

DATA ANALYTICS STRATEGY AND COMPETITIVE ADVANTAGE OF BEVERAGE MANUFACTURING FIRMS IN NAIROBI COUNTY, KENYA

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ABSTRACT

The study examined the combined effect of data infrastructure, data-driven decisions, and data quality management on competitive advantage of beverage manufacturing firms in Nairobi County, Kenya. Beverage manufacturing firms in Nairobi County experienced declining competitiveness, reflected in reduced market share, weakening cost-efficiency indicators, and declining consumer utility scores. Despite the growing importance of data analytics, empirical evidence on its combined contribution to competitive advantage in Kenya's beverage manufacturing sector remained limited. The study used descriptive and explanatory research designs and targeted 132 respondents from 11 beverage manufacturing firms. Data were collected using structured questionnaires; 103 completed questionnaires were returned, representing a 78% response rate. Data were analyzed using descriptive statistics and multiple regression in SPSS Version 27. Data infrastructure, data-driven decisions, and data quality management had statistically significant effects on competitive advantage, while the combined model explained 64.5% of the variance ($R^2 = 0.645$, $F = 52.178$, $p < 0.001$). Data quality management was the strongest predictor ($\beta = 0.402$), followed by data-driven decisions ($\beta = 0.237$) and data infrastructure ($\beta = 0.191$). The study recommends an integrated data analytics strategy that strengthens data infrastructure, promotes data-driven decision-making, and maintains high data quality standards.

Keywords: *Data analytics strategy; data infrastructure; data-driven decisions; data quality management; competitive advantage.*

INTRODUCTION

According to Jahani, Jain, and Ivanov (2026), data analytics concerns with the collection, transformation, and organization of data with the objective of drawing conclusions, making predictions, and supporting informed decision-making. Data analytics further involves data visualization and interpretation as well as implementation and evaluation to enhance processes outcomes. Descriptive, diagnostics, predictive, and prescriptive are the common types of data analysis procedures that can be applied to a data-set to obtain meaningful information and inform actions (Maroufkhani, Iranmanesh, & Ghobakhloo, 2023). Through data analytics, beverage manufacturing firms in Nairobi County, Kenya can promote the quality of decision-making, support problem identification and suggest solutions, promote opportunities identification, and improve efficiency.

Data analytics strategy is a structured plan outlining how organizations collect, analyze, and use data to support data-driven decisions to achieve desired organizational goals (Batko & Ślęzak, 2022). The profound integration of data analytics and competitiveness has emerged as critical inclination due to the past intersection of new technologies. Global, regional, and local industries adopting data analytics to generate more value for the businesses are undergoing a process otherwise known as “digital transformation” that is necessary in wadding off competition in the modern business environments (Tenedero, 2026). According to Butt, Imran, Helo, and Kantola (2024), many firms adopt data analytics strategy to promote acquisition of competitive edge. Such a competitive edge results in substantial benefits like improved customer satisfaction, enhanced product differentiation, increased profits, increased agility and improved market share.

The dynamical manufacturing sector requires respective firms to adopt the disruptive data analytics strategies like data infrastructure, data-driven decisions, and data quality management to remain relevant and competitive both in the short and long-runs, thus achieving sustainable market presence, growth potential, and customer satisfaction (Zhang, Xu, & Ma, 2023). In today’s rapidly evolving and hyper-connected business environment, data analytics is no longer optional but a mandatory as it presents a firm with the foundation of long-term survival and growth (Tanui & Mutua, 2024). Competitors are modernizing, customer expectations rising, market dynamics shifting, and modern technologies reshaping how organizations operate. Traditional processes that depended on manual workflows, outdated systems, and siloed teams are no longer sufficient to remain competitive in the wake of large volumes of data that require critical analysis and interpretation (Butt *et al.*, 2024).

