
**JOINT EFFECT OF ORGANIZATIONAL AMBIDEXTERITY, DESIGN
AND ENVIRONMENTAL DYNAMISM ON PERFORMANCE OF
LARGE MANUFACTURING FIRMS IN KENYA**

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ABSTRACT

Research Objective: The objective of this research was to examine the difference between the joint effect of organizational ambidexterity, design and environmental dynamism and the individual effect of organizational ambidexterity on the performance of Kenyan Large Manufacturing Firms (LMFs).

Research Methodology: The study was anchored on dynamic capabilities Theory. Positivism provided philosophical foundation. The population of the research was the entire 107 Kenyan LMFS. This was therefore a census survey. Cross-sectional research design was used. Primary data was collected using a structured questionnaire, which incorporated a section where financial performance data as extracted from the firms' financial statements over a five year period (2014 to 2018) was provided by the respondents. The respondents were the senior managers of the LMFs in Kenya; namely Chief Executive Officers (CEOs)/Managing Directors (MDs) or General Managers (GMs), or Heads of departments (HODs). Multiple regression was applied in the data analysis.

Results and Findings: The research outcomes revealed that the joint effect of organizational ambidexterity, design and environmental dynamism on the performance of large manufacturing firms in Kenya was higher and statistically significant compared to the individual effect of organizational ambidexterity on the performance of Kenyan large manufacturing firms.

Implication of the study: The study findings are useful to practitioners in general and managers from the manufacturing industry in Kenya, policymakers in government as well as scholars and researchers.

Keywords: *Organizational ambidexterity, Design, Environmental Dynamism, Performance, Large Manufacturing firms in Kenya*

1. INTRODUCTION

Organizational ambidexterity which is an organization's capability to concurrently explore and exploit has drawn wide research attention in strategic management (O'Reilly & Tushman, 2013). Duncan (1976) pioneered the concept of organizational ambidexterity, defining it as the capability of an organization to be simultaneously aligned and adaptive. The assumed generic meaning of the concept is the organizational capacity to concurrently conduct two diverse undertakings and equally well (Birkinshaw & Gupta, 2013). In this study, the definition adopted is the capacity of the organization to simultaneously exploit and explore (Patel, Messersmith & Lepak, 2013). Exploitation entails being efficient and aligned in the current business through enhancement, proficiency, stability, and execution, while exploration necessitates adaptation to environmental changes through innovation (March, 1991). However, despite growing research undertaken on organizational ambidexterity in different contexts and methodologies, the findings are varied (Junni, Sarala, Taras & Tarba, 2013).

According to Mintzberg (1979) organizational design is a multidimensional assembly of strategies, structures, processes, and relationships through which the organization operates, integrating people, systems, and processes to enhance adaptation with environmental changes thus increasing the likelihood of success. Therefore, organizational design choice affects speed and agility of strategy execution and reaction to the environment, hence the organization's performance (Vohries & Morgan, 2003) and dynamic capability (Girod & Whittington, 2017). However, organic configurations tend to evolve in uncertain environments, and mechanistic configurations suited for stable environments (Burns & Stalker, 1961).

Among the broadly studied strategic management concepts is environmental dynamism. It denotes the extent and instability of variation of the organization's macro- environment, characterized by the environment's volatility and unpredictability (Dess & Beard, 1984). The construct is important due to its influence on relations among several firm-level concepts; for example the organization's structural design (Lawrence & Lorsch, 1967), strategic management process (Prajogo, 2016), and performance outcomes (Keats & Hitt, 1988). The increased uncertainty, unclear relationships, and inappreciable future constrain effectiveness and timeliness in decision making; hence performance (Eisenhardt, 1989).

Prosperity in organizations is one of the main goals and performance improvement is core in strategic management, thus necessitating close attention to performance measurement by organizations (Venkatraman & Ramanujam, 1986). The organization's performance should be aligned to conflicting current and future aspirations and optimal resource exploitation in the short-run as well as the new resources generation (Miller & Friesen, 1983). However, researchers are yet to reach an agreement on the causes of organizational performance disparities and hence its appropriate measurements (Mugambi & K'Obonyo, 2012). Besides,

though the individual influences of organizational ambidexterity, organizational design and environmental dynamism on organizational performance have been studied, there has been no examination of the variables' joint effect on performance.

