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Digital Transformation Capabilities and the Competitive Advantage of Commercial Banks in Kenya

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Abstract
The purpose of the study was to determine the effect of digital transformation capabilities on the competitive advantage of commercial banks in Kenya. The study adopted a post-positivist research philosophy and an explanatory research design, guided by Dynamic Capability Theory. The target population consisted of 370 respondents drawn across the 37 commercial banks in Kenya. Stratified random sampling was used to select 192 CEOs and heads of key departments from commercial banks. Primary data were collected using self-administered questionnaires and analysed using descriptive and inferential statistics in Statistical Package for the Social Sciences version 25, statistical software. Descriptive statistics involved frequency distribution, means and standard deviation. The inferential statistics used were Pearson's coefficient for correlation analysis, Chi-square test, one-way ANOVA, and ordinal logistic regression for hypothesis testing. The descriptive results indicated a high level of Digital Transformation Capabilities among commercial banks ($M = 4.322$, $SD = 0.731$), suggesting that organisational restructuring, process reengineering, and cultural change were widely embedded in the banks. The ordinal logistic regression model demonstrated strong explanatory power (Nagelkerke Pseudo-R^2 = 0.741), while Digital Transformation Capabilities had a positive and statistically significant effect on Competitive Advantage (Estimate = 6.855, $p < 0.001$). The study concludes that stronger Digital Transformation Capabilities increase the likelihood of higher Competitive Advantage. The findings imply that bank managers should move beyond technology adoption by prioritising organisational restructuring, process reengineering, and cultural change, while the Central Bank of Kenya can strengthen policies and supervisory frameworks that support banks' digital transformation and organisational readiness.

Introduction
Commercial banks operate in an increasingly competitive financial services environment, where competition for customers, deposits, and lending opportunities places pressure on banks to strengthen their operational and strategic performance (Srivastava et al., 2023). This competitive pressure makes it important to examine the specific factors that enable banks to sustain performance and maintain their market position. The liberalisation of financial markets has led to an increase in the number of institutions offering similar financial products and services (King'oku & Muathe, 2024). Additionally, deregulation, and privatization changes have intensified competition within the sector and brought external competitors, primarily non-banking financial institutions and market-based financing options (Nguyen-Thi-Huong et al., 2023). Equally, the shifting interest rate cycle has forced banks to

compete in a new landscape, where they must continue to transform their business models to maintain revenue growth and profitability. The main drive for the Banks is to remain competitive in the ever-dynamic market.

Competitive advantage refers to a firm's ability to outperform competitors by delivering superior value through lower costs, differentiated products or services, efficient operations, strong brand equity, or unique resources that are difficult to imitate (Khalaf et al., 2024). It is reflected in two key dimensions: efficiency advantage, achieved through superior operational performance, and value advantage, achieved by offering products or services that customers perceive as more valuable than competing alternatives (Farhikhteh, 2023). In the banking sector, competitive advantage is essential for profitability, customer retention, market share growth, and long-term sustainability. Globally, increasing competition, industry consolidation, and rapid technological advancements have compelled banks to continuously strengthen their competitive position through innovation, operational excellence, and customer-focused strategies (McKinsey, 2024; Bowman, 2022).

Across Africa, banking sectors have become increasingly competitive following financial sector liberalisation and regulatory reforms. In South Africa, the five largest banks account for over 90% of banking assets, creating intense competition for corporate and retail customers (Bisschoff & Els, 2023). In Nigeria, there are over 20 commercial banks, with the five largest institutions controlling approximately 70% of industry assets, compelling smaller banks to compete through product differentiation and customer service (Rufus et al., 2022). Similarly, Ghana's banking reforms reduced the number of universal banks from 34 in 2017 to 23 by 2020, increasing competition among the remaining institutions as they sought to strengthen profitability and market share (Antwi et al., 2024).

In Kenya, the banking sector is among the most competitive in Sub-Saharan Africa. As of 2024, the country had 37 licensed commercial banks serving a population of over 55 million people (Central Bank of Kenya, 2024). However, competition remains uneven. The largest banks, including Equity Bank, KCB Bank, Cooperative Bank, Absa Bank Kenya, and Standard Chartered Bank Kenya, control more than 60% of total banking assets and deposits, while smaller banks continue to experience declines in market share and profitability (Juma et al., 2024). Furthermore, the Central Bank of Kenya reported that the banking sector recorded a Return on Assets (ROA) of approximately 3.4% and a Return on Equity (ROE) of about 25% in 2024, although these averages conceal significant performance disparities across banks. Several small and medium-sized banks continue to experience low profitability, limited market share growth, and increasing competitive pressure despite operating within the same regulatory environment.

Digital transformation capabilities encompass the organisational skills, resources, technological competencies, and processes that enable firms to effectively adopt, integrate, and sustain digital technologies and processes (Barasa & Ngure, 2015). Firms are increasingly reshaping processes, operations, and human roles in value creation as they pursue digital transformation (Mihu et al., 2023). Consequently, organisations require capabilities that enable business model change and organisational restructuring (Ellström et al., 2023). A clear understanding of digitalisation concepts is essential before embarking on this process, particularly because digitisation and digital transformation are often confused (Fischer et al., 2023). Digitisation refers to the conversion of analog information into digital formats or the automation of processes using ICT, while digital transformation involves broader changes in business models, products, processes, and organisational structures (Hess et al., 2016). It is an ongoing process of strategic renewal leveraging digital technologies to build adaptive capabilities that reshape business models and organisational culture (Warner & Wäger, 2019).

