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Change Management and the Productivity of Pharmaceutical Companies in South-Eastern, Nigeria

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Abstract: The study examined the effect of change management on the productivity of pharmaceutical firms in South-Eastern, Nigeria. The study used a descriptive survey research design. The study was undertaken in Enugu, the capital of Enugu State. The population of the study comprised a total number of two hundred employees across various functional units of the pharmaceutical company. The sample for the study was calculated using the Taro Yamane formula for the finite population as one hundred and ninety-six. The study used a simple random sampling technique to select the respondents for the study. The study was based on primary data collected using a structured questionnaire. The questionnaire was pilot tested on a sample of 20 respondents. The reliability of the instrument was determined using Cronbach's Alpha. The questionnaire was validated by experts in the field of management and administration. The data were analysed using descriptive and inferential statistics. Pearson Correlation Coefficient was used to analyse the research questions; and, simple linear regression and Chi-Square to test the hypotheses. The results showed that technological and leadership change had a significant effect on productivity; secondly, leadership change also has a significant effect on employee performance. Based on the findings, the study recommends that managers embrace technological change as a strategic response to productivity and competition in the modern business environment. Leaders should initiate change drivers that focus on productivity and also motivate employees to boost employee performance. The importance of appropriate communication during a change management programme was also re-emphasised. Lastly, managers should anticipate resistance from change initiatives; and, approaches for tackling such in order to reinforce and institutionalise change.

Introduction

The modern-day business environment is increasingly becoming dynamic, as the rate of change businesses face continues to increase daily. The pace of business activities today is far faster than yesterday (Nwinyokpugi, 2018). This results from advances in information and communication technology, increasing democratization and liberalisation of economies, social values, workforce demographics, and the political environment, among several other factors. The culmination of these forces has resulted in an external environment that is dynamic, unpredictable, demanding and often devastating to those organizations, which are unprepared or unable to respond (Burnes, 2004). More so, organisations are open systems in constant interaction with the environment. Change is therefore inevitable and a regular feature of modern business life. In his words, John F. Kennedy (2005) noted that “change is the law of life and those who look only to the past or present are certain to miss the future”.

Organisational change is a state of transitioning an organisation from its present state to a desired future state (Kotter, 2011). It is a present feature of organizational life, both at the operational and strategic levels (Burnes, 2004). Organizational change may take several forms, such as a merger, acquisition, joint venture, leadership, technology adoption, organizational restructuring, and change in products or regulatory compliance (Kitur, 2015). Change management in an organisational context, therefore refers to effective management of the change process. It is the process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers. It is an intervention for managing the softer aspects of change and improving performance within an organization (United Nations International Children's Emergency Fund [UNICEF], 2016). Organizations that manage their change efforts well provide a pedestal for them to compete successfully (Johnson & Scholes, 2002); while providing them with a better future position. In the modern business world, the rate of change of an organisation is directly related to its capacity to adapt (Berkhout, 2012), respond to external environmental challenges (Shin, Taylor, & Seo, 2012) and diverse competitive pressures (Qudah & Melhem, 2011).

The pharmaceutical sector is vital to the growth and development of any nation. It plays a key role in the health of citizens. The pharmaceutical sector is a complex one, involving many different stakeholders such as the manufacturers themselves, national regulators, government ministries, wholesalers and others (United Nations Industrial Development Organization [UNIDO], 2011). The Nigerian pharmaceutical industry was for almost five decades dominated by foreigners; while the indigenous industry remained non-performing and epileptic. The industry has grown at an average annual rate of between 10 and 15 per cent over the last five years (Pharmaceutical Manufacturing Group of the Manufacturers' Association of Nigeria [PMG-MAN]). In 2009, the estimated size of the total pharmaceuticals and healthcare products market was more than US\$ 2 billion annually (PMG-MAN). However, drug manufacturers in Nigeria are up against several constraints, including low capacity utilization, undercapitalization, a weak financial base, high production costs as a result of the high cost of inputs, poor infrastructure, difficulty in meeting WHO prequalification criteria, low-level or obsolete technology, high-interest rates and unstable demand (UNIDO, 2011). This has necessitated the need for rapid changes in leadership and technological structures among Nigerian pharmaceutical companies.