The Kenyan manufacturing sector significantly impacts the country's economic performance and has been identified as a pillar of the "Big Four" agenda towards achieving the country's vision 2030 (GOK, 2018). However, despite the significance, its Gross Domestic Product (GDP) contribution declined from 10% in 2014 to 7.8% in 2018, while its growth is erratic; 2.5% in 2014, 3.6% in 2015, 3.1% in 2016, 0.7% in 2017 and 4.3% in 2018. The declining and erratic performance can be attributed to environmental dynamism in which the sector firms are operating (KNBS, 2019).

This study is anchored on dynamic capabilities theory. Dynamic capabilities theory entails the organizational ability to configure and reconfigure its processes and assets to create growth and adaptation within changing environments (Teece, Pisano & Shuen, 1997), thus underpins the concept of environmental dynamism (Teece, 2014). Hence, the recognition of organizational ambidexterity as a major dynamic capability (O'Reilly & Tushman, 2011). This study acknowledges the view that organizational structures are not universal and must be tailored to specific circumstances (Donaldson, 2001), thus anchors the concepts of organizational design and environmental dynamism, and their attendant influence in the relationship (Morton & Hu, 2008).

2. LITERATURE REVIEW

This section explains theories forming the study foundation, and review of literature on results of previous studies on the organizational ambidexterity, organizational design and environmental dynamism and performance relationship. The study is anchored on the dynamic capabilities theory.

Dynamic Capabilities Theory

Dynamic Capabilities Theory (DCT) was proposed by Teece, et al. (1997) and extends Resource-Based View (RBV) and focuses on capabilities deployed by firms for competitive advantages by enhancing the firm's sensing effectiveness and external environment dynamics adaptation seizing capability. Dynamic capabilities theory places emphasis on competitive survival in reaction to business environmental dynamism through dynamic capabilities deployment (Eisenhardt & Martin, 2000). Dynamic capabilities entail an organization's integration, building internal and external competencies, reconfiguration capabilities and include business practices, molded by the organization's asset base support, and growth cycle (Helfat & Peteraf, 2003). They are typically the managerial activities of sensing, seizing and reconfiguring, that can make a capability dynamic (Teece, 2007).

Sensing entails the environmental scanning capability of an organization (Teece, 2007) from which opportunities are recognized, and competitive threats identified (Helfat & Peteraf, 2015). Seizing on the other hand refers to formulation and execution of appropriate organizational strategies for the exploitation of opportunities and eluding any threats, in line with its strengths and weaknesses (Teece, 2007; Li & Liu, 2014). Strategic renewal will require organizational design reconfiguration (Teece, 2007).

Organization's capacity to concurrently undertake exploration and exploitation activities is organizational ambidexterity (O'Reilly & Tushman, 2008). Exploration relates to activities such as novelty, search, discover and change; which is similar to sensing, which is characterized by increased research activities. Exploitation in the contrary entails organizational processes, including production and through-put enhancement, implementation and monitoring; similar to seizing. Organizational ambidexterity is linked to better performance, therefore, makes the concept part of the dynamic capabilities.

Organizational Ambidexterity, Organizational Design, Environmental Dynamism and Performance

According to DeWaal (2004), various factors influence the degree to which the organization exhibits performance. These factors include ambidexterity, organizational design, and environmental dynamism. Reviewed literature shows that the majority of the studies' focus has been the independent effect on organization performance. Ambidexterity achievements and effects on performance are varied at different environmental dynamism levels (Tamayo –Torres et al., 2017). Hitt et al. (2001) research established a link between environmental dynamism and strategic orientation. In their study, Garcia-Zamora, Gonzalez-Benito and Munoz-Gallego (2014) established environmental dynamism moderating effect on organizational creativity, innovativeness, risk-taking and therefore marketing innovation performance.

Donaldson (2001) concluded that organizational performance originates from a fit between organizational design and environmental aspects. Bedford (2015) suggests that in terms of either exploration or exploitation, organization design control systems have independent effects on performance in ambidextrous firms. Mihalache, Jansen, Van den Bosch and Volberda (2014) reported that the top management shared leadership effect on ambidexterity is impacted by organizational design. There is no evidence in the literature of ambidexterity - organizational design - environmental dynamism organizational performance relationships research in one single study and therefore further research is needed to establish the joint effect. An organization would be expected to ensure that there is the proper alignment of its structures, processes, and relationships to achieve ambidexterity in dynamic environments. According to DeWaal (2004), high-performance organizations are those that maximize the joint effect of firm-level characteristics. These suggest that the joint effect is higher than the individual variable effect.