Digital transformation capabilities have become a strategic priority for commercial banks; however, substantial investment in digital technologies has not necessarily translated into comparable improvements in competitive outcomes. Although Kenyan commercial banks have widely adopted customer-facing technologies such as mobile banking, application programming interfaces (APIs), cloud computing, biometrics, and big data analytics, significant challenges remain in integrating these technologies into core banking operations. According to the Central Bank of Kenya (2024), 98% of commercial banks have adopted mobile banking, 79% utilise APIs, 42% have implemented cloud computing, and 40% have adopted biometrics and big data analytics. However, only 63% have successfully embedded digital solutions into their core operations, leaving more than one-third of banks with continuing challenges in digitising critical back-end processes. This disparity between widespread front-end adoption and incomplete back-end integration suggests that access to digital technologies alone may be insufficient to generate sustained competitive advantage. Rather, the ability of banks to identify emerging digital opportunities, mobilize and deploy appropriate resources, integrate digital technologies into existing operations, and continuously reconfigure organisational processes may determine whether digital investments translate into superior customer value, operational efficiency, and competitive performance.

The observed gap between digital adoption and successful integration also points to an important empirical question concerning the organisational capabilities that enable commercial banks to convert digital investments into competitive advantage. Existing studies have generally reported a positive relationship between digital transformation capabilities and organisational competitiveness, resilience, and performance (Ferreira et al., 2019; Xie & Wang, 2023; Wamuyu, 2020). However, the extent to which these capabilities enable banks to overcome the specific challenges associated with integrating digital technologies into core operations remains insufficiently established, particularly in developing banking markets such as Kenya. From a Dynamic Capabilities perspective, digital transformation capabilities involve the capacity to sense changes and opportunities in the digital environment, seize those opportunities through appropriate resource mobilisation and technological deployment, and transform existing processes and organisational arrangements to accommodate digital change. These capabilities provide a basis for explaining why high levels of technological adoption may coexist with incomplete operational integration and uneven competitive outcomes across banks. Accordingly, there is a need to empirically examine how digital transformation capabilities influence the competitive advantage of commercial banks in Kenya. The purpose of the study was therefore to determine the effect of digital transformation capabilities on the competitive advantage of commercial banks in Kenya.

Theoretical Review

Dynamic Capability Theory, developed by Teece et al. (1997), underpinned this study by explaining how organisations achieve and sustain competitive advantage in dynamic environments through the integration, development, and reconfiguration of internal and external resources. Teece (2007) conceptualised dynamic capabilities through sensing opportunities and threats, seizing opportunities, and transforming or reconfiguring organisational resources and structures. In this study, Digital Transformation Capabilities, measured through organisational restructuring, process reengineering, and cultural change, represent the capacity of commercial banks to reconfigure their resources, routines, and organisational practices in response to digital and market changes. Organisational restructuring reflects the reconfiguration of structures, roles, and resources to support digital operations; process reengineering reflects the transformation of established routines and processes to improve efficiency and responsiveness; while cultural change reflects the development of values and behaviours that support learning, innovation, and adaptation. Collectively, these capabilities enable banks to respond to technological developments, changing customer expectations, and competitive

pressures, thereby enhancing operational efficiency, innovation, agility, and customer responsiveness and ultimately strengthening competitive advantage. Thus, Dynamic Capability Theory provides the theoretical mechanism linking the three dimensions of Digital Transformation Capabilities to the competitive advantage of commercial banks in Kenya.

Conceptual Framework

Figure 1 presents the study's conceptual framework and illustrates the relationship between the independent and dependent variables. The independent variable is digital transformation capabilities, while the dependent variable is the competitive advantage of commercial banks in Kenya.

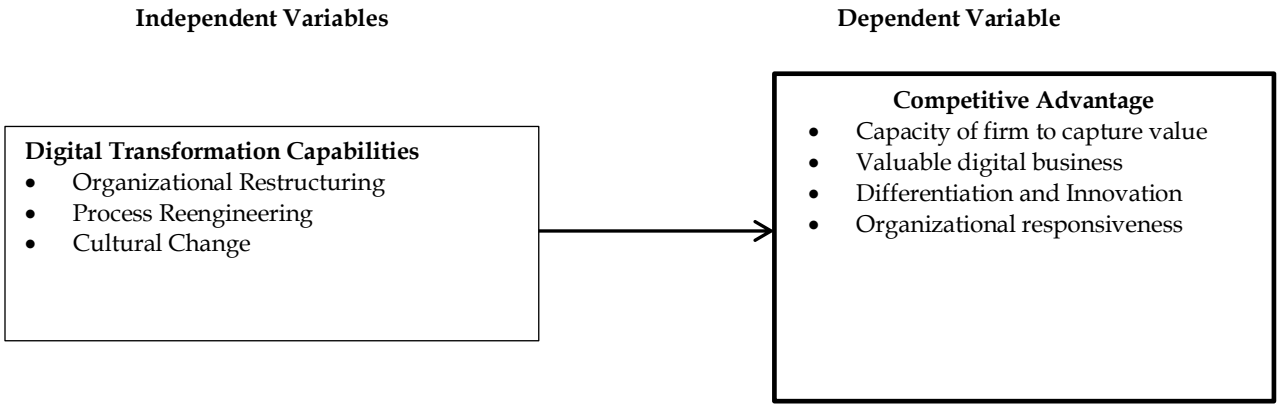

Figure 1: Conceptual Framework

Empirical Review

Empirical studies generally indicate that organisations with stronger digital transformation capabilities are better positioned to improve operational and organisational performance. Yu et al. (2022), for instance, found that digital transformation capability significantly influenced operational performance, demonstrating the importance of organisational capabilities in converting digital technologies into improved performance outcomes. Similarly, Jardak and Ben Hamad (2022) found that digital transformation positively influenced firm performance among Swedish-listed companies. Gaglio et al. (2022) further found that digital transformation enhanced innovation and productivity among South African manufacturing micro and small enterprises, while Adeyinka (2023) reported a positive relationship between digital transformation and firm efficiency in the Nigerian manufacturing sector. In Kenya, Orwa et al. (2026) established that transforming dynamic capabilities significantly influenced the performance of quality management systems among medium-sized manufacturers in Nairobi County. Collectively, these studies demonstrate that organisational capabilities associated with digital transformation can generate performance benefits across different sectors and contexts.

