

1     **The Management Challenge of Sustaining Competitive Advantage through Innovation in**  
2                                    **Nigerian Business Environment**

4                                    **Abstract**

5     Organizational learning refers to the sum total of individual and collective learning through  
6     training programs, experience, experimentation and work interactions within the organization.  
7     Thus, sustainable competitive advantage is the ability to offer superior customer value on an  
8     enduring or consistent basis, a situation in which competitors are unable to easily imitate the  
9     firm's capacity for value creation. It is worrisome that most literary works have not clearly  
10    linked organizational learning with sustainable competitive advantages, as is the case with  
11    intellectual capacity (knowledge-based resources) using resources-based view of the firm.  
12    Survey approach was the research design used with particular reference to the South East Zone  
13    of Nigeria. Findings revealed that organizational innovation leads to sustained competitive  
14    advantage. The Z-statistic value with the corresponding probability value confirms that the  
15    organization to a large extent draws its competitive strength jointly from the following factors:  
16    creation of new products, changes in way of production, changes in architecture of production,  
17    improved ways of sourcing supplies, opening new market opportunities, providing goods and  
18    services that others are not yet offering or are not able to copy, being able to offer products of  
19    comparable quality at a lower price, maintaining a configuration of resources and capabilities  
20    that cannot easily be imitated by competitors, being able to attract customers from competitors  
21    due to a positive corporate image and encouraging employees to improve their personal skills.  
22    The results total Z-scores in absolute term shows that the listed factors pose challenges to the  
23    organization in the process of achieving sustainable competitive advantage through innovation.  
24    For further justification, we proceed to their joint significant analysis adopting the one sample Z-  
25    test. The proxies employed in this study for the measurement of sustainability agreed with  
26    resource-base view strategies on sustainability of competitive advantage in an unstable business  
27    environment.

28    **Introduction:**

29         Today's challenges in business Environment is not only to build an innovation capacity,  
30         but establishing clear ways on how to sustain it (Barney, 2005:90). Learning through training is  
31         of essence so that capabilities can become stronger, evolving and more unique, thus making them  
32         more difficult for competitors to understand and imitate (Autio et al, 2002:97).

33         In building and sustaining capabilities, the characteristics of the organization which  
34         cannot be replicated by others make it distinctive and that which can be bought in by the  
35         competition are appropriate to the attainment of set objectives (Barney, 2001:72). Focusing on a  
36         model involving five essential elements and their application consistently and measurement  
37         within an activity leads to a greater potential to sustain innovation and competitive advantage.

38 In the 21<sup>st</sup> century business landscape, firms must compete in a complex and challenging context  
39 that is being transformed by many factors from globalization, frequent and uncertain changes to  
40 the growing use of information technologies (Denisi, Hitt and Jackson, 2003:116). Therefore  
41 achieving a competitive advantage is a major pre-occupation of senior managers in the  
42 competitive and slow growth markets which characterize many businesses today and the sources  
43 of competitive advantage have been a major concern for scholars and practitioners for the last  
44 two decades (Henderson, 1983:57; Porter, 1985:82; Coyne, 1986:102; Prohalad and Hamel,  
45 1990:78; Grant, 1991:46; Peteraf, 1993:67).

46 The importance of innovation as a tool for competitive advantage and distinctive  
47 competences as determinants of a firm's success and growth has increased tremendously in the  
48 last decade. This increase in importance is as a result of the belief that fundamental basis of  
49 above –average performance in the long run is sustainable competitive advantage (Porter,  
50 1985:213). Practitioners and academics have centered their studies on firm's specific  
51 characteristics that are unique, value adding to the ultimate consumer and are transferable to  
52 many different industrial settings (Coplin, 2002:87). Thus, it is understood that across sectors  
53 most firms should recognize that attaining competitive advantages is the most challenging issue  
54 facing firms in the 21<sup>st</sup> century. The concern has lead to the development of resource-based and  
55 knowledge-based theories that examine the relationship between core resources and capabilities;  
56 sustainable competitive advantage through innovations to attain above normal performance.  
57 According to Barney (2005:202) a firm is said to have a sustainable competitive advantage when  
58 it is implementing value creating innovative strategies, not being implemented by any current or  
59 potential competitors. Thus sustained competitive advantages exist only after efforts to replicate  
60 that advantages have failed. It is for this reasons that firms in Nigeria should focus on innovative  
61 methods and strategies that will result in new product development. One of such methods and  
62 strategies is organizational retooling through which an organization is capable of being involved  
63 with value – adding activities by developing creative innovations, by developing intellectual  
64 capital (human capital, social capital and organization capabilities) that are unique.