Problem Statement

Studies have shown that in turbulent environments, the capability to implement strategic sustainable programmes is a competitive advantage (Darnall, Henriques, & Sadorsky, 2008). Managers in the industry are increasingly turning to technological and leadership change to ensure the sustainability of their brands and meet new pressures and demands. Technological change determines the productivity of an organisation; while leadership change plays a key role in determining employee performance. The adoption of high-tech would result in the manufacture of products with the greatest efficiency; while a

change leader with a democratic style would encourage greater employee participation in management and decision-making. The study, therefore, fills a void in the literature by investigating how change management affects the productivity of businesses, specifically the indigenous pharmaceutical firms in Nigeria.

Objectives of the Study

The objective of the study is to examine the effect of change management on the productivity of pharmaceutical firms in South-Eastern, Nigeria. In line with the main objective, the specific objectives are to:

1. Examine the effect of technological change on the productivity of pharmaceutical firms in South-Eastern, Nigeria.
2. Ascertain the effect of leadership change on the productivity of pharmaceutical firms in South-Eastern, Nigeria.

Literature review

Conceptual Issues

Change Management

The term change is an age-long concept. The well-known passages of Heraclitus (535-475 BC) that 'everything flows and nothing stands still' or that 'no man ever crosses the same river twice', provide an appropriate introductory to the concept. Change management is a coinage of two terms, 'Change' and 'Management'. In its simplest form, change refers to the process in which there is a cause to move or pass from one state to another, or the act or an instance, of making or becoming different. Organisational change can therefore be defined as the movement of an organisation from its present form to a new form (George & Jones, 2009). It moves an organization from its current state to a more desirable position (Ragsdell, 2000). Management refers to the process of directing, organizing, and developing people, technology, and financial resources to effectively achieve organizational objectives (Robbins, 2003).

According to Mearthy and Eastman (2010), change management involves requesting, determining, attaining, planning, implementing and evaluating changes, and using modern management techniques to deal with challenging situations productively. Change management represents the "adaptive response by a system, acting as a whole or through subsystems with specific functions", to keep itself in balance with a dynamic environment. Mearthy and Eastman (2010) observed that change is a natural and inevitable process and is common to any industry, business, individual or living entity. There is a clear consensus among scholars that the need for change management has reached a crucial point (Mohrman & Lawler, 2012; Boulos, Wheeler, Tavares, & Jones, 2011); which is to ensure that an organisation is in sync with its external environment by developing such capabilities that reflect the challenges encountered in the external environment (Marchi, Maria, & Micelli, 2013). According to Morgan (2001), "all organizational change involves three phases: an initial stage of recognition and preparation, followed by the implementation of the actual changes and, finally, a period of consolidation" (p. 2). Change agents may be managers or non-managers, employees or outside consultants. They are persons who act as catalysts and assume responsibility for change management in an organization or institution (Robbins, 2003). Organisational change may have a positive or negative impact depending on management's capability at handling such. It can provide opportunities for growth, development and innovation to some; while, posing threats from establishing new relationships, skills, and activities to others. Change in organisations emanates from two major sources: external and internal sources. External sources could be improved technology, and pressure from interest groups outside the organization; such as the government or competitors in the industry. The internal sources could be from individuals; such as shareholders,

management, and employees. Alrumaih (2017) identified six main factors responsible for changes in modern business corporations:

1. Globalisation, which increased inter-connectivity in the global business environment;
2. New technologies that transformed electronics, communications, and consumer markets and speeded up transactions;
3. New technologies and globalisation together sharpened competition which precipitated the rise and fall of market leaders;
4. Technological speed, that transformed the way businesses are conducted;
5. New change processes and practices, which are faster than ever before.
6. Complexity and paradox which resulted from all these changes and therefore place greater demand on managers.

