

Review Article

Effect of Dynamic Capabilities on Competitive Advantage of Manufacturing Firms in Nairobi, Kenya

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Abstract: Previous studies on manufacturing firms particularly in less developed countries have revealed that a third of these firms have failed to become operational as well as additional failures or closures of firms in previous years due to lack of sensing, seizing and reconfiguring of firm's capabilities leading to competitive advantage. There are no empirical studies in Kenya that show the effect of dynamic capabilities and competitive advantage of manufacturing firms which this study strives to achieve. The main objective of the study was to determine the effect of dynamic capabilities on competitive advantage of manufacturing firms in Kenya. The specific objectives of the study were to assess the effect of sensing, seizing and reconfiguration capabilities on competitive advantage of manufacturing firms in Nairobi, Kenya. The study adopted explanatory research design and data was collected using survey approach on a target population of 762 manufacturing firms registered under Kenya Association of Manufacturers. A sample size of 321 firms was selected based on Yamane formula of determination in selecting respondents to be served with the questionnaires. Pearson correlation was used to test the linear relationship of variables while multiple regression model was used to analyze data in order to test the hypothesis for the study. Descriptive and inferential statistics were used in data analysis and the study findings revealed that there was a positive and significant effect of sensing capabilities and competitive advantage ($\beta=.392$, $p=.000$); seizing capabilities and competitive advantage ($\beta=.194$, $p=.000$); reconfiguration capabilities and competitive advantage ($\beta=.174$, $p=.001$) with all p-value being less than .05. The study recommends that managers and industry practitioners should put more emphasis on, and appreciate the role of the leader in the deployment of dynamic capabilities by sensing, seizing, reconfiguring their capabilities in order to achieve competitive advantage in the ever changing contemporary operating environment.

Keywords: Dynamic Capabilities, Sensing Capabilities, Seizing Capabilities, Reconfiguration Capabilities, Competitive Advantage

1. Introduction

The attainment of competitive advantage is a priority for strategists, regulators and policymakers as it occupies a pivotal position in strategic management studies [1-4]. Every business framework should endeavor to put up strategies to match the key success factors for operating in its market and hence exceeding those of its competitors [5]. Dynamic capabilities has been researched widely and scholars have acknowledged that it increases or enhances

competitive advantage thus long-term profitability of the firm guaranteed or assured [6-8]. The goal of every organization is to outperform its rivals and attract potential buyers to its products and services while at the same time retain current customers in the dynamic, volatile business functional environment [9]. Dynamic capabilities has been viewed by scholars as the most significant organizational capability that aids attainment of sustainable competitive advantage over competitors as well as profit realization [10]

Manufacturing and service industries are majorly concentrated in various clusters of the country like Nairobi, Eldoret, Kisumu, Mombasa, Nakuru and Thika because of the basic infrastructure [11] with approximately 80% located in Nairobi County. The sector is the third biggest industrial sector after agriculture and transport and communication [12]. Globally, manufacturing has acted as a growth escalator for economies that have succeeded in eventuating high incomes and those countries that have achieved rapid industrialization have done so by putting in place deliberate policies that promote and encourage value addition and diversification of manufactured goods [13].

Economic Survey results for the periods 2010 to 2014 by the Kenya National Bureau of Statistics further indicate that

some major sectors of the Kenyan economy has witnessed intermittent higher growth, though the manufacturing sector has consistently decelerated in growth rates [14] because of high cost of production, stiff competition from imported goods, high cost of credit and political shock leading to firms exiting Kenya hence spelling doom to an economy that was expected to recover.

Further statistics from Kenya Association of Manufacturers have shown that certain firms announced plans to shut down their plants and shift operations to Egypt and other countries as a result of reduced profits, competition, and government policies [15] hence the basis this study is seeking to determine the effect of dynamic capabilities, on competitive advantage of manufacturing firms in Nairobi, Kenya.

