

Research and Development and Competitive Advantage of Selected Companies in the Food and Beverages Industry in Lagos State, Nigeria

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Abstract

Research and development capability is critical to competitive advantage of firms which is necessary to sustain a going concern. However, it appears that food and beverages manufacturing companies in Nigeria have been confronted with the ineffectiveness of research and development activities R and D results which probably resulted in low competitive advantage. The study investigated the effects of research and development on competitive advantage of selected companies in the food and beverages. Primary source of data was adopted for the collection of data through administration of structured questionnaires of a total sample size of 364 employees. The Cronbach's Alpha reliability coefficients for the constructs ranged from 0.76 to 0.96. The response rate was 96%. Data were analysed using simple regression method of analysis. The finding revealed that research and development had significant effect on competitive advantage of the food and beverages companies in Lagos State ($\beta = 1.237$, $t = 28.268$, $R^2 = 0.627$, $p < 0.05$). The study concluded that research and development are major predictors of competitive advantage of the food and beverages companies in Lagos State, Nigeria. The study recommendations were made based on the findings emanated from the research.

Keywords:

Research and development, Competitive advantage, Food and beverages, Regression and Lagos State

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Background to the Study

Competitive advantage has become one of the opportunities many business organizations in different industry seek to seize for them to continue in the business. For any company to achieve competitive advantage and remain growing especially food and beverages (F&B) companies in terms of profit, customer loyalty, cost efficient and effectiveness and economies of scale at regular pace, research and development on customer demand must be set as priority for such (F&B) organizations. In this era of globalization and stiff competition, many (F&B) companies around the globe have experienced low profit, unpredictable business environment and multifaceted competitive intensity due to increasing competition and poor research and development of customer taste among food and beverages manufacturing firms in the global market.

In developed countries like United State of America and European Union (EU) countries like United Kingdom, France, Netherland, Germany among other countries, (F&B) companies control the larger share in the manufacturing sector. In recent times, the overall share of employment and performance of (F&B) companies among EU countries especially United Kingdom, France, Netherland, Germany dropped dramatically due to constant change in consumer demand, taste and competition of (F&B) products (Moser, Isaksson & Seifert, 2017). Relatively, the food and beverages sector in the United States can be described as a highly competitive and saturated market with razor-thin margins and a customer base which is constantly demanding greater value for lower prices (Tom, 2017). Several key factors can be observed that are changing customer tastes and preferences, such as the rise of e-commerce, the increasing popularity of alternative channels, and shifting demographics culminating in increase research and development failure of (F&B) companies on customer wants and stiff competition among food and beverages firms in USA (Cohan, 2017).

Given the expanding economies and increasingly consumption driven populations, many African countries hold rich potential for international traders and investors (OECD & WTO, 2013). At the same time, local (F&B) companies face fierce competition with foreign (F&B) companies entering their local markets due to the trade liberalization reforms that took place since the 1980s (Moini, Kuada, & Decker, 2016). Arising from this uncertain environment, food and beverages companies in developing nations cannot easily predict the future and meet up targeted profit. In South Africa's many (F&B) companies faces the challenge of research and development on customer taste and demanding problems, which hinder it from growing further and realizing its full potential (Lewis, 2017). Moreso, in Kenya, Odalo (2016) observed that the Kenya food and beverages manufacturing companies were going through tremendous challenges due to poor research and development capabilities on customer taste , unstable business environment and aggressive competition in the industry. He further emphasized that the performance of food and beverages firms in Kenya have-not grown as anticipated due to many factors, such as low capital injection, poor innovation capabilities, use of obsolete technologies, high cost of doing business and heightened competition from cheaper imports and thus reduced their competitive advantage.

The major conventional food consumed by a sizeable number of the Nigerian populace include, corn, sorghum, tubers, beans and seafood (fish), which are dominantly natural and/or semi-processed (Nzeka, 2011). The changing demographics and ways of life are bringing about expanding shopper inclination for expanding variety of comfort, prepared and bundled nourishment for sustenance (Nzeka, 2011). The major players in the sustenance and refreshment industry in Nigeria are–Cadbury Nigeria Plc, Nestle Nigeria Plc, Unilever Nigeria Plc, Nigerian Breweries Plc, Flour Mills of Nigeria, Dangote Pasta Limited, Frutta Juice, WAMCO, C-Way Food and Beverages and Cocoa-Cola (Eitokpa, 2015). They engaged in the assembling of hot beverages, seasonings, accommodation nourishment, sweet shops, dairy items, bread, pasta and noodles.