Other factors identified in the literature were:

1. Proactive leadership, or management (Dawson, 1994);
2. Economic benefits, or a failure to obtain them (Cannon, 1994);
3. Fear, which produces extraordinary short-term changes, but with a negative vision; and aspiration, which produces continuous learning and growth, and has a positive vision (Senge, 1999c);
4. External factors, such as political and financial upheaval, new technologies, regulatory change, worldwide competition and consumer preferences (European Commission, 1998; Dawson, 1994);
5. Diagnosis of something being wrong in the organisation and needing to be changed (Carr, 2001).

According to Jalagat (2015, p. 1238), the following are the benefits of organisational change:

1. Managing change enables organizations to respond quickly to changing customer demands.
2. The management and the organization will realize the importance of change and the expected benefits it derives when implemented in the right way.
3. It allows more flexibility whenever pressures for change arise.
4. Easy identification of the problem that requires change efforts and enables the organization to familiarize those problems that require a change plan.
5. Change can be implemented without affecting the daily activities of the organization.
6. It provides the management with the know-how in assessing the overall impacts of change.
7. Understanding the change process by all employees would likely improve their performance thus, improve organizational performance.
8. Change management helps the organization to identify accurately problems or anticipate challenges and respond to them efficiently and effectively.
9. Change management enables organizations to save cost and increase return on investment thereby reducing waste of resources, time and efforts.
10. Establish opportunities for the development of best practices, leadership development and team development.

The stakeholder focus divides change into two forms (Freeman, 1984): internal, i.e., constantly reassessing objectives and policies that affect or are affected by primary stakeholders; and, external, change that happens on the outskirts of the company's sphere of influence, the secondary stakeholders. This can take different forms, e.g. political or economic change. Managers mostly have a greater degree of control over internal changes, than external changes.

Stacey (1993) categorized change according to its predictability, as: 1) Closed change: Where the future behaviour of the system is perfectly predictable; 2) Contained change: Future behaviour can be predicted with the help of probability; and, 3) Open-ended change: Future behaviour is impossible to predict. Lorenzi and Riley (2000) proposed four types of change in the organisational focus: (1) operational changes, affecting the way the ongoing operations of the business are conducted; (2) strategic changes, impacting business direction; (3) cultural changes, affecting the basic organisational philosophies by which the business is conducted; and (4) political changes in staffing, occurring primarily for political reasons of various types. Additionally, these changes can be First-order, i.e. when there are variations in processes and procedures, but the system is relatively unchanged; or Second-order, i.e. when there are changes in strategies, perhaps due to a crisis or threat (Lorenzi & Riley, 2000). McLagan (2002) identified three types of changes in an organizational structure; transactional, transitional and transformational.

Transactional changes only need minor interventions, for example, training or changing the incentive system, or switching software. Transitional change is more complex and requires a change in roles/responsibilities, power bases and systems. An example of this kind of change could be opening a new plant in another location, where more detailed planning and expertise are needed. Transformational change requires redesigning the entire organization, especially the fundamental beliefs and norms, to adapt to global business demand (Wanza & Nkuraru, 2016).

Organisational Productivity

According to Judge and Robbins (2009), an organisation is a consciously organized social entity, which comprises two or more people, and functions continuously to achieve a common goal or set of goals. Productivity is therefore the capacity of an organisation, institution, or business to produce desired results with a minimum expenditure of energy, time, money, personnel, material, etc. (Local Government & Municipal Knowledge Base, 2018). Productivity can be defined as performance measures, which encompass both efficiency and effectiveness (Bhatti & Qureshi, 2007). Productivity entails a comparison of actual output or results against intended goals and objectives. Organizational productivity is determined by a wide range of factors, which can be evaluated either quantitatively or qualitatively (Dechert-Hampe & Company, 2018). An organisation can improve its productivity either by changing its technology or leadership change. Similarly, Putz (1991) states that there are many ways in which an organisation can improve its productivity. These include investment in plants and equipment, research and development, new methods of production and new technologies. The author further states that the largest unexplored opportunity for increasing organisational productivity is through the effective use of the workforce or employees (Putz, 1991).

