DYNAMIC CAPABILITIES AND MANAGEMENT INNOVATION IN THE NIGERIA MANUFACTURING INDUSTRY

B.E.A. Oghojafor
University of Lagos, Nigeria
S.A. Adebisi
University of Lagos, Nigeria
and
O.A. Ogunkoya
Olabisi Onabanjo University, Ago Iwoye, Nigeria

Abstract
This study investigates the relationship between dynamic capabilities and management innovation in the Nigeria manufacturing firms. The study draws together knowledge from a variety of fields to propose that management innovation can be viewed as a form of organizational capability. An extensive review of literature on management innovation leads to the development of a conceptual model of a firm as an innovation engine. The model sees substantial investment in innovation capability as the primary engine for wealth creation, rather than the possession of physical assets. The findings indicate that there is a significant and positive relationship between dynamic capabilities and management innovation in the Nigeria manufacturing firms. It also shows that firms invest and nurture this capability, through which they execute effective innovation processes, leading to innovations in new products, cutting edge services and processes delivery and superior business performance. The study concludes by provides a framework for managers and showing that the process of innovation can be managed, systematized and replicated within organizations.

Keywords:
Dynamic Capabilities, Management Innovation, Competitiveness, Path, Process, Reconfiguration.

Introduction

Ask many of today's CEOs in Nigeria and they are likely to tell you that the ability to develop new ideas and innovations is one of the top priorities of their organizations. The emergence of the knowledge economy, intense global competitions and considerable technological advances has seen management innovation become increasingly central to competitiveness. Management innovation is one of the mechanisms by which organizations produce the new products design and develop new services, processes and systems required for adapting to changing markets, technologies and modes of competition.

Firms operating in a changing environment have a need for structures and practices that provide flexibilities, rapid response to changes and execute innovative tasks so as to avoid organizational objectives somersault. Creating and adopting new ideas, product and processes are vital strategies for an organization (Burn and Stalker, 2007).

Given the challenges firms face in an attempt to keep up with market needs, they have to continuously improve their processes and product, develop new product and services to match market requirement. Successful adjustment to changing market demands depend on the firms' ability to convert knowledge into innovation, hence their internal structures and capabilities have an important role in their performance. A firm's competitive advantage does not only depend on its internal sources but also external technology sources, and this explains why Lansiti (2005) stresses that firms who want to remain in the market needs to rapidly integrate internal technologies with external available technologies and launch such product/services as at when needed. In order to address this important managerial decision, company's capabilities will determine or dictate their performance provided they respond to

appropriate changes; adopt a strategic paths and routine in the business environment (Teece, Pisan and Shuen 2007). This therefore means that an organization may have the right behavior, goodwill, plans or even best product but without the capacity to identify the need for change, formulate an appropriate response and develop decrease courses of action that will ensure rapid/systematic growth of the organization.

A company can have a lot of valuable assets and still not have useful capabilities. This connotes that a firm developed its capabilities when it combines individual skills and knowledge of its employees along with the available resources or assets that is the men, money material, machine, the technical know-how and technology (Vorhies and Morgan, 2005). In general, dynamic capabilities enable companies to respond to changes in the business environment. The dynamic capabilities framework is a development of the resource base view theory that identifies and focuses on the specific class of organizational capabilities or routines that provides advantage in dynamic environment. Strategic management researchers have used resource base view theory to understand the inter-firm differences in firm performance, since it explains the importance of the resources a firm possess that gives the firm competitive advantage over others.

Organizations need to have capabilities such as business knowledge, technological development and expertise, and international diversification experience which are transferred between parent company and its business subsidiaries (Fang, Wade, Belious, and Beamish, 2007). These capabilities are needed in conditions of rapidly changing business operating environment, and in activities such as new product development and expansion or penetrating into a new market segment.