3. RESEARCH METHODOLOGY

The study was grounded on the positivist philosophy since it involved operationalization of variables and statistical tests of hypothesis based on the relationship between the predictor and criterion variables. The study applied a cross-sectional design which is consistent with positivist philosophy. The study was a census, with the population being all the 107 Kenyan LMFs. KAM (2018) classifies manufacturing companies Kenya with 50 and above employees and annual sales turnover of Kshs 1Billion and above as large. This definition was adopted in this study. Measure of organizational size by number of employees and sales revenue is appropriate in the Kenyan context.

The study used primary and secondary data. A structured questionnaire was the tool used for primary data collection. Questionnaires were adapted from previous strategic management

studies. They were modified to align them to the current study objectives. The companies' annual financial statements were used to obtain secondary data on financial measures of performance. Both quantitative and qualitative data were collected by use of the questionnaire.

The questionnaire was delivered to the Managing Directors/Chief Executive Officers (MDs/CEOs) of the firms, General Managers(GMs) or Heads of department (HODs) of Finance, Sales and Marketing, Human Resources and production. Organizations' key informants and typically most responsible and familiar with the organization's performance parameters are the CEOs and HODs. Organizations are a replication of their senior management, who shape their destiny (Hambrick, 2007). The questionnaire administration was by dropping and picking or sending by e-mail in cases where firms' e-mail addresses had been provided in the Kenya Association of Manufacturers (KAM) directory or in accordance with the preference of the respondents.

In the study, organizational ambidexterity was measured using its two dimensions namely exploration and exploitation. In a combined perspective, the two dimensions are considered orthogonal, but complementary, based on which ambidexterity dimension was studied as the summed-up outcome (Blindenbach-Driessen & Ende, 2014). Organizational design was operationalized as evidenced by two dimensions of mechanistic and organic designs. Complexity and centralization, division of labour into specialized functions, rules and procedures, narrow span of control and long command hierarchy characterize mechanistic designs. Being at the two extremes implies that on a scale ranging from organic to mechanistic, the mid-point is mixed organizational designs. These measures of design were adapted from past studies (Akdogan, Akdogan & Cingoz, 2009; Ogollah, 2012). Environmental dynamism was operationalized and measured in terms of the perceived intensity and frequency of change as evidenced, for example by fluctuations in product demand/profitability, and technology (Miller, 1987; Zhou & Wu, 2010). The dependent variable, organizational performance, was measured using scales adapted from sustainable balanced scorecard (SBSC) by Hubbard (2009) that considers six indicators of performance: financial, internal processes, customer satisfaction, learning, and innovation, societal and environmental perspectives, using Likert-scale adapted from Hubbard (2009) and Ndegwa (2015).

4. DATA ANALYSIS AND RESULTS

Response rate

The study used a cross-sectional design, with population comprising all the 107 large manufacturing firms (LMFs) in Kenya (KAM, 2018). Out of the 107 firms, five (5) firms were used for the pilot study. The five (5) pilot study firms were excluded from the main study. Therefore 102 questionnaires were sent out for the final study, out of which 102 were completed and returned, four (4) questionnaires were incomplete and therefore were excluded from the analysis, leaving 98 questionnaires which were analysed. This is a 96 percent response from the target population of 102 LMFs. This is presented in Table 1.

Table 1: Summary of Returned Questionnaires

Description	Frequency	Percentage (%)
Accepted questionnaires	98	96
Rejected questionnaires	4	4
Total	102	100

The response rate of 96% was considered adequate in light of prior studies (Kariuki, 2015; Halevi et al., 2015). Kariuki (2015) in the study on “Firm-Level factors, Industry environment, Competitive Strategy and Performance of Large Manufacturing Firms in Kenya” had a response rate of 92% while Halevi et al. (2015) study “Ambidexterity in SBUs: TMT Behavioral Integration and Environmental Dynamism” had a 51.5% response rate.