Data analytics strategy provide companies with a structured roadmap of considering available market data, analyzing them to draw inference and inform subsequent decisions that are supported and grounded on empirical evidence (Hamad & Ahmed, 2024). According to various aspects of modern businesses are affected by large volumes of information requiring in-depth analysis and application, like manufacturing and delivery of completed goods, building of sustainable relationships with suppliers and partners, as well as formulation of long-term strategic plans for beverage manufacturing firms. Data analytics provides avenues for knowledge and information sharing, thus promoting user involvement to result in the optimal business operations (Ogundipe *et al.*, 2023).

In this study, data analytics strategy will be assessed through data infrastructure, data-driven decisions, and data quality management. According to Kapoor (2024), data infrastructure is the digital component that promotes sharing and usage of data and can be assessed through storage

facilities, security and governance, and networking and connectivity. According to Szukits and Móricz (2024), data-driven decision-making concerns with the use of data and analytics to influence business decisions, making sure that decisions and choices are backed by empirical evidence and can be assessed through adequate data collection methods, analysis procedures, and application and evaluation. Furthermore, according to Ehrlinger and Wöß, (2022), data quality management concerns with the strategic practice to promote accuracy, timeliness relevance, and completeness of data for the intended purpose and which is critical for operational efficiency and effective decision-making.

STATEMENT OF THE PROBLEM

Ideally beverage manufacturing firms in Nairobi County, Kenya should leverage technological capabilities and strategic resources to achieve product differentiation, optimal customer satisfaction, and market share growth. The optimal operational level of these firms reflects the Kenyan national objective of increasing manufacturing sector's contribution to the GDP from the current 7.3% to 20% by 2030 through adequate database infrastructure and real-time data analytics (Kenya Association of Manufacturers, 2025).

However, the real scenario has shown continuous decline in the competitive advantage of beverage manufacturing firms in Nairobi County, Kenya. The manufacturing sector growth stagnated at 2.1% in the year ending 2025, due to unstable tax environments like the ksh. 35 billion Value Added Tax (VAT) refund backlog and high-power tariffs approximating ksh. 23.04 - ksh. 29.67 per kilowatt (Kenya National Bureau of Statistics 2025). Economic growth indicators showed unprecedented decline in the competitiveness of beverage manufacturing firms post COVID-19 between 2022 to 2025. For instance, the East Africa Breweries Limited's (EABL) consumer utility score dropped from 7.5 in 2022 in 2025 to 5.4 due to homogenous production, the market share of Coca-Cola drastically fell from 63.5% in 2022 to 50.97% in 2025, resulting into a 12.53% market share loss (Kenya Association of Manufacturers, 2025). Cost efficiency indicators drastically declined in the same period with Keroche Breweries Limited dropping from 77.4 to 66.2, denoting a weakening cost leadership capacity (Chepkirui & Mwanzia, 2025).

Despite these indicators of declining competitiveness, empirical evidence on the relationship between data analytics strategy and competitive advantage in Kenya's beverage manufacturing sector remains limited. Existing studies present inconsistent findings regarding the influence of data infrastructure, data-driven decision-making, and data quality management on organizational competitiveness. Further, most studies have examined these dimensions separately, creating a gap in integrated analysis of data analytics strategy and its combined influence on competitive advantage within Kenya's beverage manufacturing sector.

Studies on data analytics strategy have failed to bridge the current knowledge gap of competitive advantage among beverage manufacturing firms in Nairobi County, Kenya. Dahiya, Le, Ring, and Watson (2022) conducted a comparative study on big data analytics and competitive advantage: the role of firm-specific knowledge while the current study specifically focuses on data analytics and competitive advantage. Li, Lin, Ouyang, and Luo (2022) evaluated the impact of data analytics usage on the decision-making quality of organizations, and used decision-making quality as the dependent variable while the current study uses competitive advantage as the dependent variable. Caren (2023) studied predictive data analytics and competitive advantage of Jade collections clothing retail stores in Kenya and used case study research design of one firm which was limited while the current study uses descriptive and explanatory research designs and targets 11 firms,

thus more reliable. Caren (2023) used three theories while current study uses four theories. Kelvin and Morrisson (2023) studied big data analytics capabilities and performance of private hospitals in Nairobi City County, Kenya and targeted health service sector while the current study targets beverage manufacturing sector.

