the linearity assumption required for regression analysis was considered reasonably satisfied across these key bivariate relationships. The homoscedasticity assumption was examined based on a residual scatter plot. The findings showed that the spread of the standardised residuals appears relatively constant across the entire range of predicted values, with no systematic increase or decrease in vertical dispersion from left to right. Most points are randomly scattered within an approximately horizontal band roughly between -2 and +3, with only a few mild outliers above +2 and below -2. There is no clear pattern or trending structure in the residual cloud, indicating that the variance of the residuals is fairly stable across levels of the predicted values. Therefore, the condition of homoscedasticity was considered satisfied for the multiple regression model. Finally, the results show that all Variance Inflation Factor values were below the critical threshold of 10: data-driven decision making (1.021) and organisational agility (1.015), indicating that multicollinearity was not a concern (Allison, 2020). Therefore, the regression coefficients could be interpreted with confidence.

Regression Analysis

The results of the multiple regression analysis examining the influence of data-driven decision-making and organisational agility on competitive advantage are presented in Table 4. The coefficient of determination (R^2) was 0.320, implying that 32.0% of the variation in the dependent variable is explained by the predictors included in the model. The adjusted R^2 of 0.280 indicates that after accounting for the number of predictors in the model, approximately 28.0% of the variance in the dependent variable remains explained by the independent variables. This suggests that while the model has reasonable explanatory power, a substantial proportion of the variation in the dependent variable is attributable to factors not captured in the model. The ANOVA results show that the regression model was statistically significant,

$F(5, 86) = 8.091, p < .001$. The coefficient results reveal differing effects of the independent variables. Data-driven decision-making had a positive and statistically significant effect on the dependent variable ($\beta_1 = 0.273, t = 3.285, p = .001$). This finding indicates that a one-unit increase in data-driven decision-making is associated with a 0.273-unit increase in the dependent variable, holding other factors constant. The standardised coefficient ($\beta = 0.297$) further suggests that data-driven decision-making makes a meaningful positive contribution to predicting the dependent variable. Since the p-value is less than the conventional significance threshold of 0.05, the effect is statistically significant. The null hypothesis (H_{01}) *Data driven decision-making has no significant effect on the competitive advantage of telecommunication firms in South Sudan* was thus rejected. This implies that organisations that effectively utilise data in decision-making are likely to achieve higher levels of the outcome variable. In contrast, organisational agility exhibited a negative but statistically insignificant relationship with the dependent variable ($\beta_2 = -0.047, t = -0.665, p = .508$). The null hypothesis (H_{02}) *that organisational agility has no significant effect on the competitive advantage of telecommunication firms in South Sudan* was not rejected. The negative coefficient suggests that an increase in organisational agility would be associated with a slight decrease in the dependent variable; however, the effect is not statistically significant because the p-value exceeds 0.05. Consequently, there is insufficient evidence to conclude that organisational agility has a meaningful influence on the dependent variable within the context of this study. The constant term was also not statistically significant ($B_0 = -0.096, p = .896$), indicating that when all predictor variables are held at zero, the predicted value of the dependent variable is not significantly different from zero.

Table 4

Regression Analysis Output

Model Summary						
Model	R	R Square	Adjusted R Square	R	SE of the Estimate	
1	.566	.320	.280		.121	
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.597	5	.119	8.091	.000
	Residual	1.269	86	.015		
	Total	1.866	91			
Coefficients						
Model		B	SE	β	t	Sig
	Constant	-0.096	0.735		-0.131	.896
	Data- Driven Decision-Making	0.273	0.083	0.297	3.285	.001
	Organizational Agility	-0.047	0.071	-0.060	-.0665	.508

$$\text{Competitive Advantage} = -0.096 + 0.273 \text{ Data Driven Decision Making} - 0.047 \text{ Organizational Agility} + \varepsilon$$