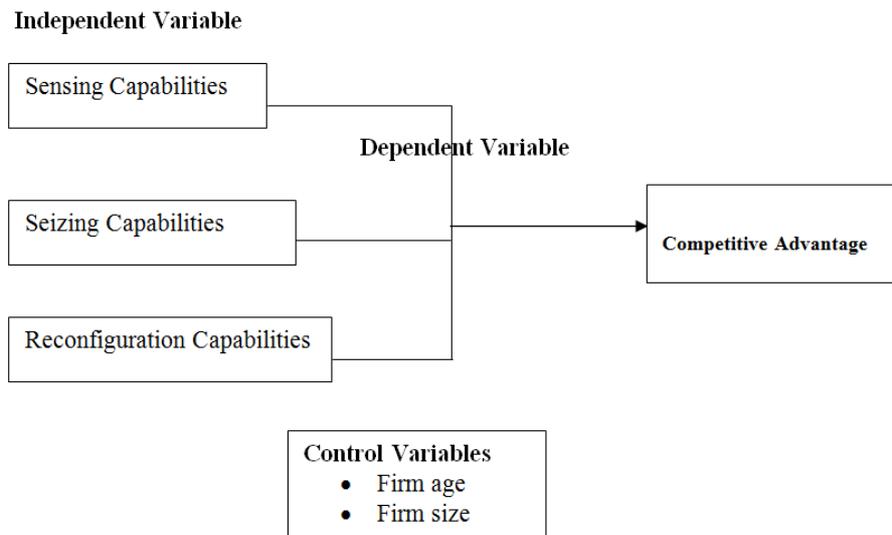


Figure 1. Conceptual framework for the Study.

2. Methodology

The study employed explanatory design where the unit of analysis was 321 CEOs drawn from a target population of 762 firms which are members of Kenya Association of Manufacturers [15]. The data was collected through census on CEOs of manufacturing firms in Nairobi County.

2.1. The Data

Primary data were gathered from the respondents using the questionnaires and keyed into SPSS package version 23 for

analysis. In order to test for reliability, the researcher used the internal consistency technique by employing Cronbach Alpha value of $\alpha > 0.7$. The questionnaire was constructed based on measures, scales and items from previous literature and further checks done through pilot study which was done in manufacturing firms in Eldoret town hence enabling the researcher to know the extent to which data collected and analysis procedures yielded consistent findings thus providing assurance that the same results could be expected on any other subsequent similar occasions [16].

Table 1. Reliability Results.

Construct	Dimensions	No. of Cronbach's	Items alpha coefficient
Competitive advantage	Competitive advantage	9	.793
Dynamic capabilities	Sensing capabilities	11	.863
	Seizing capabilities	11	.827
	Reconfiguration capabilities	11	.875

Source: Researcher (2020).

2.2. Model Specification

Pearson correlation coefficients were used to determine the

degree or strength of relationship that exists between the independent (dynamic capabilities) and the dependent variables (competitive advantage). Multiple regression model was used to analyze the data in order to determine the significance of the

hypotheses of the study. In order to achieve objectives 1 to 3, the direct effects, linear regression models were tested for purposes of H_{01} - H_{03} . The test statistics that were computed and derived included the coefficients of determination (R^2); the beta coefficient (β) and the p -values. The effects both for controls (age and size of the firm) and the direct effects were statistically processed using the specified linear equations below:

$$Y = \beta_0 + \beta_1 \text{size} + \beta_2 \text{age} + \varepsilon \quad (1)$$

$$Y = \beta_0 + C + \beta_1 X_a + \beta_2 X_b + \beta_3 X_c + \varepsilon_1 \quad (2)$$

Where:

Y: dependent variable (competitive advantage)

C: control variables (age and size of the firm)

β_0 : constant

X_1 : Sensing capabilities

X_2 : Seizing capabilities

X_3 : Reconfiguration capabilities

β_1 - β_3 : The effect of slope coefficients denoting the influence of the associated independent variables over the dependent variable coefficient of regression

ε : Error terms

3. Empirical Results

3.1. Demographic Information of the Respondents

This covers type of company, the department, size of the firm and the age or number of years the firm has been in operation in Kenya. Results showed that product firms were 262 (82.1%) while service industries 57 (17.9%). Marketing department were 24 (7.5%) while production and or operations had 295 (92.5%). Firms with below 300 employees had the highest percentage of 57.1%, followed by employees' range of 301-600 at 24%, while above 900 employees at 10.2% and finally 601-900 employees range at 8.6% with 194, 71, 21, and 7 employees respectively. Firms that have been in operation for above 30 years had the highest percentage of 45.1% followed by those in 11-20 years range (21.6%), then less than 10 years at 18.2% and lastly 21-30 years range at 15.1% with 144, 69, 58 and 48 years respectively as shown in Table 2.