The above reviewed present contextual, methodological, theoretical, geographical, and contextual gaps on the effect of data analytics strategy on competitive advantage of beverage manufacturing firms. Despite increased adoption of digital technologies, beverage manufacturing firms continue experiencing declining competitive advantage, suggesting potential inefficiencies in the strategic use of data analytics capabilities. The current study therefore, examines the effect of data analytics strategy on competitive advantage of beverage manufacturing firms in Nairobi County, Kenya to bridge the underlying knowledge gap.

RESEARCH OBJECTIVE

To determine the combined effect of data infrastructure, data-driven decisions, and data quality management on competitive advantage of beverage manufacturing firms in Nairobi County, Kenya.

RESEARCH HYPOTHESIS

H₀: Data infrastructure, data-driven decisions, and data quality management have no statistically significant combined effect on competitive advantage of beverage manufacturing firms in Nairobi County, Kenya.

THEORITICAL REVIEW

Dynamic capabilities theory was founded by Shuen, Pisano, and Teece (1997) (Pisano, 2017). The dynamic capabilities theory is a strategic management model that examines how organizations approach challenges that are present in their routine operations. The theory according to Pisano (2017), was discovered on the background of persistent challenges that characterized organizational operations and which in one way or another, threatened the survival of underlying organizations. Dynamic capabilities theory was therefore, developed to offer strategic solution to the underlying organizational challenges and problems that hindered the achievement of defined goals and objectives, thus ensuring their continued operation.

The dynamics capabilities theory assumes that organizations need to adapt and integrate their institutional skills, resources, and competencies to align with the rapid changing business environment (Bleady, Ali, & Ibrahim, 2018). The theory examines an organization's capacity to implement various capabilities necessary in retaining their operational viability, going concern, and optimal market performance. The theory proponents argue that an organization should nurture its existing resources to mount a short-term competitive advantage necessary in maintaining a long-term competitive position in the market despite the highly volatile and changing market environments. The theory concerns with how organizations strategically rethink their processes and operations using the underlying capacities and capabilities to counter the dynamic and sporadic business environment (Gupta, Modgil, Gunasekaran, & Bag, 2020).

The dynamic capabilities theory will be relevant to the data quality management variable. According to Ehrlinger and Wöß, (2022), data quality management concerns with the strategic practice to promote accuracy, timeliness relevance, and completeness of data for the intended purpose and which is critical for operational efficiency and effective decision-making. The dynamic capabilities theory will enable the current study assess how accuracy, completeness, and

timeliness of data support data analytics strategy in influencing the competitiveness of beverage manufacturing firms in Nairobi County. Adequate data quality management will enable underlying firms restructure their internal operations and processes to align with the changing market dynamics, thus remaining operationally and functionally viable both in the short and long runs.

Critics of the dynamic capabilities theory argue that it lacks a universally accepted empirically based definition of the theory and what constitutes dynamic capabilities, hindering its general applicability in practice (Kero & Bogale, 2023). Additionally, critics argue that the theory embodies strategic choices that may hardly be replicable, thus reducing their effectiveness in a source of competitive advantage. Lastly, critics of the theory state that dynamic capabilities can easily be replaced by similar capabilities from other firms, resulting into a lack of differentiation and uniqueness.

EMPIRICAL REVIEW

Mahabub, Hossain, and Snigdha (2025) examined data-driven decision-making and strategic leadership: AI-powered business operations for competitive advantage and sustainable growth. The study explored the interactive effect of AI technology and leadership techniques, showing how business organizations can leverage data to enhance innovation capacity, support decision-making, and remain competitive. Using a mixed methods research design, the study found that the use of AI in business processes significantly enhances the competitiveness of a firm. A common finding in this domain is that data-driven decision-making improves competitive outcomes. However, this study was not anchored on any theoretical model, whereas the current study will be anchored on RBV, CAT, Dynamic Capabilities, and Contingency theories, thus addressing the theoretical gap.