65 Roozenburg, (2003:73) posits that the intent of the firm is shown by its policy and the  
66 strategies for fulfilling the goals become the complimentary part of the policy. This was also  
67 emphasized by Goh (2003:65) who noted that to remain competitive; many organizations are  
68 adopting a strategy of continuous improvement. In a new product idea, two elements come  
69 together: a technical possibility and a market need. The discussion on whether the development  
70 should be market-pull or technology-push is in this context less important. As a result of  
71 continuous improvement, employees are encouraged to learn new skills continually and to try  
72 new processes and work methods in order to achieve the strategic business objectives of the  
73 organization.

74

75 **Literature review/research gap:**

76 Theoretical Framework

77 *Organizational Learning Process*

78 Organizational learning refers to the sum total of individual and collective learning  
79 through training programs, experience, experimentation and work interactions within the  
80 organization. It is the acquisition, sustenance or changing of meanings shared by people through  
81 collective actions and creativity (Cook and Yanow, 2006:76). However, the concept of  
82 organizational growth through innovation is subject to competing formulations and is an on-  
83 going activity (Stewart, 2006:107). There is need to have a process of coordinated systems  
84 change, with mechanisms built in for individuals and groups to access, build and use  
85 organizational memory structure and culture to develop long-term organizational capacity. It is a  
86 dynamic process of creation, acquisition and integration of knowledge aimed at the development  
87 of resources and capabilities that contribute to better organizational performance (Lopez et al,  
88 2005;117).

89 Precious studies (Huber 1991:87; Dale, 1994:168; Winteer, 2000:102) have proposed  
90 four dimensions or phases of sustaining competitive advantage through innovation to be  
91 knowledge acquisition, reliable distributive system, accurate information data base and good  
92 communication channels. These procedures can be used for leveraging creativity in firms thereby  
93 attaining sustainable competitive advantage.

94 This implies that, when a firm acquires individual level knowledge resources (human  
95 capital development) through training or experience and other learning activities, it must find a  
96 way to leverage those resources to the organizational level (Deivisi, 2000:68). Otherwise the  
97 effects of these knowledge-based resources on competitiveness will be limited. This implies that  
98 for an organization to benefit from the innovation process, it should put some effort in the  
99 management of knowledge.

100 The increasing difference between company market value and company book value has  
101 prompted academics and practitioners to consider the concept of intellectual capital as a key  
102 determinant of the process of value creation for shareholders, managers and the society as a  
103 whole (Viedma, 2003:68). The intellectual capital theory was initially developed as a framework  
104 for analyzing the value contribution of intangible assets in an organization (Sveiby, 1997:121;  
105 Edvinson and Malone, 1997:187) but recent theories include strategic perspectives that allow  
106 identification and evaluation of the core competencies that help achieve sustainable competitive  
107 advantage (Viedma, 2003:98). He further argued that the daily operation of firms show that in  
108 value-creation processes, all these types of intellectual capital (organizational capital, social  
109 capital, and human capital) act together. These capital resources are acquired through the process  
110 of organizational learning and are seen as being extremely important for sustaining competitive  
111 advantage in today's competitive environment (DeNisi, 2000:147). Thus through organizational

112 learning, a firm can develop a unique human and organizational capital that are hard to imitate  
113 and that evolve continuously with the firm (Amstrong, 2001:87). Armstrong argues that  
114 employees' skills, knowledge and abilities (human capital) are intertwined with organizational  
115 culture to form unique resources through innovation that other firms cannot acquire and apply.

116 Organizational capital arises from converting individual and collective knowledge  
117 acquired through learning processes, into routines, processes and systems that help develop  
118 organizational reputation, competence and capabilities that are rare and difficult to imitate  
119 (Amstrong, 2001:76). It is important to note that human capital has a symbiotic relationship with  
120 organizational capital in the sense that each provides the prerequisites for one another's use and  
121 development. Individual skills, collective skills and knowledge are used to develop work  
122 methods and databases which in turn are used as sources of knowledge for innovative techniques  
123 by individuals and groups for the attainment of competitive advantage sustainability.