Table 2. Firm Profile.

Variable	Category	Frequency	Percentage (%)
Type of company	Product	262	82.1
	Service	57	17.9
Department	Production/Operations	295	92.5
	Marketing	24	7.5
Size of the firm	Below 300	194	57.1
	301-600	71	24.0
	601-900	21	8.6
	Above 900	7	10.2
Age of the firm	Less than 10	58	18.2
	11-20	69	21.6
	21-30	48	15.1
	Above 30	144	45.1

Source: Researcher (2020).

3.2. Factor Analysis

Factor analysis was done so as to identify the latent variables in the data constructs and to prepare it for regression [17].

3.2.1. KMO Results for Dynamic Capabilities

Factorability of the data was assessed using Bartlett's test of sphericity and Kaiser-Meyer-Olkin measure of sampling adequacy where Bartlett's test of sphericity should be statically significant at $p < 0.05$, KMO index should range from 0 to 1.

Table 3. KMO and Bartlett's Test results.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.872
	Approx. Chi-Square	4373.954
Bartlett's Test of Sphericity	Df	528
	Sig.	.000

Source: Researcher (2020).

KMO measure was greater than .5 (.87) and Bartlett's test findings were significant ($X^2(528) = 4373.95$, p -value $< .001$ [18]. confirming that all the changes in the three components of sensing, seizing, learning and reconfiguration capabilities can significantly be relied upon to assess the majority of the changes in the dynamic capabilities.

3.2.2. Total Variance Explained Results for Dynamic Capabilities

Factor analysis was carried out on dynamic capabilities and the factors were extracted using principal component analysis and rotation done using varimax with Kaiser Normalization [19]. PCA was chosen as the most convenient method as it revealed the set of factors which accounted for all common and unique variances [17]. Table 4 showed that sensing capability accounted for 27.42% of variation in dynamic capability while seizing 36.01%; and reconfiguration 42.69% of the changes in the dynamic capabilities. Factors with Eigen values greater than 1 were chosen but three items only were considered for dynamic capabilities variables.

Table 4. Total Variance Explained Results.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.05	27.42	27.42	9.05	27.42	27.42	5.20	15.76	15.76
2	2.83	8.58	36.01	2.83	8.58	36.01	4.96	15.04	30.80
3	2.21	6.68	42.69	2.21	6.68	42.69	3.92	11.89	42.69
4	1.62	4.92	47.60						
5	1.29	3.91	51.51						
6	1.19	3.61	55.12						
7	1.09	3.31	58.44						
8	1.07	3.23	61.66						

Extraction Method: Principal Component Analysis.
Source: Researcher (2020).

3.2.3. Rotated Component Matrix Results

The threshold for retaining an item as a measure of a given variable was a minimum factor loading of .5, and Eigen value of not less than 1.0 [19, 20]. Table 5 above showed that all the

components were above .5 which is the cut-off for factor loading with the lowest being .520 and the highest .713 implying that these factors were retained for data transformation and the factors that did not load were removed.

Table 5. Rotated Component Matrix Results.