Research Methodology

This study adopted the post-positivist research philosophy, which supports objective and empirical investigation through quantitative methods and hypothesis testing (Creswell & Creswell, 2022). The study employed an explanatory research design to examine the effect of Digital Transformation Capabilities on Competitive Advantage among commercial banks in Kenya. The explanatory design was appropriate because the study sought to establish the extent to which variations in Digital Transformation Capabilities explain differences in Competitive Advantage without manipulating the study variables (Saunders et al., 2019). Data were collected using a five-point Likert scale and analysed

using ordinal logistic regression to determine the effect of Digital Transformation Capabilities on Competitive Advantage.

The target population consisted of 370 respondents drawn from CEOs and heads of key departments, finance, marketing, human resource, strategy, customer relations, operations, credit, ICT, risk and compliance, and internal audit, across the 37 commercial banks in Kenya. This study employed both purposive and stratified random sampling techniques. Stratified random sampling is a probability sampling technique in which the population is divided into homogeneous subgroups (strata) based on characteristics relevant to the research (Hall, 2020). After purposively identifying the relevant leadership positions, the respondents were organised into strata according to their functional roles across the 37 commercial banks licensed by the Central Bank of Kenya. This study used Yamane (1967) simplified formula to calculate the sample size of 192, which provided the number of target responses.

Primary data were collected using structured questionnaires administered to CEOs and heads of departments in commercial banks. A pilot study was conducted at National Bank of Kenya Ltd and Consolidated Bank of Kenya because they are licensed commercial banks with organisational characteristics comparable to those included in the main study. The pilot results confirmed the validity and reliability of the research instrument. Reliability analysis produced Cronbach's alpha coefficients above the recommended threshold of 0.70, indicating satisfactory internal consistency. Validity was established through face and content validity, with expert review and Content Validity Index (I-CVI) values meeting the recommended threshold of 0.78. Construct validity was further confirmed through Confirmatory Factor Analysis, with Composite Reliability (CR) values of at least 0.70 and Average Variance Extracted (AVE) values of at least 0.50. These results confirmed that the instrument was sufficiently reliable and valid for the main study.

Quantitative data analysis was employed to analyse numerical data obtained from the questionnaires. The data were edited, coded, and entered into SPSS Version 25 for analysis, with incomplete responses excluded. Descriptive and inferential statistics were generated to address the study objective. Descriptive statistics, including frequencies, means, and standard deviations, were used to summarise respondents' responses, while inferential analyses, including factor analysis, Chi-square tests, Pearson Product-Moment Correlation, and ordinal logistic regression, were used to examine relationships among the study variables and test the study hypotheses. The suitability of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. Pearson Product-Moment Correlation was used to determine the strength and direction of associations among the study variables. Ordinal Logistic Regression (OLR) was subsequently employed to test the study hypotheses. Model adequacy was evaluated using Model Fitting Information, Goodness-of-Fit statistics, and Nagelkerke Pseudo-R^2, while the effects of the predictor variables were assessed using parameter estimates, significance levels, and corresponding odds ratios. Unlike linear regression, OLR does not produce a conventional R^2 representing the percentage of variance explained; therefore, Nagelkerke Pseudo-R^2 was interpreted as an index of model explanatory strength rather than as a percentage of variance explained.

Results

The researcher administered 192 questionnaires, of which 183 were returned fully completed, representing a response rate of 95.31%. Regarding the general information, the findings indicated that 41.5% of the respondents were aged 35–44 years, 10.4% were Heads of Finance, Human Resource, Customer Relations, ICT, and Credit, 39.3% had 11–20 years of work experience, and 47.5% held a Master's degree. The respondents' age, organisational position, work experience, and educational qualifications enhanced their ability to provide reliable information on digital transformation capabilities and competitive advantage in commercial banks in Kenya.

Descriptive Statistics for Competitive Advantage

As presented in Table 1, respondents generally agreed that commercial banks demonstrated strong competitive advantage across the four dimensions of capacity to capture value, valuable digital business, differentiation and innovation, and organisational responsiveness. Regarding capacity to capture value, respondents agreed that the organisation sustains value creation through digital initiatives (M = 4.328, SD = 0.820), maximises returns from digital transformation efforts (M = 4.306, SD = 0.922), effectively captures value from digital investments (M = 4.262, SD = 0.817), and has systems for converting digital capabilities into long-term competitive advantage (M = 4.169, SD = 0.733). For valuable digital business, respondents agreed that the bank offers digital products and services perceived as valuable by customers (M = 4.279, SD = 0.787), has developed new business models enabled by digital technologies (M = 4.219, SD = 0.875), and has significantly expanded its revenue streams through digital channels (M = 4.175, SD = 0.927).

Regarding differentiation and innovation, respondents agreed that the organisation promotes a culture of innovation driven by digital initiatives (M = 4.284, SD = 0.746), uses digital technologies to enhance product and service differentiation (M = 4.219, SD = 0.816), leverages digital tools to offer distinctive services (M = 4.213, SD = 0.854), and is often an early adopter of innovative digital banking solutions (M = 4.197, SD = 0.952). Finally, for organisational responsiveness, respondents agreed that the organisation demonstrates agility in adjusting digital processes to external changes (M = 4.306, SD = 0.815), responds quickly to market changes using digital capabilities (M = 4.202, SD = 0.810), adapts digital strategies to customer feedback and competitive trends (M = 4.202, SD = 0.618), and continuously evolves its digital services to meet changing customer demands (M = 4.126, SD = 0.846).