124 The mobility of human capital is less a threat to competitive advantage than it would first  
125 seem to be because once an organization integrates human capital with other complementary  
126 resources and uses this integration to create organizational capabilities, losing one or a few  
127 individuals may not lead to a loss of competitive advantage. This means that it is not enough to  
128 acquire individuals who have skills, knowledge and abilities, it is also necessary to develop these  
129 abilities further and use them to develop structures, systems procedures and reputation  
130 (organizational capital) that allows the organization to exploit the resources and gain competitive  
131 advantage (DeNisi et al, 2003). This tripartite concept of intellectual capital indicates that while  
132 it is individuals who generate, retain and use knowledge (human capital), this knowledge is  
133 enhanced by the social interactions and networks (social capital) to generate the institutionalized  
134 knowledge possessed by an organization (Amstrong, 2001:128).

### 135 Organizational Learning and Sustainable Competitive Advantage

136 Alderson (2005:97) posits that firms should strive for unique characteristics in order to  
137 distinguish themselves from competitors in the eyes of the consumer for a long period of time  
138 (that is sustainable competitive advantage). Thus, sustainable competitive advantage is the ability  
139 to offer superior customer value on an enduring or consistent basis, a situation in which  
140 competitors are unable to easily imitate the firm's capacity for value creation (Collis and  
141 Montgomery, 2005:198). However, Barney (2001:58) avers that sustainable competitive  
142 advantages could occur when firm's resources valuable (the resources help the firm to create  
143 products and services), rare (competitors do not have access to them), inimitable (competitors  
144 cannot easily replicate them) and appropriate (the firm owns them and can exploit them at will).  
145 Acquiring and preserving sustainable competitive advantage and superior performance are a  
146 function of the resources and capabilities brought to the competition (Aaker, 2009:38; Barney,  
147 2005:89). These knowledge resources and capabilities, resulting from learning processes implies  
148 an improvement in response capacity through a broader understanding of the environment  
149 (Dodgson, 2003:76; Sinkula, 2004:102).

150 A superior capability to learn is critical because of the acceleration of markets and technological  
151 changes, explosion of available market data and importance of anticipatory action. It is a  
152 valuable source of competitive advantage because of its complexity, usefulness and difficulty to  
153 imitate (Day, 1995; 21; Slater and Never, 1995:105).

154 The resource-based theory (Barney; 1991: 79; Prahalad and Hamel, 1990: 127;  
155 Wernerfelt, 1985:98), complementing the traditional Porter's (1985) model of competitive  
156 advantage stresses the importance of the resources and capabilities of the intangible resources  
157 and capabilities of the firm in the context of the competitive environment (Collis and  
158 Montgomey, 1995: 87). This affirms to the fact that firms who devote their internal forces to  
159 exploit the opportunities of the environment and to neutralize threats while avoiding weak points  
160 are likely to attain competitive advantages than those that do not do the same (Barney, 2005:84)  
161 and they are able to build a good reputation.

162 Consequently, the knowledge-based view depicts firms as repositories of knowledge and  
163 competencies. This implies that the organizational advantage of firms over markets arises from  
164 their superior capability in creating and transferring knowledge (Ghoshal and Moran 1996:72).  
165 Sequel to this, firms are able to improve their real and perceived market value.

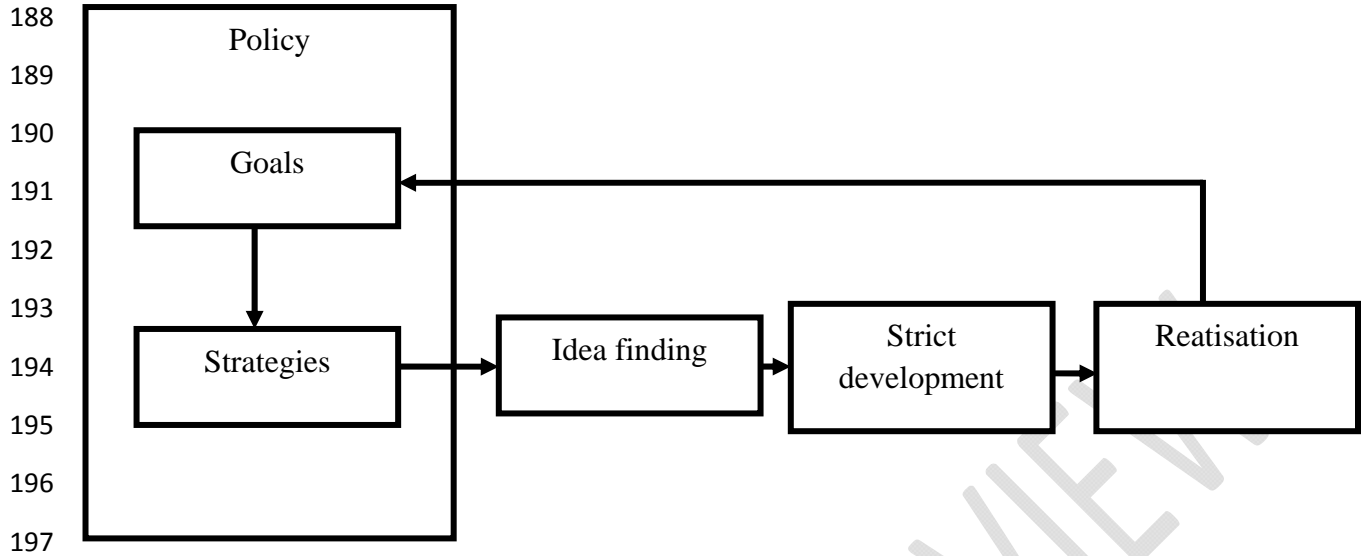
166 Therefore, accumulation of knowledge through learning constitutes a driving force in  
167 development and growth of firms, because acquisition of knowledge enhances the firms' ability  
168 to sustain a competitive position (Spender and Grant, 2006:182). This added to the fact that the  
169 ability to learn faster than competitors may be the only sustainable competitive advantage (Stata,  
170 2009:105) makes organizational learning a competence that all organizations should develop in  
171 fast-changing and competitive environment (Garvin, 2003:78) that is being witnessed today in  
172 businesses.