Nilashi, Baabdullah, Abumalloh, Ooi, Tan, Giannakis, and Dwivedi (2025) studied how big data and predictive analytics impact the performance and competitive advantage of the food waste and recycling industry. The study was anchored on RBV, Technology-Organization-Environment (TOE), and Human-Organization-Technology theories, and used single procedure and survey research designs. The study found a significant impact of big data and predictive analytics on competitive advantage, economic performance, and environmental performance. The emerging trend here is the growing integration of data analytics with sustainability performance. The key gap is that this study targeted the food waste and recycling industry, while the current study targets the beverage manufacturing sector, creating a contextual gap.

Vafaei-Zadeh et al. (2024) researched the interactive effects of capabilities and data-driven culture on sustained competitive advantage. The study used RBV theory and targeted 172 Malaysian high-tech manufacturing firms. The study revealed that data-driven culture enhances the competitive advantage of the underlying firms. A common finding across such studies is that organizational culture aligned with data use strengthens competitive positioning. However, this study did not specify a research design, whereas the current study uses both descriptive and explanatory research designs to guide the methodology, addressing this methodological gap.

Chaudhuri, Chatterjee, Mariani, and Wamba (2024) assessed the influence of emerging technologies on organizational data-driven culture and innovation capabilities from a sustainability performance perspective. The study was anchored on Dynamic Capabilities Theory and used a survey research design. The study found that data-driven culture enhances performance standards. The contradiction in this study lies in its use of survey research design, which does not enable the

determination of cause-and-effect relationships among study variables. The current study addresses this by using an explanatory research design that enables causal effect determination.

RESEARCH METHODOLOGY

Research Design

A research design refers to the structured blueprint or framework that informs planning, collection, analysis and presentation of data in a research activity (Creswell & Creswell, 2017). In this study, both descriptive and explanatory research designs were used. According to Ghanad (2023), descriptive research design concerns with the description of study phenomena, behaviour or characteristics as they occur in their normal settings without any manipulation. On the other hand, explanatory research design is a methodology that examines cause-and-effect relationships among study variables (Creswell & Creswell, 2017). Descriptive research design was preferred in this study since it supported the successful description of study variable characteristics as they occur without any manipulation, which would promote the validity, reliability, and generalizability of the study findings on data analytics strategy and competitive advantage. Additionally, explanatory research design was preferred to enable successful determination of causal relationship between data analytics strategy and competitive advantage of beverage manufacturing firms in Nairobi County, Kenya.

Target Population

According to Adams and McGuire (2022), target population is the total group of subjects, objects, events or people that one is interested in studying. Bhangu, Provost, and Caduff (2023) further assert that a target population comprises units that share similar characteristics, thereby supporting the collection of data from comparable subjects. The study targeted 11 beverage manufacturing firms in Nairobi County, Kenya. From each firm, 12 personnel were selected as respondents: four executive directors, four departmental managers, and four ICT technicians, giving a total target population of 132 respondents. These personnel were selected because their roles involved strategic formulation, data and information management, organizational functionality, and market research, and they therefore possessed relevant knowledge on data analytics strategy and competitive advantage. The 11 beverage manufacturing firms formed the units of analysis, while the 132 executive directors, departmental managers, and ICT technicians formed the units of observation. Sampling Design and Procedure

A sample refers to a subset of a population selected for study. Census sampling was used because the target population was relatively small and manageable. The approach enabled all 132 eligible respondents from the 11 beverage manufacturing firms to be included in the study, thereby minimizing sampling error and improving coverage of the target population (Adams & McGuire, 2022).

RESULTS AND DISCUSSIONS

Descriptive Statistics

Combined Effect of Data Analytics Strategy

Respondents rated various statements related to the combined effect of data analytics strategy on competitive advantage on a scale of 5 to 1, where 5 indicated "Very Great Extent," 4 indicated "Great Extent," 3 indicated "Moderate Extent," 2 indicated "Small Extent," and 1 indicated "Not at All." Table 1 presents the descriptive statistics for the combined effect of data analytics strategy.

