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Product innovation and organizational performance: The manufacturing industry perspective

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Abstract---The study on promoting innovation looked at product innovation and organizational performance drawing the manufacturing industry perspective. Two objectives were drawn for this with the process and promotional innovation and it affects organizational performance in firms. A sample of 124 was used for the study. The two hypotheses showed significant relationships. The paper concluded product innovation is essential and good to be presented in the market provided that the firm is capable of handling it very well. Similarly, recommendations were tailored in that direction of continuous improvement and processing to continue to remain in the market and enhance performance.

Keywords---product innovation, organizational performance, perspectives

1 Introduction

In today's dynamic and globally competitive environment, innovation is becoming more pertinent for organizations, mainly due to three major trends: concentrated international competition, disjointed and challenging markets, and assorted and swiftly changing technologies (Kim & Mauborgne, 1999). Product development is a broad field of endeavour dealing with the design, creation and marketing of a new product, (Yanelle, 2005). It encompasses product planning as well the technical activities of product research, engineering design, etc to take advantage of potential opportunities facing a company's product idea in a market.

Product development is very critical to organizational performance because the product is the cornerstone of the firm's marketing mix: every other element rests on the product. Product is not used to mean only tangible 'things', but includes services (the intangibles) as well as things that can be touched and seen and tasted. A close observation of the Nigerian beer industry shows that the post mergers acquisition era in the sector has witnessed phenomenal growth as typified by the performance of big breweries such as Guinness, Nigerian breweries and consolidated breweries Plc made possible by product development (Ojo, 2000). However, other breweries have not been able to operate optimally. This, therefore, suggests that organizational performance, which refers to how well an organization is doing about its intended purpose and competition, might depend to a large extent on product development. But this has not yet been ascertained, as the situation in the Nigerian beer industry appears not to have stimulated interest among researchers and academics in the Nigerian intelligentsia. This might have been informed in part by the apathy, levity and jaundiced perception with which many scholars treat the beer industry in Nigeria. Undeniably, the industry has made meaningful contributions to our gross domestic product (GDP), employment generation, sports sponsorship and promotion of Nigerian music and artists (Mousend and Thompson, 2002).

In the light of the achievement of a few breweries and the dismal performance of others which are still struggling to find their feet and rhythm in the Nigerian business environment turbo-charged by competition, volatility and unpredictability, it is necessary to direct empirical searchlight on this industry, which can provide information on product development and organization performance in the sector, thereby enriching existing literature. In Nigeria, apart from the perceived high performance recorded by the Nigerian breweries Plc and Guinness Nig. Plc, other breweries have not been able to operate profitably, for example, Peabody breweries, which has been reactivated recently.

The Problem

The speed of product innovation has drastically increased in recent times; product lifecycles have been reduced and this trend is expected to affect other sectors particularly the breweries industry. The effect and problem of the stale, static and stagnant corporate is never a little manner. Long-standing, old and dying product brands in the set array by organisation describe the poor performance and potential of such organisation. Product innovation is a strong and major instrument, which endeavours to save and salvage the organisation typically. Product innovation accord the organisation a lot of benefits and strengths. Unfortunately, Nigerian manufacturers (breweries) found it difficult to stand against their competitors from foreign countries. The local companies cannot compete with their foreign counterparts in terms of product quality and other areas of marketing capabilities. The resultant effect is while the local industries' performance is on the decline, the multinationals are booming.

Objectives

The main objective of the study is to examine the effect of product innovation on organizational performance. Other specific objectives are to;

- i. assess the effect of process innovation on organizational performance.
- ii. examine the impact of promoting innovation on organizational performance.

Review of Related Literature

2.1 Introduction

This segment is concentrated on the review of applicable literature and the researcher's efforts to identify, locate, and appraise previous studies, opinions, comments documents and observations related to these studies. This is in place of developing an understanding of the nature and relationship between product innovations as strategies for effective organizational performances.