Technological Change and Productivity

In the modern business world technology is constantly evolving and business organizations are at the centre of this evolution (Nna, 2011). It changes organizational policies and strategies. Technological advancement can improve employee and firm performance as well. Previously, office activities done manually, are been replaced with machines (Nwinyokpugi, 2018). The global business world, which the modern organization is part of, is ever-changing. Presently, electronics and more specifically computers have emerged and affected all business transactions. This change has brought along certain benefits and risks (Naveed, Jantan, Saidu, & Bhatti, 2017). The benefits of technological change are predictable; while

it is difficult to predict risks because of resistance to change. Technological changes mostly have a positive influence on organizational efficiency and effectiveness. In the change process, leaders have to focus on upcoming technologies so they can get a competitive edge over competitors. Dauda and Akingbade (2014) in Nigeria; found no significant relationship between technological change and employee relations. Abbas, Muzaffar, Mahmood, Ramzan, and Rizvi (2014) in Pakistan; found that information technology improved the productivity of employees of Allied Bank, from time-saving and control over mistakes and frauds.

Leadership Change and Productivity

Leaders are one of the key driving forces in organisational change management. They are key elements for successfully introducing, implementing and institutionalising changes (DeSimone & Popoff, 2000). Leaders are the key decision-makers that determine the acquisition, development, and deployment of organizational resources, the conversion of these resources into valuable products and services, and the delivery of value to organizational stakeholders (Wanza & Nkuraru, 2016). Leaders as change agents can manage the process of organizational change more effectively if he/she is capable and competent (Asghar, 2010) and collaborate with employees to achieve long-lasting plans.

According to O'Reilly, Caldwell, Chatman, Lapid, and Self (2010), workplace leadership pertains to the ability of a person in a formally assigned hierarchical role to influence a group to achieve organizational goals. An effective leader: (1) articulates the unit's vision, (2) sets a strategic direction, (3) defines measurable objectives based on specified strategies, (4) aligns the reward system, (5) motivates subordinates, and (6) effectively deals with resistance to change. Lewin (1950) identified three leadership styles, namely, Autocratic, Democratic and Laissez Faire leaders. In the autocratic style, leaders make decisions alone without consultation with subordinates. This is effective when decision-making does not require collaborative, cross-functional expertise and where the decision is not likely to change as a result of any subordinate input. In the autocratic style, the subordinate contribution is minimal and motivation levels are low. In the democratic style, leaders ask for subordinate participation and contribution to the decision-making process. However, the final decision will be taken by the leader. This style of leadership is appreciated by subordinates and they feel that their contribution is appreciated. Of course, one issue that becomes obvious with this style of leadership is that the decision-making could take longer to be made because of the number of opinions and options put forward. Laissez Faire leaders are given maximum empowerment and authority to their subordinates in the decision-making process. This particular style of leadership provides subordinate freedom in decision-making and could be seen as a high motivator for employees. The main disadvantage of this style is that a possible lack of monitoring of employee input may lead to inappropriate decisions (Lussier & Achua, 2009).

Several factors influence leaders in change management, they include 'tenure' in a leadership role, effective communication, managerial and employee support, and allocation of vital resources are also critical to ensuring a leader's success in affecting and effecting change(s) in the organization (O'Reilly, Caldwell, Chatman, Lapid, & Self, 2010). Change in the workplace affects groups of people and their collective performance. In this context, managing change is a challenge that leaders and managers in any organization should address (Ansari, Munir, & Gregg, 2012). The following challenges face leaders: how to behave openly yet not be controlling, how to advocate and encourage confrontation of different views, how to respond effectively to subordinates' anxieties despite their own, how to manage the feat and become more open, (Argyris, 1977); and, how to balance change without losing the core (Collins & Porras, 2002).