Table 1: Combined Effect of Data Analytics Strategy

Statement	Mean	SD
Adequate data infrastructure has enhanced the firm's innovativeness, resulting in differentiated beverage products	4.052	0.859
The use of data-driven decisions has improved market penetration strategies, contributing to positive market share growth	4.009	0.804
Adequate data quality management supports effective customer query resolution, contributing to improved customer satisfaction	3.948	0.808
The firm has experienced growth in its customer base over the 2022-2025 period	4.042	0.829
Overall, the adoption of data analytics strategy has positively contributed to the firm's competitive advantage	3.836	0.830

Source: Research Data (2026)

The findings were consistent with Hamad and Ahmed (2024), Tanui and Mutua (2024), and Wang, Cao, and Wang (2022), who reported positive relationships between data analytics or digital transformation and organizational performance or competitiveness. The results also supported the Resource-Based View, which regards valuable organizational resources as sources of competitive advantage, the contingency perspective that emphasizes context-informed decision-making, and Dynamic Capabilities Theory, which emphasizes the ability to adapt and reconfigure resources in changing environments. The findings therefore indicated that strengthening data infrastructure, data-driven decision-making, and data quality management could collectively support competitive advantage among beverage manufacturing firms in Nairobi County.

The findings in Table 3 showed that respondents generally agreed that data analytics strategy contributed to competitive advantage. Mean scores ranged from 3.836 to 4.052. The highest mean was recorded for adequate data infrastructure enhancing innovativeness and product differentiation ($M = 4.052$, $SD = 0.859$), followed by customer-base growth over 2022–2025 ($M = 4.042$, $SD = 0.829$), data-driven decisions improving market penetration and market share growth ($M = 4.009$, $SD = 0.804$), and data quality management supporting customer query resolution and customer satisfaction ($M = 3.948$, $SD = 0.808$). The overall contribution of data analytics strategy to competitive advantage recorded a mean of 3.836 ($SD = 0.830$).

Multiple Regression Analysis

Multiple regression analysis was conducted to determine the combined effect of data infrastructure, data-driven decisions, and data quality management on competitive advantage. This analysis enables the examination of how all three independent variables simultaneously influence competitive advantage, providing insights into their collective predictive power and the relative contribution of each variable when controlling for the others.

Table 2: Model Summary for Multiple Regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.803	.645	.638	.37045

Source: Research Data (2026)

The model summary presented in Table 4 showed that the combined independent variables explain 64.5% of the variation in competitive advantage ($R^2 = 0.645$), with an adjusted R^2 of 0.638

indicating that the model generalizes well to the population. The multiple correlation coefficient ($R = 0.803$) showed a strong positive relationship between the combined data analytics strategy components and competitive advantage. The R^2 value of 0.645 is substantially higher than any of the individual regression models (0.374, 0.475, and 0.520), indicating that the three components of data analytics strategy collectively account for nearly two-thirds of the competitive advantage observed among beverage manufacturing firms in Nairobi County, Kenya. The standard error of the estimate (0.37045) is the lowest among all regression models, indicating greater precision in prediction when all three independent variables are considered together.

Table 3: ANOVA for Multiple Regression

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	19.392	3	6.464	52.178	.000
Residual	10.672	99	.124		
Total	30.064	102			

Source: Research Data (2026)

The ANOVA results presented in Table 5 show that the multiple regression model is statistically significant ($F = 52.178$, $p < 0.001$), confirming that the combined independent variables are valid predictors of competitive advantage and leading to the rejection of the null hypothesis (H_{04}) which stated that data infrastructure, data-driven decisions, and data quality management have no significant combined effect on competitive advantage. The F-statistic of 52.178 with 3 and 99 degrees of freedom indicates that the explained variance is significantly greater than the unexplained variance. Of the total variance in competitive advantage (30.064), 19.392 is explained by the combined independent variables, while only 10.672 remains unexplained, representing a substantial improvement over the individual regression models.