Nonetheless, the manpower to drive this industry is not likely to constitute a problem because in this 21st century the issue of unemployment in Nigeria is becoming endemic and ravaging; particularly among the youths. National Bureau of Statistics (NBS, 2016) reported that as at the end of March 2016, youth unemployment has risen by 2.5 percentages from 19 percent to 21.5 percent (Sampson, 2016). The country could leverage on the food and beverages companies to stem down the menace of youth unemployment in the country. Moreover, on the level of employment creation by the assembling segment, an expected 5,521 new occupations were made in the first six months of the year. Toward the end of 2013, sums of 53,340 were included, making the part as one of the development drivers of the economy. Driving among the group was the sustenance and refreshment division with around 2,105 jobs or 38% of 5,521 (Manufacturer Association of Nigeria (MAN), 2014). In most developing countries like Nigeria, assembling SMEs, which are in the larger part, are working in a domain with feeble institutions for specialized and budgetary backings especially food and beverages industry (Monday, Akinola, Ologbenla & Aladeraji, 2015). They face antagonistic legal and regulatory requirements, and minimal institutional support which mitigate most food and beverages firms in Nigeria.

Food and beverages manufacturing sector in Nigeria, is presently in an unstable state with many (F&B) companies having to either close down or operate far below capacity (Okoro, 2016). Nigeria, which was once a net exporter of food products became a net importer, spending a sum of ₦3.96 Trillion importing basic food commodities including wheat on which ₦635 Billion was committed yearly, and rice on which Nigeria expended ₦356 Billion annually, translating to about ₦7 Billion per week (Okoro, 2016; Osagie, 2013). Olawoye (2016) emphasized that most (F&B) companies in Nigeria failed to employ research and development in their business processes so as to understand their customer preferences, demand and business environment. Nwankwere (2017) emphasized that the performance of food and beverages companies in Nigeria have not grown as expected due to many factors, such as depreciating naira, falling oil prices, non- payment of workers' salaries which resulted in low spending. As a sub-sector of the manufacturing firm, the output has fallen below that of their counterparts in developing countries which impacts greatly on their low aggregate performance.

Several studies have been conducted on the link between organizational Research and Development, competitive advantage and firm profitability in different parts of the world (Cheng, Johansen & Hu, 2015; Jaisinghani, 2016; Lee, Im & Fan, 2012; Liik, Masso & Ukrainski, 2014; Mutunga, Minja, & Gachanja, 2014; Park & Kim, 2015; Rao, Chandra, & Shin, 2012). These studies were carried out in countries like China, Korea, India and continents of Africa, Europe and America. Most of these studies never linked research and development and competitive advantage of food and beverages companies in Lagos State, Nigeria. Okoro (2016) and Jnd Nwankwere (2017) confirmed that the high competitive business environment experienced by (F&B) manufacturing companies in Nigeria today have led to continuous changing in strategies, poor profit performance and deep competition among the food and beverage organizations. As pointed out by Alli (2014), research and development play a prominent role in business growth and gaining competitive advantage. However, Abubakar (2006) observed that there is a disconnect in terms of communication between the research and development institutions leading to avoidable waste of scarce resources and a reduction in their effectiveness. Monday. Akinola, Ologbenla and Aladeraji (2015) emphasized that there are a number of challenges that undermined the effectiveness of research and development activity in most Nigeria (F&B) manufacturing companies; such as high costs of production, long timescales and uncertain outcomes of the firm's research and development. They further pointed out that these challenges impact negatively on most Nigeria (F&B) manufacturing companies, resulting in declined financial performance and hence inability to compete with global similar product. Okoro (2016) revealed that difficulties in anticipating changes in marketing conditions, the fear of changing customer needs during the long R&D process and the fear of substitute products from competitors make Nigeria(F&B) manufacturing companies lose control of the market and achieve poor competitive advantage.