Theoretical Framework

The study is anchored on the '3-Step Change Theory'. The 3-Step Change theory describes both the driving and restraining forces that promote or restrain change. Kurt Lewin (1951) introduced the three-

step change model. He theorised that change is a process which involved three steps: *unfreezing*, *changing* and *refreezing*. According to Lewin, the process of change entails creating the perception that a change is needed, then moving toward the new, desired level of behaviour and, finally, solidifying that new behaviour as the norm. The first stage, referred to as unfreezing identifies how an organisation should get ready for the change, highlighting measures to be taken to move away from the current stage. This stage majorly tries to communicate the need and importance of the change and also highlights the consequences of not changing based on current situations.

- Unfreezing can be achieved by the use of three methods. First, increase the driving forces that direct behaviour away from the existing situation or status quo. Second, decrease the restraining forces that negatively affect the movement from the existing equilibrium. Third, find a combination of the two methods listed above. Some activities that can assist in the unfreezing step include: motivating participants by preparing them for change, building trust and recognition of the need to change, and actively participating in recognizing problems and brainstorming solutions within a group (Robbins, 2003). Lewin (1951) further argued that once an employee's mindset was right for a change then managers should implement the second phase of the change process.
- The second stage, referred to as changing/transition is where all change measures are taken on by the employees. This is the most challenging phase as there is always a possibility for resistance. Thus, the success or failure of the change will heavily depend on the overall progress of this stage. Thus, effective communication, support, and demonstrating the bigger picture of the change are vital in this stage (Woodman, Pasmore, & Shani, 2009). Three actions can assist in this stage: persuading employees to agree that the status quo is not beneficial to them and encouraging them to view the problem from a fresh perspective, work together on a quest for new, relevant information, and connect the views of the group to well-respected, powerful leaders that also support the change. Managers should make sure that the driving forces are stronger than the restraining forces in this stage to get to the desired status (Lewin, 1951). The 'Force Field Analysis' can be effectively applied in this stage; and, thus managers could find ways of eliminating restraining forces while supporting driving forces (Holt & Seki, 2012; Woodman, Pasmore, & Shani, 2009).
- The last stage, referred to as refreezing is when all changes are incorporated into the business model. It is the actual integration of the new values into the community values and traditions. The purpose is to stabilize the new equilibrium resulting from the change by balancing both the driving and restraining forces. It ensures the smoothness, stability and balance of the business operations with the changes already embedded. In this stage, people will find new patterns, relationships and become comfortable with their new routines. This phase will consume time, however, it is important to closely monitor to what extent people are practising change initiatives learned. One action that can be used to implement Lewin's third step is to reinforce new patterns and institutionalize them through formal and informal mechanisms including policies and procedures (Robbins, 2003).

A change can then occur when the driving forces are increased or when restraining forces are reduced, but the underlying principle of this idea is that the driving forces need to outweigh the restraining forces before a change can occur (Cameron & Green, 2012).

- a. **Driving Forces:** These are a set of variables that influence positively the suggested change process. Factors such as new challenges on the job, increased rewards, increased operational efficiency, increased effectiveness, and reduction of overhead cost could be taken as driving forces (Ageron, Gunasekaran, & Spalanzani, 2012).
- b. **Restraining forces:** Restraining forces push the change process back and try to maintain the status quo. In other words, these factors will try to highlight the difficulties of the change process and the convenience of staying with the existing system. Factors such as anxiety about the job, change

looking less stimulating, unwillingness to take risks, and fear of loss of power, status and authority are some of the restraining factors (Holt & Seki, 2012).