Table 4: Coefficients for Multiple Regression

Model	B	Std. Error	Beta	t	Sig.
(Constant)	0.987	.218	—	4.527	.000
Data Infrastructure	.182	.087	.191	2.092	.039
Data-Driven Decisions	.248	.095	.237	2.611	.011
Data Quality Management	.417	.092	.402	4.532	.000

Source: Research Data (2026)

From the coefficients presented in Table 6, several important insights emerge regarding the individual contribution of each independent variable when controlling for the effects of the others. Data quality management emerges as the strongest predictor of competitive advantage in the multiple regression model ($\beta = 0.402$, $t = 4.532$, $p < 0.001$), followed by data-driven decisions ($\beta = 0.237$, $t = 2.611$, $p = 0.011$), and data infrastructure ($\beta = 0.191$, $t = 2.092$, $p = 0.039$). All three variables are statistically significant at the 95% confidence level ($p < 0.05$), confirming their individual contributions to competitive advantage even when controlling for the other variables.

The unstandardized coefficients indicate that a one-unit increase in data quality management leads to a 0.417-unit increase in competitive advantage, holding other variables constant. Similarly, a one-unit increase in data-driven decisions leads to a 0.248-unit increase, and a one-unit increase in data infrastructure leads to a 0.182-unit increase in competitive advantage. The constant term

(0.987) represents the expected level of competitive advantage when all independent variables are held at zero.

The multiple regression equation can be expressed as:

$$Y = 0.987 + 0.182X_1 + 0.248X_2 + 0.417X_3 + \varepsilon$$

Where:

Y = Competitive Advantage

X₁ = Data Infrastructure

X₂ = Data-Driven Decisions

X₃ = Data Quality Management

ε = Error Term

A comparison of the standardized coefficients (Beta) between the individual and multiple regression models reveals interesting patterns. In the individual regression models, data quality management had the highest Beta coefficient (0.721), followed by data-driven decisions (0.689), and data infrastructure (0.612). In the multiple regression model, the Beta coefficients for all three variables decreased (data quality management: 0.402, data-driven decisions: 0.237, data infrastructure: 0.191), which is expected due to the shared variance among the independent variables. However, the relative ranking remained the same, with data quality management retaining the strongest influence on competitive advantage.

The Variance Inflation Factor (VIF) was assessed to check for multicollinearity among the independent variables. All VIF values were below 5.0 (data infrastructure: 1.894, data-driven decisions: 2.143, data quality management: 2.056), indicating that multicollinearity was not a concern in the regression model. The tolerance values were all above 0.2, further confirming the absence of multicollinearity.

CONCLUSION

The objective was to determine the combined effect of data infrastructure, data-driven decisions, and data quality management on competitive advantage of beverage manufacturing firms in Nairobi County, Kenya. The hypothesis was that data infrastructure, data-driven decisions, and data quality management have no significant combined effect on competitive advantage. The analysis revealed that the combined effect of the three variables significantly influences competitive advantage, leading to the rejection of the null hypothesis.

The results demonstrated a strong positive combined effect of data analytics strategy components on competitive advantage. The combined model explained 64.5% of the variance in competitive advantage ($R^2 = 0.645$, $p < 0.001$), indicating that the three predictors collectively account for nearly two-thirds of the competitive advantage observed among beverage manufacturing firms. Data quality management emerged as the strongest predictor ($\beta = 0.402$), followed by data-driven decisions ($\beta = 0.237$), and data infrastructure ($\beta = 0.191$). Respondents acknowledged that adequate data infrastructure has enhanced innovativeness resulting in differentiated beverage products ($M = 4.052$, $SD = 0.859$), that data-driven decisions have improved market penetration strategies contributing to market share growth ($M = 4.009$, $SD = 0.804$), and that data quality management supports effective customer query resolution contributing to improved customer satisfaction ($M = 3.948$, $SD = 0.808$). These patterns suggest that data analytics strategy is not just

a collection of isolated capabilities but an integrated approach that collectively enhances competitive advantage.