173 Therefore this research proposal proposes a model that links organizational innovation  
174 through learning to sustainable competitive advantage through intellectual capital elements. The  
175 design model will help a firm achieve above average performance over a long period of time if it  
176 pursues innovation through organizational learning strategies that lead to competitive advantage  
177 and are hard to imitate. Intellectual capital with effective knowledge management system is to  
178 enhance the transfer of knowledge across the boundaries of individual, units and organizations  
179 which could lead to sustainable competitive advantage.

#### 180 Organizational Innovation and Competitive Advantage

181 Organizational innovation encompasses all activities that precede the adoption of a new  
182 operational procedures and processes in the structure of an organization. According to  
183 Roozenburg and Eekels (1995:201) an organization that wants to innovate must know very well  
184 what it wants to achieve. It must produce fruitful ideas for innovation, work them out skillfully  
185 into comprehensive plans for action and then realize those plans tenaciously yet flexible. The  
186 structure of innovation is shown below

187



198 *Source: Roozenburg and Eekels, 1995:201*

199 The first part of innovation process to sustain competitive advantage is planning which  
200 has two parts: ‘policy formulation’ and idea finding.’ What an organization wants to achieve is  
201 shown by its policy. Right choice of strategy is of essence in the sustenance of competitive  
202 advantage.

203 When searching for new organizational ideas, it is wise not to search at random, but first  
204 to demarcate the areas in which you intend to be active. These areas are called ‘search fields’. A  
205 search field is a strategic idea of future activities of a company, which is based on knowledge of  
206 external opportunities (strengths). Idea finding has much in common with exploration. Its  
207 success depends on the activity itself, but also strongly on luck and chance. The organization  
208 policy directs the idea-finding process and provides normative information for making choices in  
209 that process. Buijs (2003:81) argues that coming up with new organizational procedures and  
210 processes is the response of an organization to its changing competitive environment.

211 The strategy formulation stage is subdivided into six activities.

- 212 (i) Analysis of the present situation, which leads to the strategic situation of the  
213 organization;  
214 (ii) Internal analysis;  
215 (iii) External analysis;  
216 (iv) Search area generation;  
217 (v) Search area evaluation; and  
218 (vi) Search area selection.

219 Based on an analysis, the strategic situation of the organization is formulated. The strategic  
220 need for innovation is made explicit by estimating the future corporate situation when no  
221 strategic changes are made. During the internal analysis, the strategic strengths, the core  
222 competences are defined. In the external analysis, the competitive environment is analysed and

223 the opportunities and threats are made explicit. Search areas are strategic ideas for innovation  
224 and potential new business opportunities. A search area is a combination of a strategic strength  
225 and an external opportunity. During search area evaluation, the strategic innovation ideas are  
226 checked with the outside world by interviewing experts, looking at patents, observing potential  
227 clients/users, etc. In search area selection, a definite choice is made. The selected search areas  
228 form the starting point for the next phase.

229 An improvement path is selected based upon the strategy and business environment.  
230 However, most improvement efforts to sustain a competitive advantage require some level of  
231 organizational change, change management and leadership style issues to be addressed.