Empirical Review

There is a vast amount of empirical literature on change management; they focus mostly on issues such as employee performance, leadership, and productivity, among several others. They are reviewed and presented below:

Ebongkeng (2018) examined organizational change and the performance of microfinance institutions. The study used a case study approach. The case study was African Financial Company SOFINA S.A. The study relied on primary data obtained from a questionnaire. The data was analysed using descriptive statistics. The results showed that organizational change has an impact on the staff and customers of SOFINA.

Nwinyokpugi (2018) investigated the effect of organisational change management on employees' productivity in the banking sector. The study used a cross-sectional survey research design. The sample comprised 104 employees and management staff of three Banks in Port-Harcourt, Nigeria. The study relied on primary data collected through a structured research questionnaire. The results showed that dimensions of organizational change management (Change Communication, Change Identification, Employee Engagement, Change Implementation and incentives) are significantly positively related to employees' productivity.

Nuskiya (2018) examined the effect of information technology on employees' performance in the Banking Industry in Sri Lanka. The study used a survey research design. The sample comprised 5 employees from 10 banks in Ampara District. The data were analysed using descriptive and inferential statistics. The hypotheses were tested using correlation analysis. The results showed that information technology adoption was positively and significantly related to employees' workload, increases employee satisfaction and motivation, reduce absenteeism, and decreases error rate and employee skills.

Cheworei (2017) examined the influence of change management strategy on performance at the United Nations Secretariat, Kenya. The study used a case study approach. The study relied on primary data obtained through interviews. The data was analysed using content analysis. The study found that changes that had taken place included the introduction of new information systems, restructuring and operational strategic changes such as the introduction of flexible working schedules for employees, involvement of employees in decision-making and change of strategic approaches to program activities. The resulting changes renewed staff engagement to improve performance.

May and Stahl (2017) examined the significance of organizational change management in achieving sustainable competitiveness. They used a case study approach. The case study involved six companies in the Lombardia region in Italy. They also conducted 15 face-to-face interviews. Secondary sources were used for further data collection and data triangulation. The analysis revealed four archetypes of companies that show increasing sustainable competitiveness with increasing formalism and persistence in organisational change.

Kahoro (2017) investigated the effect of change management on the performance of Kenya ferry services. The study used the cross-sectional survey research design. The study relied on primary data collected by administering questionnaires. The sample comprised 62 employees from four departments. The data were analyzed using descriptive statistics; while the t-test was used to test the relationships between variables. The study found that information technology awareness, organizational culture and communication had a strong effect on change management; while organizational structure had a weak effect on change management.

Wadood, Gharleghi, and Samadi (2016) examined the relationship between change in management and managing strategies, leadership styles and technological innovation. The study used a survey research design. Primary data was collected through a questionnaire administered to employees of Samsung, Rocket Internet, Apple Inc., and Google. The sample size for the study was two hundred and fifty. The data was analysed using descriptive statistics, correlation and linear regression. The hypothesis was tested using linear regression. The results showed that managing strategies and technological innovation are significant; while leadership skill was not a significant predictor of change in management.

Khatoon and Farooq (2016) explored the relationship between aspects of change and organizational performance. They also investigated the impact of these aspects of change on performance. The study used a survey research design. The aspects of change studied were the quality of change communication, participation, the attitude of top management, leadership and readiness for change. The study used primary data; which was collected from a questionnaire. They employed Structural Equation Modelling in analysing the data and testing the hypotheses. The results showed that there was a significant positive relationship between the quality of change communication and performance. Participation, the attitude of top management, and readiness for change were positive but non-significant; while leadership was negative but non-significant.

Lim, Wang, and Oo (2016) examined the effect of change management on sustainable competitive advantages. The study relied on primary data; from an online questionnaire administered to the respondents. The sample comprised 74 construction professionals. The results showed that training and development opportunities, employee–employer relationships and effective information and communication systems are the three most significant enablers for the successful implementation of a change management process. The study also found that to gain effective change management, company leaders need to be ‘respectful and caring’ and place greater emphasis on developing and promoting a learning culture.