Considering the gap and problem identified in the Nigeria (F&B) industry, this study hypothesized that; H_{01} : Research and development has no significant effect on competitive advantage of selected companies in the food and beverages industry in Lagos State, Nigeria

Theoretical Framework

The study adopted Knowledge-based Theory and Schumpeterian Theory of Innovation as the underpinning theories. One of the notable proponents of the knowledge-based view of the firm (KBV) is Grant (1996). KBV is an extension of the resource-based view (Allameh, Shahin & Tabanifar, 2012). The KBV defines knowledge as a strategic resource that does not depreciate in the same way traditional economic productive factors do; since it has the capacity to generate increasing returns (Wang, He & Mahoney, 2009). According to the knowledge-based view of an organisation, knowledge and information have become the underlying sources of competitive advantage (Patton, 2007). Nonaka and Konno (1998) conceptualize knowledge as the capacity to act based on explicit and tacit elements. Explicit knowledge is shared through data, in the form of manuals or specifications, and can be readily communicated between individuals systematically and

formally; namely, through numbers and words. In contrast, tacit knowledge is difficult to formalize, share, or communicate; it is personal, deeply rooted in individuals' experience, actions, values, emotions, or the ideals they embrace, and includes subjective intuitions or insights (Nonaka & Takeuchi, 1995). Overall, knowledge is intangible, dynamic, boundaryless, and has no value if it is not used at a specific time in a specific place. Managers enhance the firm's capacity to produce efficiently by advancing or updating knowledge (Nicolaidis, 2014). Together, Grant (1996) and Fink (2011) stated that knowledge can result in effective generation, dissemination and application of knowledge, and ultimately in creating customer value, delivering superior integration of demand and supply management processes. This theory explains research and development as surrogate of the independent variable dimension that could be exploited as platforms to update and advance knowledge of food and beverages industry to enhance competitive advantage. Joseph Alois Schumpeter is the proponent of the Schumpeterian theory of innovation. The theory is based on the following assumptions: All economic activities are essentially repetitive and follow a familiar and routine course; the demand and supply are in equilibrium at each point of time in a given economy; the economic system has the optimum level of output and its maximum uses. There is no possibility of wastages of resources; the firms working in the system are in the state of perfect competitive equilibrium, that is, the firms are of optimum size. The factors of production are paid according to their marginal product; under the stationary equilibrium of the economy, the prices everywhere are equal to the average cost of production. Interest rates tend to be zero and there is no possibility of involving unemployment of resources (Schumpeter, 1934).

The theory is premised on an economic process that is run on the platform of constant rate; static and operating at equilibrium year in and out. Therefore, for a change to be instituted there is a need for internal change steered up by outside forces. These changes can be brought through innovations. Schumpeter contended that anyone seeking profits must add value. Schumpeter believed that innovation is viewed as a crucial driver of competitiveness and economic dynamics. Studies that are in support of Schumpeterian theory of innovation (Nelson & Winter, 1982; Penrose's, 1959 & Rosenberg, 1976, 1982, 1994).

The criticisms of this theory are that the role of entrepreneur is over-emphasized; analysis of capitalist process is not convincing, replacement of socialism with capitalism is not convincing, the analysis of cyclical process is wrong. There is undue importance to bank credit; innovation is not the main cause of economic development and the theory is grossly inadequate for underdeveloped countries.

This theory is germane to this study because the innovative capability surrogates (independent variable dimensions) such as research and development, technological agility and customer knowledge management can prompt innovation and consequently generate above average returns thus resulting in competitive advantage.

Methodology

This study employed cross sectional survey research design as questionnaire instrument were administered to respondents in various selected (F&B) companies in Lagos State, Nigeria. The total population for the study is 6,852. Cochran (1977) standard method of randomisation was employed to determine the sample size. According to Cochran (1977), the formula that connects total sample size of (F&B) with the desired degree of precision is given below:

$$n = \frac{Nz^2pq}{d^2(N-1) + Z^2pq} \quad \text{1}$$

$$n = \frac{6,852 (1.96)^2(0.5) (0.5)}{(0.05)^2(6,852-1) + (1.96)^2(0.5) (0.5)} = 364 \quad \text{2}$$

Therefore, the expected numbers of sample to be taken for this study would be 364. The study employed stratified random sampling method. The questionnaire for this study used a six point likert type rating scale as follows: Very high extent (Coded 6), high extent (Coded 5), average extent (Coded 4), low extent (Coded 3), Very low extent (Coded 2), no extent at all (Coded 1). The scale increased the reliability of the responses. In this study simple regression method of analysis was employed.