### 232 **Research method:**

233 The research design that was adopted for this research was the survey approach. The  
234 survey approach focused on certain phenomenon through the use of questionnaire, with  
235 particular references to the South East Zone of Nigeria, to gather information from a sample of  
236 population under study. This is because survey seems to bring things up to date and relate to the  
237 present state of events.

238 The findings of this work are discussed in the light of the set objective as follows:

### 239 **DATA ANALYSIS**

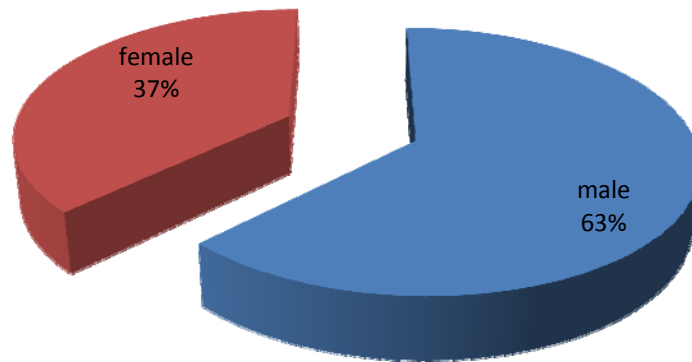
240 ***TABLE 1: DISTRIBUTION OF GENDER OF THE RESPONDENTS***

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Male	37	62.7
Female	22	37.3
<b>Total</b>	<b>59</b>	<b>100.0</b>

241 ***SOURCE: Author's computation using SPSS 20***

242 The distribution of the gender of the respondents indicate that 37(62.7%) of the respondents are  
243 males while 22(37.3%) of the respondents are females. This shows that there are more males  
244 than females in the study. See figure 1 below for pictorial presentation

**Fig. 1: Pie chart of the gender of the respondents**



245

246 *SOURCE: Field Survey 2016*

247

248

249

250

251 **TABLE 2: DISTRIBUTION OF RESPONDENTS' POSITION**

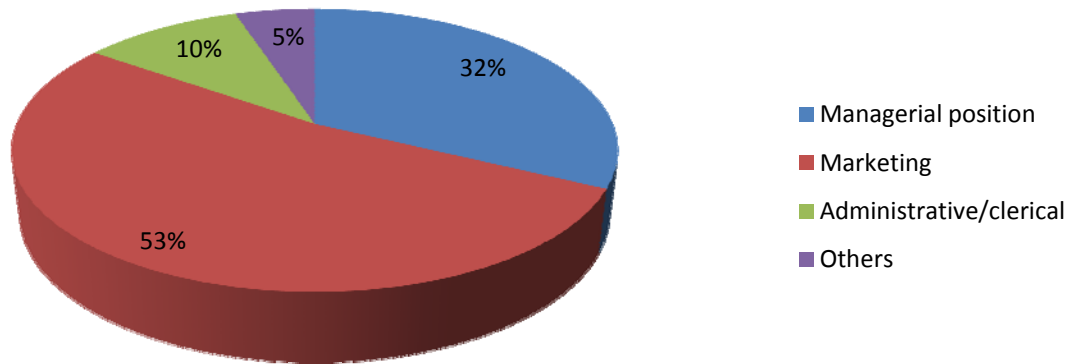
<b>Positions</b>	<b>Frequency</b>	<b>Percent</b>
Managerial position	19	32.2
Marketing	31	52.5
Administrative/clerical	6	10.2
Others	3	5.1
<b>Total</b>	<b>59</b>	<b>100.0</b>

252 *SOURCE: Author's computation using SPSS 20*

253 The table 2 above presents the respondents' positions. The result shows that 19(32.2%) of  
254 the respondents are occupying managerial position; 31(52.5%) are marketers; 6(10.2%) of the  
255 respondents are administrative/clerical officers while 3(5.1%) of the respondents are occupy  
256 other positions which were not highlighted in this study. The result therefore shows that most of  
257 the respondents are marketers. Fig 2 presents the pie chart.



**Fig. 2: Pie chart of positions of the respondents**



258

259 *SOURCE: Field Survey 2016*

260

261 **TABLE 3: Descriptive statistics of length of service of the Respondents**

	n	Min	Max	Mean	Std.	Skewness	Kurtosis
LENGHT OF SERVICE	59	1	10	4.71	2.407	.313	-.408

262 *SOURCE: Author's computation using SPSS 20*

263 The descriptive statistics above indicates that the average length of service of the  
264 respondents is 4-5years with a standard deviation of 2-3years. The minimum year of service of  
265 the respondents is 1year while the maximum is 10years. The Skewness and Kurtosis which  
266 measures the peakedness and departure from normality of the dataset indicates that the length of  
267 service of the respondents is skewed to the right without excess kurtosis.