The rest of this article proceeds as follows: Section two, reviewed relevant literatures on dynamic capabilities and innovation and the conceptual model indicating the relationship between tested hypotheses. Section three is devoted to the methodology adopted for carrying out the study and it includes method of data collection, analysis and presentation of the findings with respect to each of the hypothesis tested. The final section derives the study's conclusions, articulate managerial and public policy implications, and offer suggestion for future research directions.

Literature Review

Dynamic Capability and Management Innovation

A dynamic capability can be defined as a pattern of collective activity through which the organization systematically generate and modifies its operating routines in pursuit of competitive advantage (Zollo and Winter, 2002). Therefore, dynamic capabilities are those strategies an organization adopts in the smooth running of the day to day activities of the firm in order to have competitive edge over other firm/companies in the same industry or business. Dynamic capability thus reflect an organizations ability to achieve new and innovative forms of competitive advantage given path-dependencies and market positions and also enables companies to recognize and respond to changes in the business environment (Teece, Pisan, and Shuen, 2007). Dynamic capabilities can also be referred to as the organizational and strategic routines by which firms achieve new resources configuration as market emerge, collide, split, evolve or even die (Eisenhardt and Martin, 2000). These organizational routines are closely related to management innovation.

Innovation may be defined as the invention discovery and the implementation of a novel management practice, process, structure or techniques that is new to further organizational goals. It is a challenging issue for different organizations to adapt to the changes in the business environment. Firms may require making change in its capabilities that focuses on the management practices concerning organizational reactions to changes thus, leading to innovation (Benner, 2009). Innovativeness is one of the fundamental instruments of growth strategies to penetrate new markets, increase the existing market share and to provide the company with a competitive edge. Thus, innovations constitute an indispensable component of the corporate

strategies for several reasons such as to apply more productive manufacturing processes, to perform better in the market, to seek positive reputation in customers' perception and as a result to gain sustainable competitive advantage and performance.

Management innovation include service innovation processes, service scorecard, service utility map, downstream analysis for understanding service growth potential, key account management leadership of service business unit, handover management, frontline empowerment, performance management systems or communities of service practices. Management innovation further suggests the existence of close links with the organizational and strategic routines constituting dynamic capabilities (Fischer, Gebauer, Ren, Gregory, and Flelsch, 2010).

Processes

From managerial and organizational perspective, process is referred to as the way things are done in the firm, or what might be referred to as its routines, or patterns of current practice and learning. Organizational processes ranges from static organizational routines and coordination to the ability of the organization to learn new routines and patterns of activities, and move to unknown territory to experiment with new processes that largely elude systemization (Taylor and Greve, 2006). These capabilities are intriguing assets to the firm as they are typically must be built because they cannot be both. Organizational routines that enable firm to transform and reconfigure resources when required are particularly important dynamic capabilities which will lead to the three roles of organizational processes: coordination, learning and reconfiguration (Gavin, 2002).

a. Coordination/ Integration: Coordination becomes necessary to ensure that the organizational goal is achieved effectively, how effective and efficiently internal coordination is achieved is therefore important (Aoki, 2002), likewise for the external coordination. Increasingly, strategic advantage requires the integration of external activities and technology. A firm distinctive ability needs to be understood as refection of organizational capabilities.

b. Learning (dynamic concept): Perhaps, even more important than coordination is learning. Learning is a process by which repetition and experimentation enable tasks to be performed better and quicker to enable firms identify new production opportunities. Mody (2004) pointed out that collaborations and partnership can be a vehicle for new organizational learning , helping firms to recognize dysfunctional routines , and preventing strategic blind spots.

c. Reconfiguration: Teece (2006) defined dynamic capabilities as a firm's ability to sense, seize and reconfigure internal and external competences, to address a rapidly changing environment. In rapidly changing environments, there is obviously value in the ability to sense the need to reconfigure the firm's asset structure and to accomplish the necessary internal and external transformation (Lavie, 2006).