Table 1: Descriptive Statistics for Capacity of Competitive Advantage

Statements	N	Mean	Std. Dev
Our bank effectively captures value from its digital investments.	183	4.262	.817
The organisation has systems in place to convert digital capabilities into long-term competitive advantage.	183	4.169	.733
Our bank maximises returns from digital transformation efforts.	183	4.306	.922
The organisation sustains value creation through digital initiatives.	183	4.328	.820
The bank offers digital products and services that are perceived as valuable by customers.	183	4.279	.787
Our organisation has developed new business models enabled by digital technologies.	183	4.219	.875
Digital channels have expanded the bank's revenue streams significantly.	183	4.175	.927
Our bank leverages digital tools to offer unique services that stand out in the market.	183	4.213	.854
The organisation promotes a culture of innovation driven by digital initiatives.	183	4.284	.746
Our bank's use of digital technologies enhances product and service differentiation.	183	4.219	.816
The organisation is often the first mover in adopting innovative digital banking solutions.	183	4.197	.952
Our bank quickly responds to market changes using digital capabilities.	183	4.202	.810
The organisation adapts digital strategies in response to customer feedback and competitive trends.	183	4.202	.618
Our bank continuously evolves its digital services to meet changing customer demands.	183	4.126	.846
The organisation demonstrates agility in adjusting digital processes to respond to external shifts.	183	4.306	.815
Average		**4.232**	**0.823**

Factor Analysis for Competitive Advantage

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.908, indicating a good level of suitability for factor analysis, as values above 0.6 are considered acceptable. This suggests that the sample size and correlations among variables are adequate for principal component analysis (PCA). Bartlett's Test of Sphericity is highly significant ($\chi^2 = 1646.675$, df = 105, $p < 0.001$), indicating that the

correlation matrix is not an identity matrix and that significant relationships exist among the variables. This confirms that PCA can be meaningfully applied to the dataset.

Table 2: KMO and Bartlett's Test for Competitive Advantage

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.908
Bartlett's Test of Sphericity	Approx. Chi-Square	1646.675
	df	105
	Sig.	.000

Table 3 presents the total variance explained for Competitive Advantage. The results indicate that the first principal component had an eigenvalue of 10.505 and explained 70.036% of the total variance in the 15 indicators. Since only one component was extracted, this component represents the underlying Competitive Advantage construct, encompassing value capture, valuable digital business, differentiation and innovation, and organisational responsiveness. The relatively high proportion of variance explained indicates that the indicators share substantial common variance and provide a strong representation of the construct. The remaining components had eigenvalues below the extraction criterion and were not retained. These findings support extracting a single component and confirm that the indicators can be combined into a composite measure of Competitive Advantage for subsequent analysis.

Table 3: Total Variance Explained for Competitive Advantage

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.505	70.036	70.036	10.505	70.036	70.036
2	1.364	9.090	79.126			
3	.897	5.983	85.108			
4	.706	4.706	89.814			
5	.413	2.751	92.566			
6	.344	2.293	94.858			
7	.254	1.696	96.554			
8	.186	1.242	97.796			
9	.113	.751	98.547			
10	.093	.618	99.165			
11	.065	.431	99.596			
12	.031	.205	99.801			
13	.019	.128	99.929			
14	.008	.054	99.983			
15	.003	.017	100.000			

Extraction Method: Principal Component Analysis.

As shown in Figure 2, the scree plot supports extracting a single principal component, consistent with the results in Table 6. The plot exhibits a sharp decline in eigenvalues after the first component, followed by a relatively flat trend, indicating that only the first component has an eigenvalue greater than one and contributes meaningfully to explaining the variance in the data. Component 1 has an eigenvalue of 10.505 and explains 70.036% of the total variance, which exceeds the recommended threshold of 50% for a unidimensional construct. This finding indicates that the indicators of competitive advantage converge on a single underlying construct and exhibit strong shared variance. Consequently, the extracted component adequately represents the competitive advantage construct and is suitable for subsequent statistical analyses.

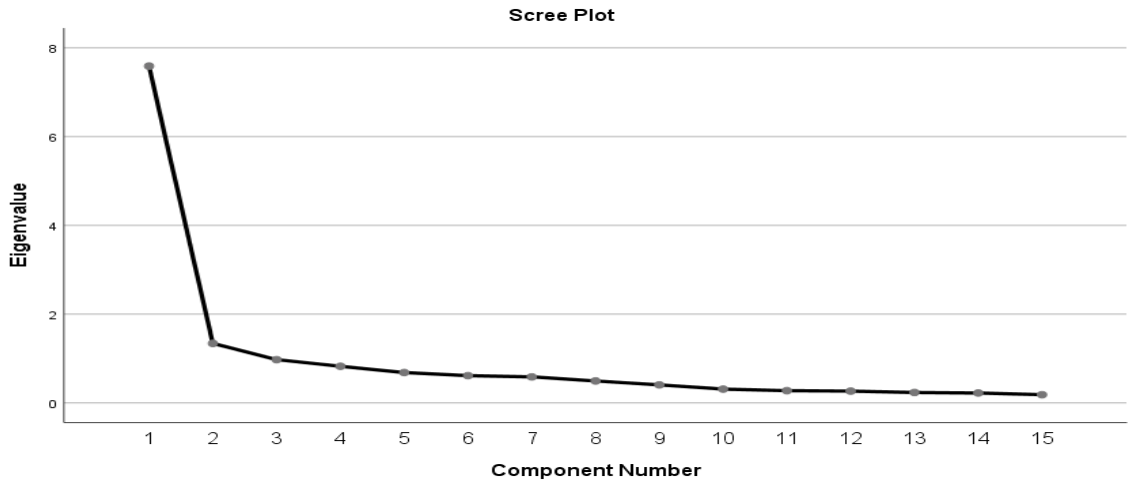

Figure 2: Scree Plot for Competitive Advantage

The component matrix in Table 4 indicates that Competitive Advantage is represented by a single factor, with all 15 items loading positively between 0.605 and 0.855. Strong loadings were observed for digital differentiation, value capture, innovation, and organisational responsiveness, indicating that the indicators are closely associated with the underlying construct. The highest loading was for leveraging digital tools to offer unique services (0.855), while the lowest was for sustaining value creation through digital initiatives (0.605). The extraction of one component suggests that the items collectively capture a unidimensional construct of Competitive Advantage. The results therefore support combining the indicators into a composite measure for subsequent statistical analysis.