Wanza and Nkururu (2016) investigated the effects of change management on employee performance. The study used a case study research design. The sample comprised 121 employees from the University of Eldoret, Kenya selected using a simple random sampling technique. The study relied on primary data collected using questionnaires and interview schedules. The data was analysed using descriptive statistics. The study found that change management factors (leadership, culture, structure and technology) influenced employees’ performance at all levels in the university.

Ndahiro, Shukla, and Oduor (2015) analyzed the effect of change management on the performance of government institutions. The study adopted a survey research design. The sample comprised 100 Rwanda’s Revenue Authority employees. The study relied on primary data collected from a questionnaire; which was analyzed using SPSS and Microsoft Excel. The results showed that the change management led to the following: increased output, increased tax revenue, and improved salary. The lack of employee involvement was a major cause of resistance.

Method

The study employed the descriptive survey research design. The design was considered appropriate because the study used a survey method to obtain data through a questionnaire, describe and draw inferences on the relationships to be tested, between the variables of change management and productivity. The study was conducted in Enugu. Enugu State is one of the five states in the South-East geo-political zone of Nigeria. The population for the study comprised employees in the various branches of pharmaceutical firms in the South-Eastern states of Nigeria (i.e., Enugu, Anambra, Abia, Imo, and Ebonyi). The firm has up to seven branches in the South-Eastern states with a total number of staff in these branches as two hundred (200) across various functional units of the pharmaceutical company. The

sample for the study was calculated using the Taro Yamane formula for the finite population. The formula is stated below:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = sample size
 N = population (200)
 e = error Term (10%)

l = constant

$$\begin{aligned} \text{Therefore, } n &= \frac{200}{1 + 200(0.01)^2} \\ n &= 196.1 \text{ (Approx. 196)} \end{aligned}$$

The sample size for the study is 196, and, used a simple random sampling technique to select the respondents for the study. This technique affords each element or unit in the population the same probability of being selected in the sample. It is considered suitable, especially where the sample has a homogenous feature.

The study focused on primary data collected using a structured questionnaire. The study used a structured questionnaire for obtaining the needed data from the respondents. The research instrument was a structured questionnaire; subdivided into two sections: Section A retrieved demographic information from the respondents; such as gender, marital status, academic qualification, working experience and category of staff. Section B comprised two sections, and the respondents were asked to indicate on a five-point scale the response which most clearly matches the respondents' view on change management and productivity. The questionnaire was pilot tested on a sample of 20 respondents at various departments of Juhel Pharmaceuticals, Awka, Anambra State. The respondents were selected based on their familiarity with the research objectives and did not partake in the final research (Frazer & Lawley, 2000). Having received feedback, changes were made in the wording of questions, layout, sequential methods and validity before the final copy of the questionnaire was administered.

The basic steps in data analysis include categorising data; coding data; and calculating appropriate statistics (Connaway & Powell, 2010). The responses to the questions in the questionnaire were presented and analyzed using frequency and descriptive tables. The hypotheses were tested using linear regression and Chi-Square. The models are specified below as follows:

$$\text{Proc} = \beta_0 + \beta_1 \text{Tech} + \mu \dots \dots \dots \text{Equation 1}$$

$$\text{Proc} = \beta_0 + \beta_2 \text{Lead} + \mu \dots \dots \dots \text{Equation 2}$$

Notes: Proc (Productivity), Tech (Technological Change), Lead (Leadership Change); β_0 refers to the constant, $\beta_1 - \beta_2$ are coefficients of Tech and Lead respectively and μ is the error term.

Results and Discussion

Analysis of Research Questions

The retrieved questionnaires distributed were one hundred and ninety-six (196); representing approximately eighty (80) per cent success rate. The demographic information of the respondents is shown in the table below.