2.2 Conceptual Review

2.2.1 Concept of Innovation

The term innovation generally includes three types of innovations i.e. Product innovation, process innovation and organizational innovation (Halila & Rundquist, 2011). Innovation, green innovation, environmental innovation or sustainable innovation is usually used to find out those innovations that play their part in a sustainable atmosphere through the development of ecological improvements (Becker & Egger, 2013). Support and maintenance for the development and transmission of more ecological fit processes, products, organizational models and systems can direct to improvements in the living environment of present and future generations (Halila & Rundquist, 2011). Innovation is also known as environmental innovation, consisting of any kind of product, process or organizational innovation that adds something to sustainable development (Doran & Ryan, 2014). Innovation is where organizations adopt or develop innovations which diagnose, observe decrease or prevent environmental problems. While conventionally so many managers and economists considered innovation as an extra burden of the cost for the firm, this is no longer the case nowadays (Doran & Ryan, 2014).

The need and demand for innovation have been augmented because of the requirement to deal with today's different environmental challenges. Innovation refers to the process of creating and developing ideas, ways of operation, products and processes that assist in decreasing environmental burdens or reaching environmental sustainability targets (Rennings, Andreas, Kathrine, & Esther, 2006). According to Halila & Rundquist (2011) the ever-escalating stress from the government and market concerning mechanized sustainability, developing an effectual and efficient innovation program and creating it a permanent component of a firm's management programs is significant. When it comes to practice, there are various types of innovations; product innovation, process innovation and organizational innovation. While every kind of innovation have its determinants,

attribute plus contribution to business performance, it is not too successful to implement innovations without a holistic view (Cheng, Yang, & Sheu, 2014)

2.2.2 Product Innovation

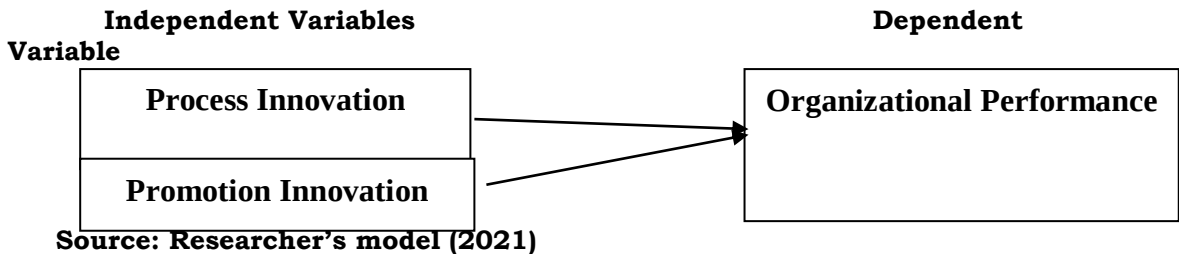
Odumeru, (2013), posits that innovation is a strategy that is widely accepted by most organisations in contemporary economies. Robbins and Coulter (2006) defined innovation as the process of taking creative ideas and turning them into useful products or work methods. This is in contrast to the invention which was defined by these authors as the process of developing new ideas. Parashar & Singh (2005) defined innovation as the ability to combine two or more pieces of knowledge. Tran (2008) on the other hand viewed innovation as the creative and commercial embodiment of organizational learning. Quoting Lim, Schultmann, & Ofori, (2010) defined innovation as a potential new combination that results in radical breaks with the past, making a substantial part of accumulated knowledge obsolete. They viewed innovation within the context of manufacturing industries as a means of developing and sustaining core competencies through the development of internal capabilities, set ups of research and development R&D departments and strategized research scopes and investments. Odumeru, (2013) citing Wirtz, (2010), says innovation is the development and successful establishment of a technical, organizational, business-related, institutional or social solution to a problem, which is perceived as groundbreaking and new, accepted by pertinent users and pursued by innovators in anticipation of an achievement. He differentiated innovation from invention using Thomas Edison's statement: "... the real challenge in innovation was not invention coming up with good ideas –but in making they work technically and commercially". Hauser, Tellis, & Griffin (2006) stated that for success in innovation, organizations must take the needs of customers as paramount, and get them satisfied through innovative products/services. They, therefore, defined innovation as the process of bringing new products and services to a target market. Innovative activities introduce new products, create new demand and substitute for old products (UNIDO, 2002). A divergent opinion exists on the various types of innovation. Joseph Schumpeter, a famous economist of the twentieth century identified five types of innovation namely: Introduction of a new product or qualitative change in an existing one (product innovation); process innovation; the opening of a new market (market innovation); development of a new source of supply of raw materials or other inputs; and change in industrial organization (OECD, 1997). However, further evidence in the literature indicated the existence of at least eight types of innovation: Process Innovation, Product Innovation, Incremental Innovation, Radical Innovation, Administrative Innovation, Technology Innovation, Market Innovation and Value Innovation (Seng, Yusof, & Abidin, 2011). Product Innovation is the development of new products, changes in the design of established products, or the use of new materials or components in the manufacture of established products (Policy Study Institute, 2010). Product Innovation reflects a change in the quality of products for the benefit of its consumers (Barlow, 1999).