Questionnaire Items	Sensing	Seizing	Reconfiguration
Fast in detecting changes in the industry	.643		
Often review possible influence of changes	.620		
Quickly understand new opportunities	.713		
Regularly check quality of functional capabilities	.607		
Regularly check operational capabilities	.677		
Pay great attention to monitoring change of functional and operational capabilities	.637		
Pay great attention to monitoring the efficiency of new processes	.589		
Established processes to identify target market segments, changing customer needs and innovation	.637		
Observe best practices of product and service delivery to our customers	.558		
We attend business forums that discusses changing trends within our business operational environment		.607	
Employees regularly attend business forums to learn about new market/customer needs		.715	
Existing knowledge is readily available to each department		.520	
Business unit periodically circulates new information or knowledge to update everyone		.671	
During major market or technological development changes, every department is made to know immediately		.685	
Employees have capabilities to produce many novel and useful ideas		.520	
Have capabilities to effectively develop novel ideas, new knowledge and insights to impact on product development		.544	
Transform existing resources into new capabilities			.650
Bring new perceptible changes that lie outside existing features of existing capabilities			.666
Effectively identify valuable capability elements to connect and combine them in new ways			.719
Effectively recombine existing capabilities into novel combinations			.681
Strategically change our strategies			.617
Effectively integrate new externally sourced capabilities and combine them with existing capabilities into novel combinations			.634
Substantially renewed our business processes			.615
Substantially changed ways of achieving our targets and objectives			.611
Implement new kinds of management methods more responsive within business processes			.526
Bold efforts to maximize probability of exploiting opportunities			.544
Successfully integrate the new knowledge acquired with existing knowledge			.616

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.
Source: Researcher (2020).

3.3. Correlation Analysis Results

The purpose of conducting correlation analysis was to

measure the possibility of any existing linear relationship between the dependent variable and the other variables through determining the magnitude and direction of the possible relationships considering that both variables are at

interval level of measurement and the data is parametric in nature. Pearson correlation coefficient was used to measure

the relationships between the variables [20, 21] as shown in Table 6 below:

Table 6. Correlation Results.

Items	Competitive	Sensing	Seizing	Reconfiguration
	Advantage	Capabilities	Capabilities	Capabilities
Competitive advantage	1			
Sensing capabilities	.534**	1		
Seizing capabilities	.414**	.380**	1	
Reconfiguration capabilities	.411**	.403**	.415**	1

** Correlation is significant at the 0.01 level (2-tailed).
Source: Researcher (2020).

Results in Table 6 showed that there is positive and significant correlation between; sensing capabilities and competitive advantage ($r = 0.534$, p -value < 0.01), seizing capabilities ($r = .414$, $p < 0.01$) and reconfiguration capabilities ($r = 0.411$, $p < 0.01$).

3.4. Hypothesis Testing

A regression test to determine the effects of both the control and the independent variables (direct effect) was done and the findings revealed that 36.0% variation of competitive advantage is predicted by sensing, seizing and reconfiguration

($R^2 = 36.0$). Their joint prediction was significant as shown by F-change (35.27), p (.000) and Durbin Watson (1.908). The results showed that all the three variables - sensing capabilities ($\beta = .392$, $p = .000$), seizing capabilities ($\beta = .194$, $p = .000$) and reconfiguration capabilities ($\beta = .174$, $p = .001$); have significant and positive effect on competitive advantage. The variables when combined contributed 36% ($R^2 = .360$) of the variance in competitive advantage which is an improvement from the first set of control variables 'contribution, by 2.1% ($\Delta R^2 = .021$) as shown in Table 7.

Table 7. Testing $H_{01} - H_{03}$ Results.

Model Variables	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	Beta values	SE	Beta	T	Sig.	Tolerance	VIF
(Constant)	1.176	.253		4.648	.000		
Size of the firm	.007	.022	.016	.314	.754	.788	1.269
Age of the firm	-.003	.019	-.008	-1.50	.881	.739	1.353
Sensing capabilities	.462	.061	.392	7.594	.000	.766	1.306
Seizing capabilities	.125	.034	.194	3.653	.000	.727	1.376
Reconfiguration capabilities	.146	.044	.174	3.323	.001	.743	1.345
R=.600 ^a							
R Square=.360							
Adjusted R Square=.350							
Std. Error of the Estimate=.332							
R Square Change=.360							
F Change=35.272							
Sig. F Change=.000							
Durbin Watson=1.908							

a. Dependent Variable: Competitive Advantage.

b. Predictors: (Constant), Age of the firm, size of the firm, sensing capabilities, seizing capabilities, reconfiguration capabilities,
Source: Researcher (2020).