### 268 **Discriminant Analysis**

269 The study utilized the Fisher's function of discrimination presenting the degree of correct  
270 and wrong classification of the variables under study. From the discriminant result, we have the  
271 Box's M which ascertains equal covariance matrix of the factors. The result here shows that the  
272 factors have equal population covariance matrices (Box's M = 4.131; p-value = 0.152).

273

274

275 **Box's Test of Equality of Covariance Matrices**

**Test Results**

Box's M	4.131
Approx.	1.892
F	2
df1	430.178
df2	.152
Sig.	

Tests null hypothesis of equal population covariance matrices.

276 *Source: Researcher Extract from SPSS output*

277 The canonical correlation with a coefficient value of 0.951 shows that the factors  
 278 considered in the study explains about 95.1% of the organization's problems. This is significant  
 279 as it was confirmed in table of Wilks' Lambda.

**Wilks' Lambda**

Test of Function(s)	Wilks' Lambda	Chi-square	df	Canonical correlation	Sig.
1	.096	32.762	2	0.951	.000

280 *Source: Researcher Extract from SPSS output*

281 The Fisher's Function and classification result indicates that about 64.7% of the original  
 282 group cases were correctly classified hence can be subjected to further analysis. The results is as  
 283 shown below

284

285

**Functions at Group Centroids**

group	Function
	1
competitive strength	-2.148
aspect of innovation	-1.937
factor	3.762

Unstandardized canonical discriminant functions evaluated at group means

286

**Classification Results<sup>a</sup>**

	group	Predicted Group Membership			Total	
		competitive strength	aspect of innovation	factor		
Original	Count	Competitive strength	3	3	0	6
		Aspect of innovation	3	2	0	5
		Factor	0	0	6	6
	%	Competitive strength	50.0	50.0	.0	100.0
		Aspect of innovation	60.0	40.0	.0	100.0
		Factor	.0	.0	100.0	100.0

a. 64.7% of original grouped cases correctly classified.

287 *Source: Researcher Extract from SPSS output*

288 **Table 4(a): Sources of Competitive Strength of the Organization**

Source	VLE (%)	LE (%)	U (%)	SE (%)	VSE (%)	Mean	Std.
Sales volume/Market share	48(81.4%)	11(18.6%)	0(0.0%)	0(0.0%)	0(0.0%)	4.81	0.39
Product Quality/Innovation	47(79.7%)	12(20.3%)	0(0.0%)	0(0.0%)	0(0.0%)	4.80	0.41
Customer service/Care	20(33.9%)	31(52.5%)	8(13.6%)	0(0.0%)	0(0.0%)	4.15	0.72
Length of existence/Firm History	30(50.8%)	21(35.6%)	3(5.1%)	5(8.5%)	0(0.0%)	4.23	0.91
Brand Appeal	36(61.0%)	21(35.6%)	2(3.4%)	0(0.0%)	0(0.0%)	4.72	0.86
Firm Size	17(28.8%)	21(35.6%)	5(8.5%)	13(22.0%)	3(5.1%)	2.39	1.26
<b>Cluster mean</b>						<b>4.18</b>	<b>0.76</b>

289 **Note:** VLE = Very Large Extent; LE = Large Extent; U = Undecided; SE = Small Extent;

290 VSE = Verv Small Extent: VLE = 5: LE = 4: U = 3: SE = 2: VSE =1

291 its competitive strength to a large extent from sales volume; product quality/innovation;  
 292 customer service/care; length of existence/firm history and brand appeal but not largely from  
 293 firm size.

294

295 **Table 4(b)**

<b>FACTORS</b>	<b>Mean</b>	<b>Z-score</b>	<b>Critical value @ 0.05</b>
SV/MKT	4.81	0.67730	1.96
PROQ	4.80	0.66649	1.96
CS&C	4.15	-0.03603	1.96
LEX	4.23	0.05044	1.96
BRAP	4.72	0.58003	1.96
FS	2.39	-1.93824	1.96
<b>Total</b>		<b>3.948530</b> <b>2</b>	

296 *SOURCE: Author's computation using MINITAB 14*

297 The results above with Z-scores (in absolute term) > 1.96 shows that the organization  
 298 draws its competitive strength individually from the factors. Hence, we take a further look at the  
 299 joint statistics.