Organizational Performance

Organizational performance is the appraisal of prescribed indicators or standards of effectiveness, efficiency, and environmental accountability such as productivity, cycle time, regulatory compliance and waste reduction. The performance also refers to the metrics regarding how a certain request is handled, or the act of doing something effectively; of performing; using knowledge as notable from just possessing it. It is the result of all of the organization's operations and strategies (Constanzo, Keasey & Short, 2003). It is also the level to which an individual fulfils the expectations concerning how he should behave or function in a certain situation, context, circumstance or job. Oakland (1999) posited that performance is what individuals do relating to institutional roles.

Non-financial performance indicators in the banking sector include efficiency in operations and quality service delivery while financial performance indicators revolve around a blend of financial ratios analysis, measuring performance alongside budget, benchmarking or a combination of these methodologies. The common postulation, which explains most of the financial performance discussion and research, is that increasing financial performance will result in improved functions and actions of the bank. It can be argued that there are three principal factors to advance financial performance for financial firms; the institution size, the institutional asset management, and the institution's operational efficiency (Fowler, King, Marsh & Victor, 2013).

Conceptual Framework



Process Innovation and Organizational performance

Process innovation is the application of meaningfully improved production or delivery method. This includes significant changes in techniques, equipment and software. Process innovations can be made to reduce unit prices of production or delivery costs, to increase the quality, or to produce significantly improved products and offer the best services (Oslo Manual, 2005 as cited in Abdul and Aisha, 2015).

López-Mielgo, Montes-Peón, and Vázquez-Ordás (2009) stated that process innovations give a positive effect on the total quality management efforts of the organizations. However, for the production cost reduction impact, Peterson and Zhang (2011) argue that not all the innovative processes may lead to savings cost, but some permits the firm to market their products at competitive prices. Therefore, one can assert that production performance, which is the merging of accomplishments in such performance pointers as speed, value, flexibility, and

cost-efficiency, is positively affected by innovative performance (Gunday, Ulusoy, Kilic, and Alpan, 2011).

Gunday et.al, (2011) measured process innovation by determining the level at which non-value-adding activities in the production and delivery process are eliminated, the changes in output quality in the manufacturing process and speed in logistics processes.

Promotion Innovation and Organizational performance

Sales promotion is the business of communicating with targeted customers. It provides information that assists them in making given decisions to purchase a product or a service. The cost that is associated with sales is the promotion or the advertising of the goods which usually signifies a large percentage of the given overall cost of producing an item. However, successful sales promotion often increases sales so that advertising and other associated costs are spread over a larger output. Though increased sales promotional activity is mostly a sign of a response to an identified problem such as competitive activity, it also enables an organization to develop and also build up a succession of messages and can be an extremely cost-effective method (Gunday et. al, 2011).

According to (Belch & Belch, 2007), marketers use many pieces of equipment to promote their products and services, which include a promotion, direct marketing, sales promotion, personal selling, and internet marketing. With the invention of advanced technology and the consequent rise of Web 2.0 creation of applications that are based on the internet, there is an improved possibility for marketers to use the internet for the promotion of products and services. Any sales advertising corporation between a game and a consumer brand may not comprise licensing contracts as a way of communication through video and advertisement which is created to efficiently market a particular game product. The media through TV and movies are allowed in such circumstances.

Promotion is the function of influencing, convincing and informing the decision of customer process. Advertising is believed to be the most powerful promotion strategy in an organization. Advertising, therefore, is a form of funded notice of the public that seeks to inform, persuade, and finally adjust consumer attitudes toward a particular product, to cause an eventual purchase of the product. The promotion equipment is consumer promotion and trade promotion.