H_{01} stated that sensing capabilities had no significant effect on competitive advantage. The findings in the table showed that sensing capabilities had coefficients of estimate which was positive and significant ($\beta_1 = .392$, $p = .000$) which is less than (.05) implying that there was .392 (39.2%) unit increase in competitive advantage for each unit increase in sensing capabilities. This therefore led to null hypothesis being rejected and researcher concluded that sensing capabilities had a significant and positive effect on competitive advantage.

H_{02} stated that seizing capabilities had no significant effect on competitive advantage. The study findings showed that seizing capabilities had a positive and significant effect on competitive advantage based on the $\beta_2 = .194$ with a $p = .000$ which is less than (.05) implying that seizing capabilities had a

positive and significant effect on competitive advantage This implies that there was .194 (19.4%) unit increase in competitive advantage for each unit increase in seizing capabilities hence null hypothesis rejected.

H_{03} of the study stated that reconfiguration capabilities had no significant effect on competitive advantage. The study findings showed that reconfiguration capabilities had coefficients of estimates which were positive and significant ($\beta_3 = .174$; $p = .001$) which is less than (.05) thus null hypothesis was rejected confirming that reconfiguration capabilities had a positive and significant effect on competitive advantage. Results showed that there was .174 (17.4%) unit increase in competitive advantage for each unit increase in reconfiguration capabilities.

4. Discussions of the Study

The research findings indicated that objective 1 of the study was to determine the effect of sensing capabilities on competitive advantage of manufacturing firms in Nairobi, Kenya and was hypothesized that there was no significant effect of sensing capabilities on competitive advantage (H_01). The results showed that there was positive and statistically significant effect of sensing capabilities on competitive advantage ($\beta = .392$, $p = .000$) implying that sensing capabilities which comprise constant scanning, searching, identifying opportunities, threats, changes and also competitor's possible responses to the focal enterprise actions in firms [3] affect competitive advantage.

Objective 2 of the study was to examine the effect of seizing capabilities on competitive advantage of manufacturing firms in Nairobi, Kenya which was hypothesized that there was no significant effect seizing capabilities on competitive advantage (H_02). The findings showed that seizing capabilities had a positive and statistically significant effect on competitive advantage ($\beta = .194$, $p = .000$) implying that seizing capabilities which comprise of correcting decisions and executing them so that they simultaneously align with the enterprises' assets and strategic goals [3] by capturing value from opportunities through mobilizing existing resources towards these new innovative goals [22].

Objective 3 was to establish the effect of reconfiguration capabilities on competitive advantage of manufacturing firms in Nairobi, Kenya. The hypothesis was that there was no significant effect of reconfiguration capabilities on competitive advantage of manufacturing firms in Kenya. The study findings ($\beta = .174$, $p = .001$) supported this objective leading to null hypothesis being rejected.

5. Conclusion of the Study

Empirical findings of this study confirmed the significant and positive relationship between dynamic capabilities and competitive advantage of manufacturing firms. Based on the hypothesis of dynamic capabilities and competitive advantage the findings agreed with reviewed literature.

The study concludes that firms with a stronger commitment to deploying dynamic capabilities (sensing, seizing and reconfiguration) are more successful hence firms need to continuously deploy all firm-relevant capabilities in line with the Dynamic Capabilities View and Resource-Based View because ignoring deployment of a single dynamic capability can negatively affect the deployment of other dynamic capabilities since they are correlated and interwoven together.

6. Recommendations for Further Research

Follow-up studies could focus on a deeper investigation of each dynamic capability, especially on the paths and positions affecting the development of dynamic capabilities. Secondly, a longitudinal research would also be valuable since the

results of deploying and developing dynamic capabilities usually cannot be seen in the short term but in the long-term. Thirdly, the same or a similar study could also be conducted in other industries or a cross-industry analysis could reveal commonalities and diversities in deploying dynamic capabilities across industries. Finally, future studies exploring the dynamic capabilities field should involve other qualitative approaches such as focus groups or observation methods.

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