300 **Z-Test**

Test of mu = 0.000 vs mu > 0.000						
The assumed sigma = 1.00						
<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>StDev</b>	<b>SE Mean</b>	<b>Z-stat</b>	<b>P</b>
<b>Cluster mean</b>	6	4.183	0.925	0.408	10.25	0.0000

301  
 302 The Z-statistic value of 10.25 with the corresponding probability value of 0.0000 < 0.05  
 303 confirms that the organization to a large extent draws its competitive strength jointly from the  
 304 listed factors.

305  
 306  
 307  
 308  
 309  
 310

311 **Table 5(a): Extent of Aspects of Innovation**

Aspects of Innovation	VLE (%)	LE (%)	U (%)	SE (%)	VSE (%)	Mean	Std.
Creation of new or improved goods and services that are launched to the market	48(81.4%)	5(8.5%)	0(0.0%)	0(0.0%)	6(10.2%)	4.19	1.02
Changes in the way in which goods and services are produced	34(57.6%)	11(18.6%)	3(5.1%)	5(8.5%)	6(10.2%)	4.05	0.58
Changes in the architecture of production	45(76.3%)	3(5.1%)	5(8.5%)	0(0.0%)	6(10.2%)	4.33	1.01
Improved ways of sourcing supplies of raw inputs or intermediate goods and services	42(71.2%)	5(8.5%)	0(0.0%)	6(10.2%)	6(10.2%)	4.21	0.55
Opening up new market opportunities	48(81.4%)	3(5.1%)	0(0.0%)	2(3.4%)	6(10.2%)	4.50	0.61
<b>Cluster mean</b>						<b>4.26</b>	<b>0.75</b>

312 **Note:** VLE = Very Large Extent; LE = Large Extent; U = Undecided; SE = Small Extent;  
 313 VSE = Very Small Extent; VLE = 5; LE = 4; U = 3; SE = 2; VSE =1

314  
 315 The cluster mean value of 4.26 > 3.0 (likert average) indicates that the aspects of  
 316 innovation contribute positively to a large extent to the achievement of long term competitive  
 317 advantage.

318 **Table 5(b)**

FACTORS	Mean	Z-score	Critical value @ 0.05
Creation of new products	4.19	-0.39109	1.96
Changes in way of production	4.05	-1.22067	1.96
Changes in architecture of production	4.33	0.43849	1.96
Improved ways of sourcing supplies	4.21	-0.27258	1.96
Opening new market opportunities	4.50	1.44584	1.96
Total		<b>3.76867</b>	

319 **SOURCE:** Author's computation using MINITAB 14

320 The results above with Z-scores (in absolute term) > 1.96 shows that the respondents do  
 321 not agree to a large extent that the listed aspect of innovation contribute positively to the  
 322 achievement of the organization's long term competitive advantage.

323 **Z-Test**

Test of mu = 0.000 vs mu > 0.000						
The assumed sigma = 1.00						
Variable	N	Mean	StDev	SE Mean	Z-stat	P
Cluster mean	5	4.256	0.169	0.447	9.52	0.0000

324  
 325 The Z-statistic value of 9.52 with the corresponding probability value of 0.0000 < 0.05  
 326 confirms that the listed aspect of innovation to a large extent contribute positively to the  
 327 achievement of the organization's long term competitive advantage.

328

329 **Table 6(a)**

FACTOR	VLE (%)	LE (%)	U (%)	SE (%)	VSE (%)	Mean	Std.
Providing goods and services that others are not yet offering or are not able to copy	32(54.2%)	0(0.0%)	0(0.0%)	9(15.3%)	18(30.5%)	3.32	1.87
Being able to offer products of comparable quality at a lower price because cost of production is lowest in the industry	32(54.2%)	5(8.5%)	0(0.0%)	17(28.8%)	5(8.5%)	3.71	1.55
Maintaining a configuration of resources and capabilities that cannot easily be imitated by competitors	32(54.2%)	0(0.0%)	0(0.0%)	3(5.1%)	24(40.7%)	3.22	1.97
Being able to attract customers from competitors due to a positive corporate	32(54.2%)	2(3.4%)	6(10.2%)	3(5.1%)	16(27.1%)	3.53	1.77

image							
Encouraging employees to improve their personal skills so that they can learn and develop	29(49.2%)	5(8.5%)	6(10.2%)	3(5.1%)	16(27.1%)	3.47	1.74
Encouraging employees to share their on-the-job experiences with their colleagues so that people learn from other experiences	34(57.6%)	6(10.2%)	0(0.0%)	13(22.0%)	6(10.2%)	3.83	1.54
<b>Cluster mean</b>						<b>3.51</b>	<b>1.74</b>