Discussion of Findings

The findings of this study demonstrate that data-driven decision-making significantly influences the dependent variable, while organisational agility does not exert a statistically significant effect. The regression model further indicates that the independent variables collectively explain a substantial proportion of the variance in the outcome variable, suggesting that organisational capabilities related to information utilisation play an important role in shaping organisational performance outcomes. The positive and significant effect of data-driven decision-making supports the growing body of literature emphasising the strategic value of data as a critical organisational resource. The findings suggest that organisations that effectively collect, analyse, and utilise data in their operational and strategic processes are better positioned to enhance performance outcomes. This result aligns with the resource-based view, which posits that valuable, rare, and difficult-to-imitate organisational resources contribute to sustained competitive advantage (Barney, 1991). In the contemporary business environment, data and analytics capabilities have increasingly become such strategic resources. Organisations that leverage data-driven insights are able to improve decision quality, reduce uncertainty, optimise resource allocation, and respond more effectively to market dynamics. The finding aligns with Mugane (2018) and Liébana-Cabanillas and Blanco-Encomienda (2024), who both reported a significant correlation between data analytics and enhanced performance among telecommunication firms in Kenya and Brazil, respectively. It also echoes Vafaei-Zadeh et al. (2020) and Fast et al. (2023), who argued that data-driven value creation is a critical resource for maintaining a competitive edge in high-technology settings. The result, however, partially differs from Ramadan et al. (2020), whose research in Saudi manufacturing suggested that analytics capabilities affected competitive advantage indirectly through innovation, rather than directly.

Conversely, organisational agility was found to have a negative but statistically insignificant effect on the dependent variable. This finding suggests that although agile organisations are theoretically expected to adapt rapidly to environmental changes, such adaptability may not automatically translate into improved performance outcomes within the context examined. One possible explanation is that agility alone may be insufficient to create value unless supported by complementary organisational capabilities such as digital infrastructure, leadership commitment, technological competencies, and effective decision-making processes. In this regard, agility may serve as an enabling capability whose benefits are realised only when integrated with other strategic resources. The insignificant relationship may also reflect contextual factors affecting the organisations under study, especially in the context of South Sudan. Furthermore, the benefits of agility may emerge over a longer period and may not be fully captured through cross-sectional analysis. The result finds partial support in studies that suggest agility's effects are context-dependent. For instance, Zhang et al. (2023) and Nguyen et al. (2020) both imply that sectoral characteristics and organisational orientation can influence agility's role. Even though the study was successfully undertaken, a few limitations exist. First, the explanatory power of the model is moderate, with an adjusted R^2 of 0.280. The study relied on cross-sectional data, which limits the ability to draw causal inferences. While the regression results show statistical associations between data-driven decision making, organisational agility, and competitive advantage, they do not establish temporal ordering or causality. As a result, it cannot be conclusively stated that improvements in data-driven decision-making led to increased competitive advantage, since reverse or bidirectional relationships may also be possible. Third, the findings may be subject to self-reporting bias given that the data were collected using structured questionnaires and Likert-scale items, as is common in similar studies. Respondents may overestimate or underestimate aspects such as data-driven decision-making quality or organisational agility due to perception bias or organisational image concerns.

Conclusion

This study examined the influence of data-driven decision-making and organisational agility on the dependent variable. The results reveal that data-driven decision-making has a positive and statistically significant effect, indicating that organisations that effectively utilise data in their decision-making processes are more likely to achieve superior outcomes. The findings highlight the strategic importance of investing in data analytics capabilities, information systems, and organisational processes that support evidence-based decision-making. In contrast, organisational agility was found to have no statistically significant influence on the dependent variable. Although agility remains an important organisational capability for responding to environmental uncertainty and change, its direct contribution to organisational outcomes was not supported by the findings of this study. This suggests that agility alone may not be sufficient to drive organisational success unless complemented by other organisational resources and capabilities. The study concludes that data-driven decision-making constitutes a critical organisational capability that significantly enhances performance outcomes.

Recommendations

Managers and policymakers should prioritise initiatives aimed at strengthening data accessibility, analytics capabilities, and a culture of evidence-based decision-making. The telecommunication firms in South Sudan ought to prioritise operational data visibility at the middle-management level. Rather than complex enterprise analytics, firms should deploy simple dashboards that display key metrics such as network uptime, customer complaints, and service activation times. Further, the telecommunication firms should implement short, practical workshops where teams analyse recent operational data and propose corrective actions. A mentorship arrangement of pairing experienced analysts with operational managers can further strengthen the analytical confidence of staff. Finally, firms ought to embed a data-driven culture in their decision-making such that managers should be required to reference data in justifying operational decisions, and teams that demonstrate measurable improvements based on data insights should be recognised. Future research should explore additional organisational and environmental factors that may influence the dependent variable and investigate potential mediating or moderating mechanisms through which organisational agility contributes to organisational performance.