Tests of Hypotheses

Objective of the Study was to examine the difference between the joint effect of organizational ambidexterity, design and environmental dynamism and the individual effect of organizational ambidexterity on the performance of the Kenyan Large Manufacturing Firms. It was hypothesized that the joint effect of organizational ambidexterity, organizational design and environmental dynamism was not significantly different from the individual effect of organizational ambidexterity on the performance of large manufacturing firms (LMFs) in Kenya. The joint effect was assessed using multiple regression analysis while the independent effect of organizational ambidexterity was tested using simple linear regression analysis. Organizational performance was measured as a composite of sustainable balanced score card (SBSC) perspectives. The findings from the regression test are summarized in Table 2.

Table 2: Regression Output for the Individual Effect of Organizational Ambidexterity and Joint Effect of Organizational Ambidexterity, Organizational Design and Environmental Dynamism on the Performance of LMFs in Kenya

Model Summary						
Model	R	R Square	Adjusted R Square			Std. Error of the Estimate
1	.682 ^a	.465	.448			.15447
2	.589 ^a	.347	.341			.16877
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.947	3	.649	27.199	.000 ^b
	Residual	2.243	94	.024		
	Total	4.190	97			
2	Regression	1.455	1	1.455	51.100	.000 ^b
	Residual	2.734	96	.028		
	Total	4.190	97			
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.382	.385		3.593	.001
	Organizational Ambidexterity	.355	.071	.423	5.025	.000
	Organizational Design	.317	.070	.380	4.539	.000
	Environmental Dynamism	-.020	.064	-.024	-.317	.752
2	(Constant)	1.994	.265		7.537	.000
	Organizational Ambidexterity	.494	.069	.589	7.148	.000
Model 1: Predictors: (Constant), Joint variables - Organizational Ambidexterity, Organizational Design, Environmental Dynamism. Model 2: Predictor: (Constant), Individual variable - Organizational Ambidexterity. Dependent variable: Organizational Performance.						

The regression output presented in Table 2 indicates that the influence of organizational ambidexterity (predictor variable) on performance of LMFs in Kenya was significant ($R^2=0.347$, $F=51.100$, $p<0.05$). This means that 34.70 percent of performance variation is accounted for by organizational ambidexterity, the rest (65.40 percent) is explained by factors outside the current study's scope. The F-ratio shows that the effect of organizational ambidexterity on performance is significant ($p<0.05$) indicating the regression model achievement of robustness and fit for use in analyzing data for this study. The beta coefficient is also significant ($\beta = 0.589$, $t=7.148$, $p<0.05$). This means that a unit variation in organizational ambidexterity results in 0.589 units of change in performance.

A separate regression test was done for the joint influence of organizational ambidexterity, organizational design and environmental dynamism on performance. The regression output in Table 2 reveals that the joint influence of organizational ambidexterity, organizational design, and environmental dynamism account for 46.50 percent of variation in the performance of Kenyan LMFs ($R^2=0.465$, $p<0.05$). The F-ratio shows that the effect of organizational ambidexterity, organizational design and environmental dynamism, together, on performance is statistically significant ($F=27.199$, $p<0.05$). This implies the model was fit and robust for use in analysing this study's data.

Joint effect of organizational ambidexterity, organizational design, and environmental dynamism on performance of LMFs in Kenya is higher and statistically significant ($R^2=0.465$, $F=27.199$, $p<0.05$) than the individual effect of organizational ambidexterity ($R^2=0.347$, $F=51.100$, $p<0.05$) on performance of LMFs in Kenya. This is adequate evidence against the null hypothesis, which is therefore rejected.

5. DISCUSSION OF THE FINDINGS

The objective of this study was to determine whether the joint effect of organizational ambidexterity, organizational design and environmental dynamism was significantly higher than the independent effect of organizational ambidexterity on performance of LMFs in Kenya. The hypothesis was: H_0 : The joint effect of organizational ambidexterity, organizational design and environmental dynamism on performance of LMFs in Kenya is not significantly higher than the independent effect of organizational ambidexterity on the performance of LMFs in Kenya. The results indicate higher and significant organizational ambidexterity, organizational design and environmental dynamism joint effect on performance compared to the organizational ambidexterity independent effect of performance of Kenyan LMFs ($R^2=0.465$, $F=27.199$, $p<0.05$, $R^2=0.347$, $F=51.100$, $p<0.05$).