Change though costly, firms must develop processes to minimize low pay-off change. The ability to calibrate the requirements for change and to effectuate the necessary adjustment would appear to depend on the ability to scan the environment, to evaluate markets and competitors, and to quickly accomplish reconfiguration ahead of competitors (Amit and Schoemaker, 2002).

Resources Positions

The resources positions that underpin competitive advantage and dynamic capabilities must be deployed to the best advantage. Organizational resources can be tangible or intangible, for example, the plant and equipment, technological assets, market knowledge and financial assets are part of the resources position of the organization (Wernerfelt, 2004). Dynamic capabilities deploy, reconfigure and adapt these resources as required in dynamic environment.

Paths

Where a firm can go is a function of its current position and move ahead. Its current position is often shaped by the paths it has travelled (Lavie, 2006). Dynamic capabilities steer the organization on future-oriented paths, but are also dependent. Paths dependence in dynamic capabilities is a function of the previous

decision made, knowledge gained and competencies developed that affect the current choices available. Current and future choices and paths are formed and altered by dynamic capabilities as an organization moves forward in a dynamic environment (Lavie 2006, Teece et al., 2007).

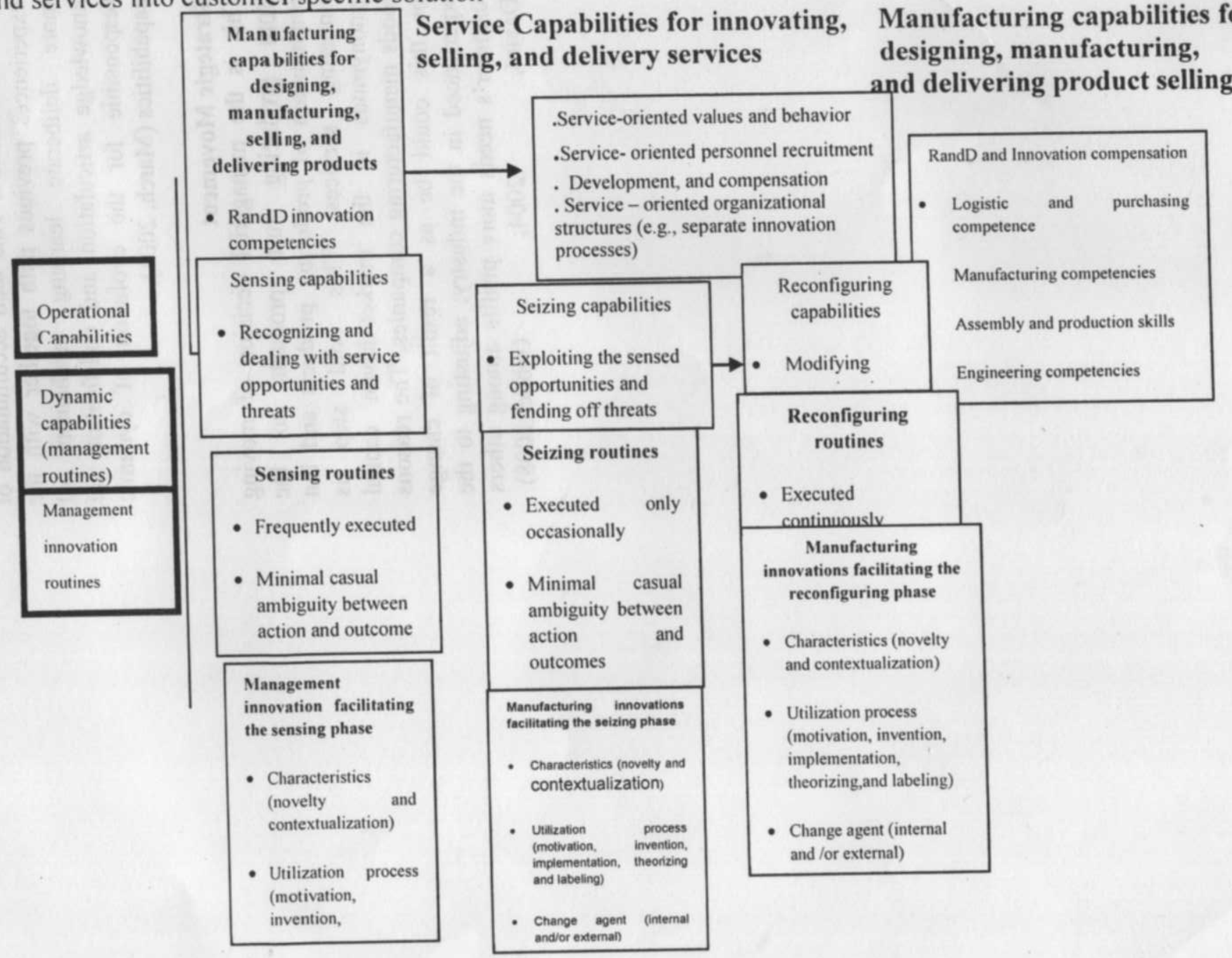
The dynamic capabilities themselves evolve in a path dependent evolutionary fashion. For example organizational learning theory shows how decision making process evolve in response to the feedback and outcomes from previous decision. This tacit accumulation of experiences previous path together with the more deliberate learning mechanism of knowledge articulation and codification are responsible for the evolution of dynamic capabilities (March, 2001).