References

- Accenture (2021). The impact of 5G on the United States economy. Retrieved from <https://www.accenture.com/content/dam/accenture/final/a-com-migration/pdf/pdf-146/accenture-5g-wp-us.pdf>
- Allison, P. (2020). Multiple regression: A primer. Pine Forge Press.
- AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research*, 145, 636-648.
- Argyris, C., & Schön, D. A. (1978). *Organisational learning: A theory of action perspective*. Addison-Wesley.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Dun & Bradstreet (2024). Telecommunications companies in South Sudan. Retrieved from <https://www.dnb.com/business-directory/companyinformation.telecommunications.ss.html>

- Du, X., Wang, N., Lu, S., Zhang, A., & Tsai, S. B. (2024). Sustainable competitive advantage under digital transformation: an eco-strategy perspective. *Chinese Management Studies*, 1(4), 1-15.
- Fast, V., Schnurr, D., & Wohlfarth, M. (2023). Regulation of data-driven market power in the digital economy: Business value creation and competitive advantages from big data. *Journal of Information Technology*, 38(2), 202-229.
- Field, A. (2023). *Discovering statistics using IBM SPSS Statistics* (6th ed.). Sage Publications.
- Global System for Mobile Communications Association (2024). Connectivity for refugees: South Sudan Country profile. Retrieved from https://www.gsma.com/-soluteeeonnns-and-impact/connectivity-for-good/mobile-fordevelopment/wpc-content/uploads/2024/05/Connectivity-forRefugees_So-uthSudan_R2_Web.pdf
- International Telecommunication Union (2023). Measuring digital development. Retrieved from https://www.itu.int/dms_pub/itu-d/opb/ind/d-ind-ict_mdd-2023-1-pdf-e.pdf
- Creswell, J. W., & Creswell, J. D. (2022). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Kola, J. (2023). Effect of digital transformation on competitive advantage of telecommunication firms in Kenya. Master's Thesis, United States International University-Africa, Nairobi, KE.
- Liébana-Cabanillas, F., & Blanco-Encomienda, F. J. (2024). Impact of big data analytics on telecom companies' competitive advantage. *Technology in Society*, 76, 102459.
- Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & information systems engineering*, 57(5), 339-343.
- Mugane, G. M. (2018). Big data analytics and competitive advantage of commercial banks and fintech companies in Kenya (Doctoral dissertation). University of Nairobi, Nairobi, Kenya.
- MTN Group (2023). MTN Group Limited: Integrated report for the year ended 31 December 2023. Retrieved from <https://mtn-investor.com/reporting-suite/pdf/mtn-fy-2023-ir.pdf>
- Nguyen, D. K., Broekhuizen, T., Dong, J. Q., & Verhoef, P. C. (2020). When it takes three to tango in the digital transformation age: Synergies between digital orientation, change commitment and organisational agility. *ICIS 2020 Proceedings*.
- Porter, M. E. (1985). *Competitive advantage: Creating and sustaining superior performance*. New York, NY: Free Press/
- Ramadan, M., Shuqqo, H., Qtaishat, L., Asmar, H., & Salah, B. (2020). Sustainable competitive advantage driven by big data analytics and innovation. *Applied Sciences*, 10(19), 6784.
- Saunders, M. N. K., Lewis, P., & Thornhill, A. (2022). *Research methods for business students* (9th ed.). Pearson.
- Tong, T., Iqbal, K., & Rahman, A. A. (2022). Core technological competence and competitive advantage: A study on Chinese high-tech SMEs. *Frontiers in Psychology*, 13, 959448.
- Troise, C., Corvello, V., Ghobadian, A., & O'Regan, N. (2022). How can SMEs successfully navigate a VUCA environment: The role of agility in the digital transformation era. *Technological Forecasting and Social Change*, 174, 121227.
- Vafaei-Zadeh, A., Madhuri, J., Hanifah, H., & Thurasamy, R. (2020). The interactive effects of capabilities and data-Driven Culture on sustained competitive advantage. *IEEE Transactions on Engineering Management*, 1-24.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.

- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889-901.
- World Bank (2024). Digital economy for Africa. <https://thedocs.worldbank.org/en/doc/61714f214ed04bcd6e9623ad0e215897-0400012021/related/Digital-Economy-RepSudan-jun22.pdf>
- Zhang, H., Ding, H., & Xiao, J. (2023). How organisational agility promotes digital transformation: An empirical study. *Sustainability*, 15(14), 113-134.