Theoretical Review

Diffusion of Innovation Theory

Diffusion of innovation (DOI) is based on the notion that adoption of innovation involves the spontaneous or planned spread of new ideas. Rogers (1995) stresses that it is the perception of change that is important; if the idea seems new to the potential adopter then it should be considered to be an innovation. In diffusion theory, the existence of innovation is seen to cause uncertainty in the minds of potential adopters (Berlyne, as cited in Muchoki, 2013), and uncertainty implies a lack of predictability and information. Diffusion is considered to be an information exchange process amongst members of a communicating social

network driven by the need to reduce uncertainty (Rogers, 1995). Uncertainty can be considered as the degree to which several alternatives are perceived about the occurrence of some event, along with the relative probabilities of each of these alternatives occurring. Those involved in considering the adoption of the innovation are motivated to seek information to reduce this uncertainty.

Diffusion theory contends that a technological innovation embodies information, and so its adoption acts to reduce uncertainty. An illustration of this Rogers cites the innovation of solar panels as reducing uncertainty over future energy costs and reliability of energy supply. There are thus four main elements of any theory of innovation diffusion: characteristic of the innovation itself, the nature of the communication channels, the passage of time, and the social system through which the innovation diffuses (Rogers, 1995). Rogers argues that the attributes and characteristics of the innovation itself are important in determining the manner of its diffusion and the rate of its adoption. Borrowing from the work of Thomas and Znaniecki as cited in Muchoki, (2013) he notes that it is what potential adopters perceive to be the attributes of an innovation that is the important thing. In the case of technological innovation, Rogers outlines two components to be considered: a hardware aspect consisting of a tool that embodies the technology as a physical object, and a software aspect comprising this tool's information base. Rogers notes that although the software component of technology is sometimes not easy to observe technology almost always represents a mixture of hardware and software aspects. Rogers outlines five important characteristics of an innovation that, he argues, affect its diffusion: relative advantage, compatibility, complexity, trialability and observability.

The nature of the communication channel is a necessary part of any change process and an innovation can be seen as a special type of communication concerned with the transmission of new ideas (Kaplan, as cited in Muchoki, 2013). Communication can be considered to consist of six elements: the source of the message, the content of the message, the channel used, the timing of the message, the purpose of the message, and the location where the message is received (Spann-Merchant, 1998). To reach a potential adopter the innovation must be diffused through a communications channel for instance mass media and interpersonal channels.

Rogers argues that time is involved in three aspects of innovation diffusion: the innovation-decision process, the degree of innovativeness, and an innovation's rate of adoption. He outlines five main time-dependent steps in the innovation-decision process that the adopter must pass through: knowledge, persuasion, decision, implementation and confirmation. In common with many other earlier researchers Rogers (1995) has found that different individuals in a social system do not necessarily adopt an innovation at the same time. Borrowing from the work of Deutschmann and Falls Borda as cited in Muchoki, (2013) he proposes that adopters can be classified in their degree of 'innovativeness' into five categories as innovators, early adopters, early majority, late majority and laggards.

In the innovation diffusion paradigm diffusion occurs within a social system in which the social structure constitutes a boundary. It is inside this boundary that

the innovation diffuses. Rogers argues that the system's social structure affects diffusion through the action of social norms, the roles taken by opinion leaders and change agents, the types of innovation decisions that are taken, and the social consequences of the innovation. This paradigm thus accepts concepts from the social construction of technology and is based on the idea that technology is shaped by social factors. Technology is a product of society and is influenced by the norms and values of the social system. (Rogers, 1995) Rogers maintains that for an idea-only innovation which does not have a material referent, its social construction through interpersonal communication with others is especially important. Abrahamson and Rosenkopf as cited in Muchoki, (2013) argue that social network effects bear a measure of responsibility for the extent of innovation diffusions in many organizations.