Table 1: Reliability and Validity Statistics

| Variables | Number of Items | KMO | Bartlett test of Sphericity | AVE | Cronbach's Alpha |
|--------------------------|-----------------|-------|-----------------------------|-------|------------------|
| Competitive advantage | 8 | 0.873 | 0.000 | 0.575 | 0.76 |
| Research and development | 5 | 0.732 | 0.001 | 0.610 | 0.96 |

Source: Author's Computation (2019)

Construct validity of the instrument was established using the Kaiser-Meyer Olkin (KMO) and Bartlett test of Sphericity. The KMO value of each of scale exceeds the recommended value of 0.50 and Bartlett test of Sphericity is significant (p<0.05) showing great validity. Given the widely accepted 0.70 coefficient *alpha* standard for reliability as recommended by Nunnally (1978), thus all the constructs were above the bench mark 0.70; hence, the overall reliability of the whole scale was guaranteed.

Simple Regression Models:

$$Y = \beta_0 + \beta_1 x_1 + e_i$$

$$COMPADV = \beta_0 + \beta_1 RD + e_i \quad \text{eq (i)}$$

Where;

Y= COMPADV= Competitive Advantage

x_1 -RD = Research and Development

e_i = Error Term

Result and Discussions

Table 2: Response Rate

| Response Rate | Frequency | Percentage ⁰ % |
|---------------|-----------|---------------------------|
| Returned | 348 | 96 |
| Unreturned | 16 | 04 |
| Total | 364 | 100 |

Source: Field Survey, 2019

Table 2 shows the response rate from the questionnaire administered to the targeted respondents for the study. The result presented in this study, therefore, was based on the responses from the questionnaire that were correctly filled and returned.

Table 3: Linear Regression Results on the Effect of Research and development on Competitive Advantage of food and beverages companies in Lagos State

| Model Summary | | | | |
|---------------|-------------------|----------|-------------------|----------------------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .792 ^a | .627 | .626 | 2.82909 |

a. Predictors: (Constant), Research and Development

| Coefficients ^a | | | | | | |
|---------------------------|--------------------------|-----------------------------|------------|---------------------------|--------|------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 9.252 | 1.109 | | 8.342 | .000 |
| | Research and Development | 1.237 | .044 | .792 | 28.268 | .000 |

a. Dependent Variable: Competitive Advantage

Source: Researcher's Field Results (2019)

In order to test the hypothesis, linear regression analysis was used. The data for research and development and competitive advantage were created by summing responses of all items for each of the variable. The results of the regression are presented in in table 3.

The result of simple regression analysis in Table 3 shows that research and development had significant effect on competitive advantage of food and beverages companies in Lagos State ($\beta = 1.237$, $t = 28.268$, $p < 0.05$). The t value (28.268) confirms that the coefficient

for Research and Development is statistically significant. The model summary table shows that there is a strong positive relationship between research and development and competitive advantage of food and beverages companies in Lagos State. Additionally, the table shows that 62.7% of change in competitive advantage of food and beverages companies in Lagos State can be explained by research and development. Therefore, with a value of 62.7%, there is an indication that research and development affect competitive advantage of selected food and

beverages companies in Lagos State. The established regression equation is:

$$CA = 9.252 + 1.237RD \text{ (eq.2)}$$

Where:

CA = Competitive Advantage

RD = Research and Development

According to the regression equation established, holding the independent variable constant, the competitive advantage would be 9.252 units. From the regression equation, coefficient of Research and Development was 1.237, which implies that a unit change in Research and Development would lead to a 1.237 increase in competitive advantage. However, at 5% level of significance, Research and Development have significant effect on competitive advantage of food and beverages companies in Lagos State. Therefore, the null hypothesis which states that Research and Development have no significant effect on competitive advantage of selected food and beverages companies in Lagos State is hereby rejected.