Strategic Movement

This is the managerial decision of moving from producing just products to the combination of producing products and but rendering services. This bold step is synonymous in the market-driven capital goods manufacturing companies. The reasons for this could be as a result of change experienced in the industry; adjusting to the customer's needs more profits among others (Davies, 2004; Gebuer,2008).

Figure 1 **Product manufacturing** **Providing and Services Combination of Products Integrated Capability**

- Understanding of customer's technical, business and operational needs.
- Combination of product and services into customer-specific solution



Source: Adapted from Gebauer, H. (2008:288)

Methodology

This study follows a positivist philosophy in its ontological approach. It is a cross sectional survey design was adopted to examine the relationships that exist between dynamic capabilities and management innovation among Nigeria manufacturing firms. Primary data from the questionnaire (Teece, 2007) was used to collect the data from the respondents. Regression analysis was employed in predicting management innovation, thus justifying the use of survey research (Bordens and Abbott 2002). It also examined the nature and direction of relationship that exists between the variables of study, that is, dynamic capabilities and management innovation (Kerlinger, 1973). The data was generated from manufacturing firm across Nigeria. The functional econometric model assumes thus;

$$MI = \beta_0 + \beta_1 DC_1 + \beta_2 DC_2 + \beta_3 DC_3 + \mu \ldots\ldots\ldots\ldots(1)$$

The study populations considered were the CEO of selected manufacturing firms in Nigeria. These firms are manufacturers of products such as beverages, household items and Lagos was considered a good representation of the metropolitan city housing many manufacturing firms from which the sample was derived. Therefore, the population sample was taken from Lagos State. Questionnaire was administered to the CEO of the manufacturing firms.

The techniques used in the selection of the sample of manufacturing firms were simple random sampling and stratified sampling techniques. A total of 250 questionnaires were administered to CEOs of selected manufacturing firms from the list of registered businesses in the Lagos Chamber of Commerce and Industry of 2013. However, 180 questionnaires were properly filled and returned. This represents a 72.0% response rate. The administration of the questionnaire was done on one senior manager or CEO at each manufacturing firm surveyed. The justification for using simple random sampling technique is that it eliminates the likelihood that the sample is biased by the preference of the individual selecting the samples (Bordens and Abott, 2002). Another justification is that it is particularly essential when one wants to apply research findings directly to a population (Mook, 1983). Consequently, the sampled CEO constituted the analysis. The use of primary data is justified since according to (Cowton, 1998), it is the quickest, reliable and experimental/scientific especially if the objective of study is publication.