Empirical Review

Onikoyi, (2017) examines the impact of product innovation on organizational performance. The data was collected from the production department, research and development department, sales department, marketing department, and quality and control department, which have been involved greatly in the product innovation process. A total of 340 copies of useable questionnaires were completed. The results of the study were interpreted using the SPSS package for the analysis of some appropriate statistical methods such as regression and correlation. The findings show that the impact of product innovation on organisational performance was higher in the company when consumers perceive product innovation as stronger, more favourable and more unique. Creativity/quality of the innovation process exerts a positive influence on product and organizational performance. The study has supported previous studies on product innovation and performance especially in developing economies such as Nigeria, Malaysia, Ghana, and others. Therefore, it was recommended that creative/quality innovations should be maintained continuously to develop appropriate products continually and increase the organisational performance.

Adeyeye (2014) studied the impact of technological innovation on organizational performance. The objectives of the study were to determine the relationship between strategic planning and marketing planning capabilities on organizational performance in the manufacturing industry. The study employed survey research. Primary data was used with a questionnaire as a research instrument. The subjects were 137 employees of Nestle Foods Nigeria Plc. The four hypotheses formulated for this study were tested using correlation, regression analysis, Pearson's Correlation and Analysis of Variance (ANOVA), with the aid of the Statistical Package for Social Sciences (SPSS). The findings from the study revealed that strategic planning and marketing capability independently and jointly influence organizational performance. Also, there is positive interaction between performance variables (i.e. resources availability, staff quality, productivity, sales revenue, financial strength, public image and goodwill). Based on the finding, it was recommended that there is a need for organisations to be innovative technologically to be competitive in the market. And companies should train their employee for better efficiency and effectiveness.

Lim, Schultmann and Ofori (2010) studied the effect of innovation on the performance of construction firms using statistical data across 18 organisations for Economic Cooperation and Development (OECD) countries and expert interviews in Singapore. They discovered that because construction projects are awarded by clients based on the lowest cost, innovation appears to be a non-feasible competitive strategy. However, their study revealed that construction firms can develop their competitive advantage through manipulating innovations that consumers are willing to pay for and innovations that would reduce construction costs. They also recommended that construction firms first utilise quality improvements to exploit consumers' willingness to pay for innovative products. This initiative would enable construction firms to improve their finances for innovation and develop their "brand" in construction products. Sustainable competitive advantage could then be firmly established when construction firms engage in productivity improvements that lead to lower construction costs and/or faster completion times. This study concludes that innovation can be a useful competitive tool if construction firms aptly strategies it according to their competitive environment

Udegbe (2013) investigates the relationship between organizational performance and product development by innovation. The data was collected from the marketing managers, operation managers and those managers who have been involved greatly in the product development and innovation process. A total of 185 useable questionnaires were completed through a research sample of 120 firms in Nigeria. The result of the study was interpreted using the Likert model and SPSS package for the analysis of some appropriate statistical methods such as factor analysis, regression, and reliability analysis. The findings show that the impact of product development on organizational performance was higher in Nigeria when consumers perceive product innovation as stronger, more favourable and more unique. Creativity/quality of the innovation process exerts a positive influence on product development and organizational performance. To literature, the study has supported previous studies on product development and performance especially in developing economies such as Nigeria, Malaysia, Ghana, and others. Therefore, it was recommended that creative/quality innovations should be maintained continuously to develop appropriate products continually.

Theoretical Framework

The theoretical framework of this study was Lindblom's theory of incrementalism in decision making. In this theory, Lindblom (1958) as cited by Gregory et al(2005) stated that public policy decisions "are attempts to correct mistakes of previous policies". Lindblom described a policy analysis decision-making system based on incrementalism, wherein one policy follows another. In this system changes are evaluated against the present situation, then as policies are implemented the expected results from each implementation are anticipated and compared to the desired result Grewal & Compeau (2019).). Lindblom (1959) described two approaches to public policy decision making, one in which every possible outcome was analyzed before the policy was adopted and one in which policy goals are limited with its actions undertaken to serve to move towards accomplishing the goal and then another goal. Lindblom asserted that the first

method cannot be used except for simple problems since all branches and sequels to a problem cannot be considered. While ideally the second method (incrementalism) should be used Lindblom observes that it is the first method taught and used, a method that in its analysis “takes into account all “relevant factor[s]” (.Omotoso, 2010). Hence this study adopted this theory because what happens, according to Lindblom, is that while decision-makers may seek to use each method as a standalone method, there are situations where one method is more appropriate than another.