Table 4: Component Matrix for Competitive Advantage

	Component 1
Our bank effectively captures value from its digital investments.	.806
The organisation has systems in place to convert digital capabilities into long-term competitive advantage.	.690
Our bank maximises returns from digital transformation efforts.	.657
The organisation sustains value creation through digital initiatives.	.605
The bank offers digital products and services that are perceived as valuable by customers.	.804
Our organisation has developed new business models enabled by digital technologies.	.768
Digital channels have expanded the bank's revenue streams significantly.	.719
Our bank leverages digital tools to offer unique services that stand out in the market.	.855
The organisation promotes a culture of innovation driven by digital initiatives.	.749
Our bank's use of digital technologies enhances product and service differentiation.	.683
The organisation is often the first mover in adopting innovative digital banking solutions.	.612
Our bank quickly responds to market changes using digital capabilities.	.795
The organisation adapts digital strategies in response to customer feedback and competitive trends.	.627
Our bank continuously evolves its digital services to meet changing customer demands.	.672
The organisation demonstrates agility in adjusting digital processes to respond to external shifts.	.654

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Descriptive Statistics for Digital Transformation Capabilities

As presented in Table 5, respondents generally agreed that commercial banks demonstrated strong Digital Transformation Capabilities across organisational restructuring, process reengineering, and cultural change. For organisational restructuring, respondents agreed that banks integrate digital units within their overall business structures (M = 4.437, SD = 0.675) and flatten hierarchies to improve

agility in digital decision-making (M = 4.393, SD = 0.776), while also adjusting structures to support digital transformation (M = 4.246, SD = 0.734) and realigning roles and responsibilities for digital operations (M = 4.213, SD = 0.744). For process reengineering, respondents agreed that banks regularly review and update processes to align with digital advancements (M = 4.383, SD = 0.731), redesign core processes (M = 4.235, SD = 0.745), streamline operations (M = 4.235, SD = 0.691), and automate routine tasks (M = 4.235, SD = 0.801). Regarding cultural change, respondents reported the highest agreement with openness and adaptability to digital transformation (M = 4.574, SD = 0.780), continuous learning and digital skills development (M = 4.508, SD = 0.678), a culture supporting digital innovation (M = 4.284, SD = 0.782), and risk-taking and experimentation (M = 4.120, SD = 0.635).

Table 5: Descriptive Statistics for Digital Transformation Capabilities

Statements	N	Mean	Std. Dev
Our organisation adjusts its structure to better support digital transformation initiatives.	183	4.246	.734
The organisation realigns roles and responsibilities to enable digital operations.	183	4.213	.744
Our organisation flattens hierarchies to improve agility in digital decision-making.	183	4.393	.776
The organisation integrates digital units within its overall business structure.	183	4.437	.675
Our organisation redesigns core processes to take advantage of digital technologies.	183	4.235	.745
The organisation streamlines operations to improve efficiency through digital tools.	183	4.235	.691
Our organisation automates routine tasks to support transformation goals.	183	4.235	.801
The organisation reviews and updates processes regularly to align with digital advancements.	183	4.383	.731
Our organisation fosters a culture that embraces digital innovation and change.	183	4.284	.782
The organisation supports risk-taking and experimentation in digital initiatives.	183	4.120	.635
Our organisation encourages continuous learning and digital skills development.	183	4.508	.678
The organisation promotes openness and adaptability to digital transformation across all levels.	183	4.574	.780
Average		**4.322**	**0.731**

Factor Analysis for Digital Transformation Capabilities

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.887, indicating good suitability for factor analysis, as values above 0.6 are considered acceptable. This suggests that the sample size and correlations among variables are adequate for principal component analysis (PCA). Bartlett's Test of Sphericity is highly significant ($\chi^2 = 1010.263$, df = 66, $p < 0.000$), indicating that the correlation matrix is not an identity matrix and that meaningful relationships exist among the variables. These results confirm that PCA can be appropriately applied to the dataset.

Table 6: KMO and Bartlett's Test for Digital Transformation Capabilities

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.887
Bartlett's Test of Sphericity	Approx. Chi-Square	1010.263
	df	66
	Sig.	.000

Table 7 shows that a single principal component was extracted for digital transformation capabilities using Principal Component Analysis. The extracted component has an eigenvalue of 7.500 and explains 68.181% of the total variance, exceeding the recommended minimum threshold of 50% for establishing a unidimensional construct. The remaining components have eigenvalues below one and were therefore not retained, as they contribute minimal additional explanatory power. The substantial proportion of variance explained by the first component indicates that the indicators of digital transformation capabilities, including organisational restructuring, process reengineering, and cultural change, are highly interrelated and reflect a common underlying construct. These findings

confirm that the selected indicators adequately represent digital transformation capabilities and support the suitability of the construct for subsequent statistical analyses.

Table 7: Total Variance Explained for Digital Transformation Capabilities

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	7.500	68.181	68.181	7.500	68.181	68.181
2	.915	8.319	76.500			
3	.799	7.267	83.767			
4	.576	5.237	89.003			
5	.408	3.709	92.713			
6	.299	2.717	95.430			
7	.177	1.605	97.035			
8	.148	1.343	98.378			
9	.097	.877	99.256			
10	.063	.575	99.831			
11	.019	.169	100.000			

Extraction Method: Principal Component Analysis.

As shown in Figure 3, the scree plot supports retaining the first principal component, which accounts for 68.181% of the variance, as it exhibits a sharp drop in eigenvalues after the first component. The second component contributes a smaller 8.319%, and the curve flattens noticeably thereafter, forming a clear "elbow" after the first component. This pattern indicates that additional components contribute minimal variance and that the first component captures the most substantial underlying structure in the digital transformation capabilities data. Therefore, retaining the first component is justified for further analysis, as it effectively represents the core construct while maintaining parsimony in the model.