The findings of the current study shows that when research and development of an organization is robust, it enhances discovery in customer taste and preferences which translates to technological breakthrough in product development and hence deliver to a firm significant competitive advantage, while in the absence of it performance is negatively related which culminate in low competitive advantage.

Similarly, this finding is similar to Aboody and Lev (2015), Nicolaidis (2014) and Azadegan, Napshin and Oke (2013) assertion that organizations could enhance competitive advantage by building capabilities, which the R&D investment would support and also R&D spending results in new products or process efficiencies, creating competitive advantage and enhancing firm performance. Also, the study of Chamsuk, Fongsuwan and Takala (2017) are in consonances with the findings of the current study. They found research and development to be a vital tool for competitive advantage.

Relating to the current study findings and to other studies, the study of Kwon-Ndung, Kwon-Ndung, Migap (2014) established that business research and innovation contribute significantly to improvement in enterprise productivity and quality and in the integral components of business strategy and success.

Theoretically, Knowledge Based Theory is in line with our findings which states food and beverages are operating in a current environment of rapid technological changes, R&D has proven to be an important element of how an organization can gain competitive advantage. The theory further stated that knowledge and information have become the underlying sources of competitive advantage. Managers enhance the firm's capacity to produce efficiently by advancing or updating knowledge. Therefore, research and development could be employed as platforms to update, creating customer value and advance knowledge of food and beverages industry to enhance competitive advantage. Likewise, the Schumpeterian theory is germane to the study because R&D can prompt innovation which could heighten competitive advantage.

Conclusion and Recommendations

The study concluded that research and development has positive and significant effect on competitive advantage of selected food and beverages manufacturing companies in Lagos State, Nigeria. Based on this finding and conclusion, this study recommended that; top managers in the food and beverages companies should not hesitate to deploy resources accordingly to the research and development cross-functional team drawn from different departments in organizations to come up with research output in form of new and improved products, processes, applications and services that fill market needs towards gaining competitive advantage and superior performance.

Implications of findings

Several implications could be obtained from this study, the first managerial implication concerns the findings that research and development has significant effect on competitive advantage, especially in the food and beverages industries in Nigeria. This study serves as useful guide in the field of management practice for manager and research and development team leaders to understand the import of research and development in their organizations and the need to cooperate with the team. This study also serve as a medium through which researchers are provided with detailed information and empirical evidences of R&D on competitive advantage on which future researches can be built on. Lastly, this study creates an avenue whereby food and beverages companies have need of research and development and intensify efforts in this area to enhance their competitive edge.

Contribution to knowledge

This study contributes to the body of knowledge, firstly by giving concise definitions, numerous information and important background to different concepts related to R&D and competitive advantage. Secondly, it contributes to theoretical review by supporting the Knowledge-based theory and Schumpeterian theory of innovation to explain how research and development could be used to update and advance knowledge to enhance competitive advantage. This study contributes to knowledge empirically by establishing that the effect of R & D on competitive advantage should be evaluated not only on research and development, but on more advanced variables such as technological agility and customer knowledge management. Finally, even though there have been various

studies in the area of research and development and competitive advantage. Most of these studies were carried out in developed countries, which has made it difficult for proper application to Nigeria context, but this knowledge has bridged the gap in knowledge by providing wealth of information on R&D and competitive advantage in Lagos State, Nigeria

Limitation and suggestions for further studies

The current study has certain limitations. These limitations provide future directions and also hint at certain possible extensions. The major limitation of the current work is its restriction to studying a single industry should be treated with caution. These findings can be extended by studying other industries in which R&D is considered very important for survival such as manufacturing, chemicals, automobiles, and home appliances industries to verify whether these results can be generalized more widely. Further, given that the current work has considered only a single country that is Nigeria. Though Nigeria has most of the features of a typical emerging economy, replicating the study in other emerging countries as well would serve scholarly investigation better. Replication of this study using econometric model containing multi independent variables to analyse the effect to R&D behaviour. Moreover, the moderating role of leadership attitude to research and development could be examined.

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