Hence, the below hypothesis was proposed:

H$_1$: There is no significant relationship between dynamic capabilities and management innovation in the Nigeria manufacturing firms

4 Empirical Results

4.1 Variables and Measures

4.1.1 Dynamic Capabilities

This study initiated 12 items, a five-point likert scale which ranged from strongly agree to strongly disagree to assess the CEO responses on their firm's dynamic capabilities. The results of the respondents rating on the twelve items were processed, added up,

and averaged to generate the mean of dynamic capabilities. Dynamic capabilities is considered high if the index is equal to or greater than 5.0 while it is considered low if less than 5.0. The Cronbach alpha of the items was calculated to be 0.991 suggesting that the items are highly reliable.

Management Innovation

A five-point likert scale of 4 items was generated for management innovation. The scales ranged from strongly agree to strongly disagree. The result of the items were added and averaged to determine the mean index. Management innovation is considered high if the index is equal to or greater than 5.0 while it is considered low if less than 5.0. The Cronbach alpha of the items was calculated to be 0.998 suggesting that the items are highly reliable.

Analytical Tools and Hypotheses Tests and Results

To reveal the intentions of this research and develop an important connotation to the data generated, the data gathered were analyzed using statistical package for social sciences (SPSS) as well as the following descriptive and inferential statistical techniques.

Mean frequencies and percentages which are descriptive statistics were engaged to determine the demographic attributes of the respondents. These statistics however were not meant to tackle the research hypothesis, but rather to sum up the characteristics of the sample size.

In determining the relationship between dynamic capabilities and management innovation in the Nigeria manufacturing firms, Pearson's Product-moment Correlation Coeffecient (PPMCC) was employed. This analytical instrument is a parametric test that assumes normal distribution of data consisting interval or ratio scale (Field, 2000).

More so, the amount of variations in the dependent variable (Management Innovation) that can be associated with the changes in the value of the independent variable (Dynamic Capabilities) is being tested using regression analysis. Similarly, regression analysis was used to examine the relationship that subsists between dynamic capabilities and management innovation.

Table 1 revealed that many of the respondents were male which constituted 60.6% of the total respondents (the CEOs). Respondents who were within the age of 20 to 30 were calculated at 43.3%, while those who were above 30years, but below 40 years were calculated as 36.7%. Those who were above 40 years but below 50 years were summed up at 16.1%, while those above 50 years constituted a low percentage of 3.9% of the entire sample size. The table also revealed the Educational characteristics of the respondents. While NCE/OND holders were 13.3%, HND holders were 29.4%, B.SC holders were 47.8%, M.Sc. were 7.2%, while Others were put at 2.2%. The respondents' years of experience between 1-5years constitutes 17.2%, wereas those of 6-10years was 23.9%, 11-15year was 40.6%, 16-20years constitutes 12.2% and those respondents whose year of experience exceeds 20years was 6.1%.

Table 1:Demographic profile of respondents

n= 180	*Frequency*	*Percent*
Sex	Male	109	60.6%
	Female	71	39.4%
	Total	**180**	**100.0**
Age (in years)	20-30	78	43.3%
	31- 40	66	36.7%
	41- 50	29	16.1%
	51 and above	7	3.9%
	Total	**180**	**100.0**
Educational qualification	NCE/OND	24	13.3%
	HND	53	29.4%
	BSC	86	47.8%
	MSC	13	7.2%
	Others	4	2.2%
	Total	**180**	**100.0**
Years of Experience	1-5	31	17.2%
	6-10	43	23.9%
	11-15	73	40.6%
	16-20	22	12.2%
	21 and above	11	6.1%
	Total	**180**	**100.0**

Source: Field Survey, 2014.