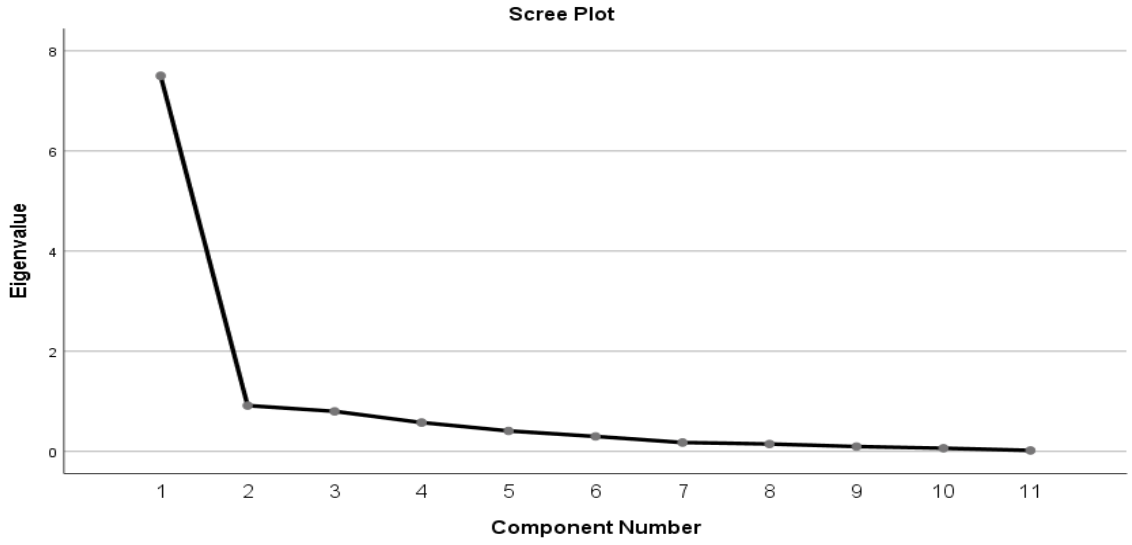

Figure 3: Scree Plot for Digital Transformation Capabilities

The component matrix in Table 8 indicates a single underlying factor representing Digital Transformation Capabilities, with items reflecting organisational restructuring, process reengineering, and cultural change. Strong loadings were observed for fostering a culture of digital innovation (0.837), redesigning core processes (0.799), and adjusting organisational structures to

support digital transformation (0.750). Other indicators, including streamlining operations (0.731), promoting openness and adaptability (0.742), and automating routine tasks (0.684), also loaded strongly on the component. The extraction of one component indicates that the three dimensions collectively represent a coherent and unidimensional construct, supporting their aggregation into a composite measure for subsequent analysis.

Table 8: Component Matrix for Digital transformation capabilities

	Component 1
Our organisation adjusts its structure to better support digital transformation initiatives.	.750
The organisation realigns roles and responsibilities to enable digital operations.	.729
Our organisation flattens hierarchies to improve agility in digital decision-making.	.604
The organisation integrates digital units within its overall business structure.	.699
Our organisation redesigns core processes to take advantage of digital technologies.	.799
The organisation streamlines operations to improve efficiency through digital tools.	.731
Our organisation automates routine tasks to support transformation goals.	.684
The organisation reviews and updates processes regularly to align with digital advancements.	.688
Our organisation fosters a culture that embraces digital innovation and change.	.837
The organisation supports risk-taking and experimentation in digital initiatives.	.626
Our organisation encourages continuous learning and digital skills development.	.626
The organisation promotes openness and adaptability to digital transformation across all levels.	.742

Extraction Method: Principal Component Analysis.
a. 1 components extracted.

Correlation Analysis for Digital Transforming and Competitive Advantage

As shown in Table 9, the results revealed a very strong and statistically significant positive correlation between digital transformation capabilities and competitive advantage, $r(181) = .882$, $p < .01$, indicating that higher digital transformation capabilities is associated with greater competitive advantage among commercial banks in Kenya.

Table 9: Pearson Product-Moment Correlation for Digital transformation capabilities and Competitive Advantage

		Competitive Advantage	**Digital Transformation Capabilities**
Competitive Advantage	Pearson Correlation	1	.882**
	Sig. (2-tailed)		.000
	N	183	183
Digital Transformation Capabilities	Pearson Correlation	.882**	1
	Sig. (2-tailed)	.000	
	N	183	183

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

Diagnostic Tests for Digital Transformation and Competitive Advantage

Diagnostic tests included assessments of model fitting, goodness-of-fit, proportional odds assumption, model summary, and pseudo R-square to evaluate the adequacy, fit, and reliability of the ordinal logit regression model.

Model Fitting Test: The Chi-square value was **185.763** with a significance level of **p = 0.000**, indicating that the final model fits the data significantly better than the intercept-only model and confirming that digital transformation capabilities improve the prediction of competitive advantage in commercial banks in Kenya.

Goodness-of-Fit Test: Pearson Chi-square value was 91.975 (p = 0.151), and the Deviance Chi-square value was 61.103 (p = 0.932). Both p-values are greater than 0.05, indicating a non-significant difference between the observed and predicted values. This confirms that the model fits the data well and that

digital transformation capabilities are appropriately modeled in predicting competitive advantage in commercial banks in Kenya.

Proportional Odds Assumption Test: The Chi-square value was 2.217 with a significance level of p = 0.524. Since the p-value is greater than 0.05, the null hypothesis is not rejected, indicating that the proportional odds assumption holds. This confirms that the relationship between digital transformation capabilities and competitive advantage is consistent across all levels of competitive advantage, validating the use of the ordinal logistic regression model for this analysis.

Ordinal Logistic Regression for Digital Transformation Capabilities and Competitive Advantage
The results in Table 10 indicate that the ordinal logistic regression model has strong explanatory power, with Cox and Snell, Nagelkerke, and McFadden Pseudo-R^2 values of 0.638, 0.741, and 0.516, respectively. The Nagelkerke Pseudo-R^2 of 0.741 indicates a strong fit of the model in explaining differences in Competitive Advantage levels based on Digital Transformation Capabilities.