The study findings support the observation by DeWaal (2004) that various factors influence the degree to which an organization exhibits performance, and that high performing organizations are those that maximize on joint effect of the various factors. Further, the results support the dynamic capabilities theory. Dynamic capabilities theory assumes that organizations that apply dynamic capabilities experience improved performance (Teece et al., 1997). Dynamic capabilities entail the managerial activities of sensing, seizing and transforming, whose combined effect results in improved organizational performance (Teece, 2007). Organizational ambidexterity (sensing and seizing) and organizational design (transformation through redesigning /reconfiguration) are dynamic capabilities. The study results have shown that the

organizational ambidexterity, design and environmental dynamism jointly have effect on performance that is significantly higher than that of the organizational ambidexterity alone on performance of LMFs in Kenya.

6. CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

The study examined the joint effect of organizational ambidexterity, organizational design, and environmental dynamism on performance of LMFs in Kenya by testing the hypothesis that the joint effect of organizational ambidexterity, organizational design and environmental dynamism on performance of LMFs in Kenya is not significantly different from the individual effect of organizational ambidexterity on performance of LMFs in Kenya. The joint effect of organizational ambidexterity, organizational design, and environmental dynamism compared to the individual effect of organizational ambidexterity on performance of LMFs in Kenya was higher and statistically significant. Based on this outcome, it is the study's conclusion that if the LMFs would have a good alignment of the organizational ambidexterity strategy with organizational design and the external environment, their performance would improve. Also, the study concludes that for greater impact on LMFs, organizational ambidexterity, organizational design, and environmental dynamism need to be considered jointly for synergetic effects to be achieved.

This study enhances the literature on the joint effect studies, comparing joint effect against the individual variable effect on organizational performance. Review of previous studies shows no evidence of any study on the organizational ambidexterity, organizational design and environmental dynamism joint effect on the performance of LMFs in Kenya in a single study. This study has addressed this gap and assessed the organizational ambidexterity, organizational design and environmental dynamism joint effect on the performance of Kenyan LMFs; in a single study. Additionally, the study brings on board an integrated framework and empirically testing the organizational ambidexterity, organizational design and environmental dynamism synergetic organizational performance effect, thus knowledge contribution.

The study finding that the joint effect of organizational ambidexterity, organizational design, and environmental dynamism is higher and significant compared to the individual organizational ambidexterity (independent variable) effect is useful for policymakers to ensure maximization of the joint effect. Continuous scanning and alignment will enable policymakers to formulate policies that are relevant to the current needs of the manufacturing sector. It is therefore recommended that Kenyan LMFs' management should ensure appropriate balance in the variable combinations to attain the desired improved performance. Also recommended is balance in the amount of explorative as well as exploitative activities together with well aligned supportive organizational design. These should be in consideration of the external environment fluctuations and accordingly ensure alignment of the ambidexterity strategy and the organizational design. This will ensure the effectiveness of organizational design in easing the emerging tensions in concurrent performance of explorative and exploitative activities whose synergetic impact will lead to higher performance.

7. SUGGESTED AREAS FOR FURTHER STUDY

The data in this research was collected from a single source. One senior manager (Managing Director, General Manager or Head of department) provided the data by responding to the questionnaire which covered the various variables of the research. Relying on a response from one person in a big organization may have some limitations; such as single source and social desirability bias. Future researchers should involve more people across the management hierarchy and in different settings such as focus groups.

Future research should consider incorporating the use of several types of data collection methods and techniques. This research was restricted by the use of questionnaire only. As such, other means of data collection; including interviews, observations and case studies would be recommended. Cross sectional research design was used as the research design. Longitudinal design can be considered in future where the joint effect of organizational ambidexterity, design and environmental dynamism on organizational performance over time and to determine causal association, thus overcome the cross sectional research design limitations. This is especially considering the general dynamism and long term nature of the causality relationships.

This study was based on Kenyan LMFs. Future researchers should consider replication in other African countries to determine the similarities or differences. Also, research should be conducted in Kenyan small and medium manufacturing enterprises. Further, a comparative study, replicating this study in a big population covering many industries should be considered. Such large population would be a useful extension of this study and would further enrich the current findings.

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