Correlation Coefficient and Regression Analysis

The relationship between dynamic capabilities and management innovation was investigated using Pearson Product Moment Correlation Coefficient and regression analysis. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. There was a strong, positive correlation between dynamic capabilities and management innovation at $r=.920$ $n=180$, $p< 0.01$. This implies that dynamic capabilities and management innovation greatly has a significant relationship in the operational activities of Nigeria manufacturing firms. Consequently, there is a significant `relationship between dynamic capabilities and management innovation in the Nigeria manufacturing firms. This was further confirmed in the regression analysis in which the value of dynamic capabilities and management innovation in the Nigeria manufacturing firms was valued at $\beta=.975$ and $R=.975$ showing a strong positive significant relationship in the Nigeria manufacturing firms. Therefore, the null hypothesis (H_0) is rejected, and the acceptance of the alternate hypothesis (H_1).Table 3 shows the analysis of variance (ANOVA) of the fitted regression equation in significant with F value of 973.712. This is an indication that the model is a good one. It shows a statistically significant relationship between the variables at 95% confidence level.

Table 2
Correlation Analysis of Dynamic Capabilities and Management Innovation

Dynamic Capabilities	*Management Innovation*		
Dynamic Capability and Management Innovation	*Pearson Correlation*	*1*	*0.920*
Sig. (2-tailed)		*.000*	
N		*180*	*180*
Pearson Correlation	*.920*	*1*	
Management Innovation Sig. (2-tailed)	*.000*		
N	*180*	*180*	

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

Table 3
Regression Analysis of Dynamic Capabilities and Management Innovation.

Model summary					
Model	*R*	*R square*	*Adjusted R square*	*Std. error of the estimate*	
.975[a]	.951	.789	.30839		
ANOVA					
Model	*Sum of squares*	*df*	*Mean square*	*F*	*Sig*
Regression	330.822	1	330.822	973.712	.000
Residual	16.928	178	.095		
Total	347.750	179			
Coefficients					
Model coefficients	*Unstandardized coefficients*		*Standardized*		*Sig*
	B	Std.error	Beta	t	P
(Constant)	.048	.070	.690	.491	
Dynamic Capability and Management innovation:	992	.017	.975	58.979	.000

Notes: Dependent variable: Management Innovation
P<0.05

Table 4. Pearson Correlation Matrix among Variables

Variables (DynC/Innov)		Mean	SD	1	2	3	4
Processes	4.23	1.34	1.000				
Coordination/Integration	2.98	0.194	0.987*	1.000			
Communications	2.87	1.43	0.421**	0.213**	1.000		
Mgt Techniques	3.43	1.65	0.109*	0.341**	0.341**		1.000

* Correlation statistically significant at the $p \leq 0.01$ level (2 tailed)

Table 5. Pearson Correlation Matrix among Variables

Variable (Mgt Innovation/DynamicC)			Mean	SD	1	2	3	4
Knowledge	3.23	3.41	1.000					
Novelty	3.12	2.31	0.761**		1.000			
Learning	1.78	0.202	0.543*	0.675*	1.000			
Reconfiguration	4.32	1.50	0.321*	0.432*	0.543*	1.000		

** Correlation statistically significant at the $p \leq 0.01$ level (2 tailed)

Conclusions and Suggestion for Further Studies

Arising from the above results, it results shows that there exists a significant relationship between dynamic capabilities and management innovation in the Nigeria manufacturing firms. The study reveals that manufacturing firms' possession of dynamic capabilities that can be useful especially when customer demand changes rapidly and consequently crucial to innovation by management. These capabilities are embedded mostly in the R&D investments and the routines of the firms where these new ideas originate. Also, firms were not really encouraging their staff to be creative because creativity is not rewarded or compensated. This is in contrary to what obtains in other clan (Teece, 2007) where unsuccessful innovations are rewarded. Though, their employees were willing to adopt a new way of working than their competitors, there is no concerted effort by the CEO of most of the manufacturing firm to create this enabling atmosphere.

The study equally reveals that resource allocation is more to fixed assets and stocks than technology and human resources that are the major source of resource reconfiguration. Management encourages the gathering of feedbacks from customers and suppliers, which shows their efficient capabilities. There is also efficient communication which could be a tool for the management of innovation.