Methodology

A survey method was adopted in the course of carrying out this study in which a detailed description of the use of product innovation process on organizational performance using an analytical review of related literature. This helped the researchers in evaluating the subject matter to ensure a meaningful conclusion. The researchers generated primary data from selected firms. These firms are situated in Asaba, Delta State Nigeria. The overall number of individuals from which this study sample was drawn, is 180 respondents. The sample size (n) which gave 124 out of a population of 180 was used for the number of questionnaires distributed in the organization was determined using the Taro Yemeni Formula.

Results

T-Test

Group Statistics

	Product Innovation	N	Mean	Std. Deviation	Std. Error Mean
Process innovation Strategy	YES	86	4.70	.462	.050
	NO	35	4.43	.608	.103
Promotion innovation	YES	87	4.98	.214	.023
	NO	36	5.00	.000	.000

Table 1.2

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Process innovation strategy	Equal variances assumed	11.373	.001	2.642	119	.009	.269	.102	.067	.471
	Equal variances not assumed			2.356	50.729	.022	.269	.114	.040	.498
Promotion innovation	Equal variances assumed	1.686	.197	-.642	121	.522	-.023	.036	-.094	.048
	Equal variances not assumed			-1.000	86.000	.320	-.023	.023	-.069	.023

Test of Hypothesis

The student t-test was used as an analytical tool for determining the comparison between the variables. The p-values in the independent sample test table were used for testing the study hypotheses.

Hypothesis One

Ho₁: There is no significant relationship between process innovation strategy and organizational performance

Since the P-value calculated in table 4.1 is less than the critical level of significance ($0.001 < 0.05$), the null hypothesis was rejected while the alternate hypothesis was accepted this implies that process innovation strategy has a significant relationship with organizational performance.

Hypothesis Two

Ho₂: There is no significant effect between promotion innovation and organizational performance

Since the p-value calculated in table 4.1 is greater than the critical level of significance ($0.197 > 0.05$), there was a need to accept the null hypothesis and reject the alternate hypothesis. This showed that there is no

significant effect between promotion innovation and organizational performance

Discussion of Findings

Following the data analysis conducted and the review of the related literature, the discussion of the findings of this study is presented thus:

Based on the results the study found that process innovation strategy has a positive influence on product innovation. . Process innovations can be made to reduce unit prices of production or delivery costs, to increase the quality, or to produce significantly improved products and offer the best services (Oslo Manual, 2005 as cited in Abdul and Aisha, 2015).

The study revealed that there is a positive relationship between process innovation and product innovation. Gervial and Compaec(2019) also supported that process innovation is a continuous process that requires feedback with checks and balances through the individual, group, and organizational levels resulting in product innovation.

The study also revealed that a positive relationship exists between promotion innovation and product innovation. This is in alignment with empirical findings (Gunday et. al, 2011) that promotion of innovation strategy for addressing complex problems, decision strategy for addressing well-structured problems, incremental strategies, brainstorming strategy, nominal grouping strategy, creative thinking strategy, managing emotions, and outbursts.

Finally, the study revealed that product innovation has a significant relationship with organizational performance. This is in line with the position of a crucial task for implementation support is, therefore, to tap into the perceptions and experiences of those whose behaviour will shape the implementation process. This support is not so much about explaining legal obligations or the requirements of statutory guidance – though this is important – than about promoting the art and craft of policy implementation. It involves assessing existing capacity to deliver, knowing what is being done well, what needs improving, and how best to build new capacity.

Conclusions

New product innovation is essential and good to be presented into the market provided that breweries firm is capable of handling it very well. Capability in handling innovation involves more departments and experts on product innovation which must also be formulated in a better way to improve the company's performance when proper and adequate planning is the backbone of every manufacturing company. From the result of the test of the hypothesis, the alternative hypothesis was accepted, meaning that, product innovation has contributed to corporate profitability. Also, in the same view, product innovation has facilitated increased market share.

Recommendation

1. Firms should continue to be innovative and increase the competitiveness level of the organisation.
2. Firms should also ensure to examine the results of its outcome and help in its future evolution.

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