The findings indicate that beverage manufacturing firms that simultaneously invest in robust data infrastructure, cultivate data-driven decision-making culture, and maintain high data quality standards are better positioned to achieve competitive advantage. This integrated approach enables firms to leverage data assets effectively, make informed strategic decisions, and respond quickly to market changes, thereby enhancing their competitive positioning in the beverage manufacturing sector.

The study concluded that the three components of data analytics strategy collectively have a significant positive influence on competitive advantage. The combined model explained 64.5% of the variance in competitive advantage, indicating that integrated data analytics capabilities yield greater returns than investments in individual components alone. Therefore, the study concludes that the combined effect of data infrastructure, data-driven decisions, and data quality management significantly enhances competitive advantage in beverage manufacturing firms.

RECOMMENDATIONS

The study recommends that beverage manufacturing firms adopt an integrated approach to data analytics strategy, recognizing that the three components—data infrastructure, data-driven decisions, and data quality management—are mutually reinforcing and collectively contribute to competitive advantage. Firms should avoid investing in isolated components but rather develop comprehensive data analytics capabilities across all three dimensions. This integrated approach will enable firms to leverage data assets holistically, make informed strategic decisions, and respond quickly to market changes, thereby enhancing their competitive positioning in the beverage manufacturing sector.

To the Kenya Association of Manufacturers (KAM) and policy-makers, the study recommends the development of sector-wide frameworks and capability-building programs to improve the digital preparedness of manufacturing enterprises in Kenya. This includes providing technical assistance, facilitating knowledge sharing platforms, and developing industry standards for data analytics practices. Such initiatives would support the manufacturing sector's contribution to the Kenyan GDP and help achieve the national objective of increasing the manufacturing sector's contribution from the current 7.3% to 20% by 2030.

REFERENCES

- Adams, K. A., & McGuire, E. K. (2022). *Research methods, statistics, and applications*. Sage Publications.
- Barney, J. B., & Clark, D. N. (2007). *Resource-based theory: Creating and sustaining competitive advantage*. Oup Oxford.
- Batko, K., & Ślęzak, A. (2022). The use of Big Data Analytics in healthcare. *Journal of big Data*, 9(1), 3.
- Bhangu, S., Provost, F., & Caduff, C. (2023). Introduction to qualitative research methods—Part I. *Perspectives in clinical research*, 14(1), 39-42.
- Bleady, A., Ali, A. H., & Ibrahim, S. B. (2018). Dynamic capabilities theory: pinning down a shifting concept. *Academy of Accounting and Financial Studies Journal*, 22(2), 1-16.
- Butt, A., Imran, F., Helo, P., & Kantola, J. (2024). Strategic design of culture for digital transformation. *Long Range Planning*, 57(2), 102415.
- Caren, A. (2023). Predictive Data Analysis and Competitive Advantage of Jade Collections Clothing Retail Stores, Kenya. *African Development Finance Journal*, 5(4), 102-115.
- Chaudhuri, R., Chatterjee, S., Mariani, M. M., & Wamba, S. F. (2024). Assessing the influence of emerging technologies on organizational data driven culture and innovation capabilities: A sustainability performance perspective. *Technological forecasting and social change*, 200, 123165.
- Chepkirui, F., & Mwanzia, M. (2025). growth strategies and performance of food and beverage manufacturing firms in Nairobi county, Kenya. *International Journal of Innovation, Enterprise, and Social Sciences*, 5(1), 103-118.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications
- Dahiya, R., Le, S., Ring, J. K., & Watson, K. (2022). Big data analytics and competitive advantage: the strategic role of firm-specific knowledge. *Journal of Strategy and Management*, 15(2), 175-193.
- Ehrlinger, L., & Wöß, W. (2022). A survey of data quality measurement and monitoring tools. *Frontiers in big data*, 5, 850611.
- Fiedler, F. R. E. D. (2015). Contingency theory of leadership. In *organizational behavior 1* (pp. 232-255). Routledge.
- Ghanad, A. (2023). An overview of quantitative research methods. *International journal of multidisciplinary research and analysis*, 6(08), 3794-3803.
- Gupta, S., Modgil, S., Gunasekaran, A., & Bag, S. (2020, July). Dynamic capabilities and institutional theories for Industry 4.0 and digital supply chain. In *Supply Chain Forum: An International Journal* (Vol. 21, No. 3, pp. 139-157). Taylor & Francis.
- Hamad, K. M., & Ahmed, A. A. (2024). The impact of digital transformation on organizational performance: a conceptual framework examining the mediating role of data-driven decision-making. *International Journal of Business Society*, 8 (10), 18-23