This paper proposed that dynamic capability can be use to describe the ability of high-performing management innovators in the Nigeria manufacturing firms. The notion of dynamic capability is useful when apply to innovation as it is the capability to innovate that creates the potential for firm-wide behaviors leading to systematic management innovation activities within the firm. The paper therefore concludes that dynamic capabilities and management innovation greatly has a significant relationship among each other in the Nigeria manufacturing firms

Further research should be directed at identifying and redefining measures for different forms or degrees of dynamic capability and management innovation. For example, there may be different emphasis on elements required for radical versus incremental innovation. This would provide a fuller picture of management innovation within organizations. The dynamic capability construct has the potential to be developed to make a significant contribution furthering knowledge in the management of innovation.Detailed exploratory case studies can provide richer, more textual background into innovation variables. Given that practitioners are often ahead of academic practice, this provides opportunity for new data and raises the basis of new research question

Reference

Amit R., and Schoemaker P. J., (2002).Strategic assets and organizational rent.*Science Management Journal,* 14(1) 33-46.

Aoki M., (2002).The participatory generation of information rents & the theory of the firms.*The firm as a Nexus of Treaties Sage, London*10, 26-52

Bordens, S.K and Abott, B.B (2002).*Research Design and Methods*: AProcess Approach (5th ed.0, McGraw-Hill,New York

Burns, T., Stalker, G.M.,(2007). The management of innovation.*Tavi stock, London.*

Eisenhardt K., and Martin, (2000).Accelerates adaptive processes product innovation in the global computer industry.*Administration science quarterly* 40: 84-110.

Fang, Y., Wade, M., Belios, A., and Beamish P.W. (2007).International diversification subsidiary performance and the mobility of knowledge resources.*Strategic Management Journal,* 28, 1053-1064

Fischer, T., Gebauer, H., Ren, G., Gregory M., and Flelsch.(2010).Exploitation and exploration in service developer.*Journal*

of Service Management, 21 (5), 591-624.

Gavin D., (2002).The processes of organization and management.*Havard Business School working paper,* 94-084.

Gebauer, H. (2008). Identifying service strategies in product manufacturing companies by exploring environment–strategy configurations.*Industrial Marketing Management, 37* (3), 278–291.

Kerlinger, F.N. (1973) *Foundations of Behavioural Research*, Holt, Rinehart and Wiston, Inc., New York

Lansit, M. (2005). Technology Integration: Making Critical choices in a dynamic world. *Harvard Business School Press, Boston M.A.*

Lavie D., (2006). The competitive advantage of interconnected firms: An extension of the resource based view. *Academy of Management Review,* 31 (3), 638-658.

Levinthal D.,and March J. (2003). The myopia of learning strategic management journal, *Winter special issue.*

March J., (2001). Exploration and exploitation in organizational learning.*Organizational Science Quarterly,* 2(1), 71-87.

Mody A., (2004).Learning through allowances.*Journal of Economic Behavior and Organization,* 20 (2).pp 151-170

Taylor, A., Greve, H.R. (2006). Superman of the innovation terms.*Academy of Management Journal* 49, 723-740.

Teece, D. (2007). Explicating dynamic capabilities: The nature and micro-foundations of (sustainable).*Enterprise Performance Strategic Management Journal* 28 (3), 1319-1350.

Teece, D.J., Pisano, G., and Shuen.A.(2007). Dynamic capability and strategic management.*Strategic Management Journal,* 18 (7), 509-533.

Vorchies, D.W.,and Morgan, N.A., (2005). Benchmarking marketing capabilities for sustainable competitive advantage.*Journal Marketing,* 69, 80-94.

Wernerfelt B., (2004).A resource-based view of firm. *Science Management Journal* (52).171-180.

Zollo M., Winter (2002).From organizational routines to dynamic capabilities. *Organization science.* 75, 56-65.