Table 10: Pseudo R-Square for Digital Transformation Capabilities and Competitive Advantage

Pseudo R-Square	Value
Cox and Snell	.638
Nagelkerke	.741
McFadden	.516

Link function: Logit.

Parameter estimates of the ordinal logistic regression model: As presented in Table 11, the threshold estimates for the Competitive Advantage categories were positive and statistically significant (p < 0.001). More importantly, Digital Transformation Capabilities had a positive and statistically significant log-odds estimate (Estimate = 6.855, SE = 0.773, Wald = 78.619, p < 0.001, 95% CI [5.340, 8.371]). The positive estimate indicates that higher levels of Digital Transformation Capabilities are associated with greater odds of being in a higher Competitive Advantage category. The corresponding odds ratio is approximately 949.0, indicating a substantial positive association between Digital Transformation Capabilities and the likelihood of higher Competitive Advantage. The null hypothesis that Digital Transformation Capabilities do not significantly influence Competitive Advantage was therefore rejected. The study concludes that Digital Transformation Capabilities have a statistically significant positive effect on the Competitive Advantage of commercial banks in Kenya.

Table 11: Parameter Estimates for Digital Transformation Capabilities and Competitive Advantage

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[CA_1 = 1.00]	15.721	2.068	57.807	1	.000	11.668	19.774
	[CA_1 = 2.00]	20.561	2.784	54.530	1	.000	15.103	26.018
	[CA_1 = 3.00]	25.010	3.071	66.324	1	.000	18.991	31.029
	[CA_1 = 4.00]	30.846	3.445	80.185	1	.000	24.094	37.597
Location	DTC	6.855	.773	78.619	1	.000	5.340	8.371

Link function: Logit.

Discussion of Results
The study found that Digital Transformation Capabilities had a statistically significant positive effect on Competitive Advantage among commercial banks in Kenya (Estimate = 6.855, p < 0.001). The positive log-odds estimate indicates that higher levels of organisational restructuring, process reengineering, and cultural change were associated with greater odds of achieving higher levels of Competitive Advantage. This finding is consistent with Yu et al. (2022), who found that digital transformation capability significantly influenced operational performance, demonstrating the importance of organisational capabilities in converting digital technologies into improved organisational outcomes. Similarly, Jardak and Ben Hamad (2022) found that digital transformation

positively influenced firm performance, while Gaglio et al. (2022) found that it enhanced innovation and productivity among South African manufacturing micro and small enterprises. Adeyinka (2023) also reported a positive effect of digital transformation on firm efficiency in the Nigerian manufacturing sector, while Orwa et al. (2026) found that transforming dynamic capabilities significantly influenced the performance of quality management systems among medium-sized manufacturers in Nairobi County. The consistency of these findings across different sectors and developing-country contexts suggests that digital transformation capabilities enable organisations to convert technological change into improved organisational outcomes.

The findings are also consistent with Dynamic Capability Theory, which argues that organisations achieve competitive advantage by developing the capacity to sense changes and opportunities, seize them through appropriate resource mobilisation, and transform or reconfigure organisational resources and processes in response to changing environments (Teece, 2007). The positive and significant effect observed in this study provides empirical support for this theoretical mechanism within the Kenyan banking sector. Organisational restructuring enables banks to reconfigure structures and resources to respond to digital opportunities; process reengineering allows them to transform established routines and operational processes; while cultural change facilitates organisational learning, innovation, and adaptation. These capabilities collectively strengthen banks' ability to respond to technological developments and changing market conditions, thereby increasing their likelihood of achieving greater Competitive Advantage. The findings therefore reinforce Dynamic Capability Theory by demonstrating that the capacity to reconfigure organisational structures, processes, and culture is associated with stronger competitive outcomes among commercial banks in Kenya.

Limitations of the Study

This study had several limitations. First, it relied on self-administered questionnaires completed by CEOs and department heads, making the findings susceptible to response bias and subjective interpretation. Confidentiality, anonymity, and standardised questionnaires were used to minimise this limitation. Second, although the unit of analysis was the commercial bank, data were obtained from individual managers, with multiple respondents drawn from some of the 37 banks. Consequently, responses within the same bank may have been correlated, yet the analysis did not explicitly account for within-bank clustering, which may have affected the estimated standard errors and statistical significance of the regression results. Future studies could address this issue using multilevel modelling or cluster-robust standard errors at the bank level. Third, although digital transformation capability is a multidimensional construct comprising capabilities such as mobile banking, data analytics, and automated workflows, this study analysed it as an aggregate construct. Consequently, the study could not establish which specific digital transformation capabilities contribute most strongly to competitive advantage. Future studies could disaggregate the construct to examine the relative effects of individual capabilities. Finally, the study focused exclusively on licensed commercial banks in Kenya, limiting the generalisability of the findings to other financial institutions, such as microfinance banks, SACCOs, and fintech firms, operating under different institutional and competitive environments.

Conclusions

The study findings revealed that digital transformation capabilities have a strong and significant positive effect on the competitive advantage of commercial banks in Kenya, as indicated by the hypothesis testing results (H_0 rejected, $p < 0.05$). The study therefore concludes that strengthening digital transformation capabilities can enhance the competitive advantage of commercial banks in Kenya. The study recommends that Policymakers should formulate and enforce regulatory frameworks that guide structured digital transformation within commercial banks. These frameworks

should provide clear standards for organisational restructuring, process reengineering, and integration of digital systems across banking operations. Regulatory bodies should ensure that transformation initiatives align with national digital economy strategies and financial sector modernisation goals. In addition, compliance monitoring mechanisms should be strengthened to ensure banks implement transformation initiatives effectively and transparently. Policymakers should also support the establishment of digital transformation maturity assessment tools to evaluate progress across institutions. Incentives should be provided for banks demonstrating high levels of compliance and innovation in transformation processes. These interventions will promote operational efficiency, strengthen institutional alignment, and enhance competitiveness within the banking sector.