**Note:** VLE = Very Large Extent; LE = Large Extent; U = Undecided; SE = Small Extent;  
VSE = Very Small Extent: VLE = 5; LE = 4; U = 3; SE = 2; VSE = 1

The cluster mean value of 3.51 > 3.0 (likert average) indicates that the above factors pose challenges to the organizations as it concerns achieving sustainable competitive advantage through innovation. Particularly encouraging employees to share their on-the-job experiences with their colleagues so that people can learn from other experiences pose most challenges followed by the organizations ability to offer products of comparable quality at a lower price and lastly by maintaining a configuration of resources and capabilities that cannot easily be imitated by competitors.

<b>FACTORS</b>	<b>Mean</b>	<b>Z-score</b>	<b>Critical value @ 0.05</b>
SV/MKT	3.32	-0.84053	1.96
PROQ	3.71	0.85502	1.96
CS&C	3.22	-1.27528	1.96
LEX	3.53	0.07246	1.96
BRAP	3.47	-0.18839	1.96
FS	3.83	1.37672	1.96
Total		<b>4.6084</b>	

**SOURCE:** Author's computation using MINITAB 14

The results above with total Z-scores (in absolute term) > 1.96 shows that the listed factors pose challenges to the organization in the process of achieving sustainable competitive

343 advantage through innovation. For further justification, we proceed to their joint significant  
344 analysis adopting the one sample Z-test.

345 **Z-Test**

Test of mu = 0.000 vs mu > 0.000						
The assumed sigma = 1.00						
Variable	N	Mean	StDev	SE Mean	Z-stat	P
Cluster mean	6	3.513	0.230	0.408	8.61	0.0000

346

347 The Z-statistic value of 8.61 with the corresponding probability value of  $0.0000 < 0.05$  implies  
348 that the listed factors mentioned above collectively pose to a significant extent challenges to the  
349 organization in the process of achieving sustainable competitive advantage through innovation.

350

351 **Findings:**

352 The results above with Z-scores show that the organization draws its competitive strength  
353 individually from the factors. Hence, we took a further look at the joint statistics. The Z-statistic  
354 value with the corresponding probability value confirms that the organization to a large extent  
355 draws its competitive strength jointly from the listed factors.

356 There are further indications that the surveyed aspects of innovation contribute positively  
357 to a large extent to the achievement of long term competitive advantage. The results further agree  
358 to a large extent that the listed aspect of innovation contribute positively to the achievement of  
359 the organization's long term competitive advantage. These sources according to our findings  
360 include Creation of new products, Changes in way of production, Changes in production  
361 architecture, improved ways of sourcing supplies and opening of new markets.

362 Conclusively, the surveyed factors jointly and severally represent sources of innovation  
363 that essentially leads to strong competitive advantage.

364 The cluster mean value indicates that the surveyed factors pose challenges to the  
365 organizations as it concerns achieving sustainable competitive advantage through innovation.  
366 Particularly encouraging employees to share their on-the-job experiences with their colleagues so  
367 that people can learn from other experiences pose most challenges followed by the organizations



368 ability to offer products of comparable quality at a lower price and lastly by maintaining a  
369 configuration of resources and capabilities that cannot easily be imitated by competitors.

370 The results total Z-scores in absolute term shows that the listed factors pose challenges to  
371 the organization in the process of achieving sustainable competitive advantage through  
372 innovation. For further justification, we proceed to their joint significant analysis adopting the  
373 one sample Z-test.

374 The Z-statistic value with the corresponding probability value implies that the listed factors  
375 mentioned above collectively pose to a significant extent challenges to the organization in the  
376 process of achieving sustainable competitive advantage through innovation.

377

### 378 **Theoretical and practitioner implications:**

379 The proxies employed in this study for the measurement of sustainability agreed with  
380 resource-base view strategies on sustainability of competitive advantage in an unstable business  
381 environment. This has not been explored by prior researchers.

382 However, there is a dearth of empirical evidence on such a study in the area of  
383 geography. The test statistic used in data analysis is an improvement over what prior research  
384 findings employed.

385 **Disclaimer: - This manuscript was presented in a Conference.**

386 **Conference name: Los Angeles International Business & Social Science Research Conference ,**  
387 **California,USA, At California, USA**

388 **July 2017 USA**

389 **Available link: -**

390 **<https://www.researchgate.net/publication/325253553> The Management Challenge of Sustaining Co**  
391 **[mpetitive Advantage Through Innovation in Nigerian Business Environment 1](#)**

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