- Jahani, H., Jain, R., & Ivanov, D. (2026). Data science and big data analytics: a systematic review of methodologies used in the supply chain and logistics research. *Annals of Operations Research*, 359(2), 1297-1354.
- Kapoor, A. (2024, October). Big data infrastructure: integrating legacy systems with AI-Driven platforms. In *CS & IT Conference Proceedings* (Vol. 14, No. 19). CS & IT Conference Proceedings.
- Kenya Association of Manufacturers (2025) *Kenya association of manufacturers*. available at: <https://www.kam.co.ke/> (Accessed: 18 April 2026).
- Kenya national bureau of statistics economic survey report (2025). <https://www.knbs.co.ke>. (Accessed: 25 May 2026).
- Li, L., Lin, J., Ouyang, Y., & Luo, X. R. (2022). Evaluating the impact of big data analytics usage on the decision-making quality of organizations. *Technological Forecasting and Social Change*, 175, 121355.
- Mahabub, S., Hossain, M. R., & Snigdha, E. Z. (2025). Data-driven decision-making and strategic leadership: AI-powered business operations for competitive advantage and sustainable growth. *Journal of Computer Science and Technology Studies*, 7(1), 326-336.
- Maroufkhani, P., Iranmanesh, M., & Ghobakhloo, M. (2023). Determinants of big data analytics adoption in small and medium-sized enterprises (SMEs). *Industrial Management & Data Systems*, 123(1), 278-301.
- Nilashi, M., Baabdullah, A. M., Abumalloh, R. A., Ooi, K. B., Tan, G. W. H., Giannakis, M., & Dwivedi, Y. K. (2025). How can big data and predictive analytics impact the performance and competitive advantage of the food waste and recycling industry?. *Annals of Operations Research*, 348(3), 1649-1690.
- Ogundipe, F., Bakare, O. I., Sampson, E., & Folorunso, A. (2023). Harnessing digital transformation for Africa's growth: Opportunities and challenges in the technological era. *African Development Review*, 28(4), 234-251.
- Pisano, G. P. (2017). Toward a prescriptive theory of dynamic capabilities: connecting strategic choice, learning, and competition. *Industrial and Corporate Change*, 26(5), 747-762.
- Szukits, Á., & Móricz, P. (2024). Towards data-driven decision making: the role of analytical culture and centralization efforts. *Review of Managerial Science*, 18(10), 2849-2887.
- Tanui, S., & Mutua, J. (2024). Digital transformation strategies and competitive advantage in the Kenyan banking industry. *Journal of Business and Management* 26(4), 01-07
- Tenedero, M.A. (2026). Digital transformation and accounting effectiveness: the roles of automation, technology competencies, and perceived opportunities. *Psychology and Education: A Multidisciplinary Journal*.
- Vafaei-Zadeh, A., Madhuri, J., Hanifah, H., & Thurasamy, R. (2024). The interactive effects of capabilities and data-driven culture on sustained competitive advantage. *IEEE Transactions on Engineering Management*, 71, 8444-8458.
- Wang, H., Cao, W., & Wang, F. (2022). Digital transformation and manufacturing firm performance: Evidence from China. *Sustainability*, 14(16), 10212.

Zhang, X., Xu, Y. Y., & Ma, L. (2023). Information technology investment and digital transformation: the roles of digital transformation strategy and top management. *Business Process Management Journal*, 29(2), 528-549.