References

Adeyinka, F. M. (2023). Digital transformation and firm efficiency in the Nigerian manufacturing sector. *Economic Horizons*, *25*(3), 215. https://doi.org/10.5937/ekonhor2302215A

Antwi, S., Kong, Y., & Gyimah, P. (2024). Competition, financial inclusion and financial stability in developing economies. *Heliyon, 10*(13), e33723. https://doi.org/10.1016/j.heliyon.2024.e33723

Barasa, D., & Ngure, K. (2025). Digital communication across cultures. In: Nesi, H., Milin, P. (Eds.), International Encyclopedia of Language and Linguistics, 3e. Vol. 6, pp. 375-378. UK: Elsevier.

Bisschoff, C., & Els, D. (2023). Brand loyalty as a competitive advantage for South African banks. *Banks and Bank Systems*, *18*(1), 103. https://doi.org/10.21511/bbs.18(1).2023.09

Bowman, L. (2022). Banking consolidation and competition in the United States. *Journal of Banking Regulation*, *23*(4), 345–360. https://doi.org/10.33423/jaf.v22i2.5135

Central Bank of Kenya. (2024). *Bank supervision annual report 2024*. Central Bank of Kenya.

Creswell, J. W., & Creswell, J. D. (2022). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Ellström, D., Holtström, J., Berg, E. & Josefsson, C. (2023). Dynamic capabilities for digital transformation. *Journal of Strategy and Management, 15*(2), 272-286.

Farhikhteh, S. (2023). *The Dimensions of Competitiveness and Their Effects on Competitive Advantage*. IntechOpen. https://doi.org/10.5772/intechopen.113391

Ferreira, J., Coelho, A., & Moutinho, L. (2020). Dynamic capabilities, creativity, and innovation capability and their impact on competitive advantage and firm performance. *Technological Forecasting and Social Change, 139*, 277-289.

Fischer, H. Wierner, M., & Strahringer, S. (2023). Embarking on the digital transformation journey toward a data-driven organization: empirical insights into transformation starting Points. *ECIS 2023 Research Papers*. 298. https://aisel.aisnet.org/ecis2023_rp/298

Gaglio, C., Kraemer-Mbula, E., & Lorenz, E. (2022). The effects of digital transformation on innovation and productivity: Firm-level evidence of South African manufacturing micro and small enterprises. *Technological Forecasting and Social Change*, *182*, 121785. https://doi.org/10.1016/j.techfore.2022.121785

Jardak, M. K., & Ben Hamad, S. (2022). The effect of digital transformation on firm performance: evidence from Swedish listed companies. *The Journal of Risk Finance*, *23*(4), 329-348. https://doi.org/10.1108/JRF-12-2021-0199

Juma, M., Muhoho, J., & Mwangi, J. K. (2024). Knowledge sharing and competitive advantage of commercial banks in Kenya. *African Journal of Emerging Issues*, *6*(15), 133-145. https://ajoeijournal.org/sys/index.php/ajoei/article/view/698

Khalaf, S., Hammood, M., & Issa, A. (2024). Internal Marketing and its Impact on Customer Value: An Exploratory Study of the Opinions of a Sample of Bank Customers. *South Asian Res J Bus Manag*, *6*(6), 340-355. https://doi.org/10.36346/sarjbm.2024.v06i06.001

King'oku, A. N., & Muathe, S. M. A. (2024). Strategic alliances and competitive advantage of commercial banks in Kenya. *International Journal of Research in Business and Social Science, 13*(5), 215–227. https://doi.org/10.20525/ijrbs.v13i5.3587

McKinsey & Company. (2024). *Global Banking Annual Review 2024*. McKinsey & Company.

Mihu, C., Pitic, A. & Bayraktar, D. (2023). Drivers of Digital Transformation and their Impact on Organizational Management. *Studies in Business and Economics, 18*(1), 149-170. https://doi.org/10.2478/sbe-2023-0009

Nguyen-Thi-Huong, L., Nguyen-Viet, H., Nguyen-Phuong, A., & Van Duy, N. (2023). How does digital transformation impact bank performance? *Cogent Economics & Finance, 11*(1), 1-10. https://doi.org/10.1080/23322039.2023.2217582

Orwa, A. K. O., Katuse, P., & Oketch, T. C. (2026). Transforming dynamic capabilities and quality management systems performance: Evidence from medium-sized manufacturers in Nairobi County, Kenya. *The University Journal, 8*(1), 29-42. https://doi.org/10.59952/tuj.v8i1.439

Rufus, A. I., Festus, A. F., & Dada, B. I. (2022). Intellectual capital and organisational performance of the financial sector: Evidence from Nigeria. *International Journal of Accounting, Finance and Risk Management*, *7*(1), 1-10. https://doi.org/10.11648/j.ijafrm.20220701.11

Saunders, M., Lewis, P. & Thornhill, A. (2019). *Research methods for business students*. 8th ed. Pearson Education Limited.

Srivastava, B., Singh, S., & Jain, S. (2023). Bank competition, risk-taking and financial stability: insights from an emerging economy. *Competitiveness Review: An International Business Journal*, *33*(5), 959-992. https://doi.org/10.1108/CR-10-2021-0143

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*(13), 1319–1350. https://doi.org/10.1002/smj.640

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509-533. https://www.jstor.org/stable/3088148

Wamuyu, M. (2020). Institutional factors and project performance in Postal Corporation, Kenya. *Unpublished Masters Project, Kenyatta University*. https://ir-library.ku.ac.ke/server/api/core/bitstreams/a5c62d76-4fa0-48d2-9144-71aa59ff5782/content

Warner, K. S. R., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning, 52*(3), 326–349. https://doi.org/10.1016/j.lrp.2018.12.001

Xie, X., & Wang, S. (2023). Digital transformation of commercial banks in China: Measurement, progress and impact. *China Economic Quarterly International, 3*(1), 35–45. https://doi.org/10.1016/j.ceqi.2023.03.002

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.

Yu, J., Wang, J., & Moon, T. (2022). Influence of digital transformation capability on operational performance. *Sustainability*, *14*(13), 7909. https://doi.org/10.3390/su14137909