Table 1: Demographic profile of the respondents

Characteristic	Frequency		Percentage
Gender:	Male	81	51.9%
	Female	75	48
Age:	Under 30 years	51	32.7%
	31 - 45	68	43.6%
	46 – 55 years	29	18.6%
	56 & Above	8	5.1%
Marital status:	Single	49	31.4%
	Married	98	62.8%
	Divorced	5	3.2%
	Others	4	2.6%
Highest Academic Qualification:	OND	19	12.2%
	HND/BSc (First degree)	84	53.8%
	MSc	49	31.4%
	PhD	4	2.6%
Years of work experience:	1 - 5 years	39	25.0%
	6 – 10 years	88	56.4%
	11 – 15 years	19	12.2%
	16 & Above	10	6.4%
Managerial Cadre:	Top management	9	5.7%
	Middle management	11	7.1%
	Lower management	136	87.2%

Source: Field Survey (2022)

Table 1 above shows that 51.9% of the respondents who participated in the study were males and 48.1% were females. Of this, 32.7%, were below 30 years of age, 43.6% were between 31-45 years of age, 18.6% were between 46-55 years of age, and 5.1% were above 56 years of age respectively. The marital status of the respondents showed that 31.4% were single, 62.8% were married, divorced was 3.2%, and others was 2.6%. The highest educational level of the respondents showed that the majority of them had a first degree, giving 53.8%. Masters' holders were 31.4%; while PhD holders were 2.6%. OND holders were 12.2%. The years of work experience of the respondents showed that 25% had worked for the company between 1-5 years; 56.4% had worked for 6 – 10 years, 12.2% had worked for the company between 11 – 15 years, and 6.4% had worked for the company for 16 years and above. 23.1% of the respondents are in the top managerial cadre; 64.7% are in the middle management level; and, 12.2% are in the lower management level.

The reliability of the instrument was tested using Cronbach Alpha (α), it reveals how reliable the components of the questionnaire are.

Table 2: Reliability coefficient of instrument sub-scales

	N	Cronbach Alpha (α)
Technology change:	5	.771
Leadership change:	5	.760
Productivity:	5	.784

The instrument is divided into sub-sections with each sub-section corresponding to a particular sub-scales. The technology change subscale consisted of five items ($\alpha = .771$), the leadership change subscale consisted of five items ($\alpha = .760$), and the productivity subscale consisted of five items ($\alpha = .784$). Overall, the instrument was found to be highly reliable.

Descriptive Statistics

Table 3: Descriptive statistics change management items

S/No.		N	Min	Max	Mean
1	The company uses artificial intelligence to aid managerial decision-making	156	1	5	4.32
2	Digital media and social networking sites are key aspects of advertisement campaign	156	1	5	4.11
3	The company has in place measures to tackle issues of cyber security	156	1	5	4.21
4	Technology is deployed in the organisation's Research and Development activities	156	1	5	4.76
5	Each technological innovation is evaluated based on its Return on Investment (ROI)	156	1	5	4.03
6	An experienced leader is capable to drive an organization in a dynamic environment	156	1	5	4.08
7	An analytical leader drives an organisation to exploit opportunities in a dynamic environment	156	1	5	4.55
8	A skilled leader implements strategic change which drives an organization to a competitive posture	156	1	5	4.00
9	Leadership change and behaviour supports organizational learning	156	1	5	3.98
10	Change leaders effectively monitor change processes against standards set to ensure sustainability.	156	1	5	4.01

Source: SPSS Ver. 24

Table 4: Descriptive statistics of business productivity

S/No.		N	Min	Max	Mean
1	Productivity entails improvements in the quality of products	156	1	5	4.38
2	Productivity facilitates the timeliness of product delivery	156	1	5	3.56
3	Productivity enables us to manufacture our products at a low cost compared to competitors	156	1	5	3.76
4	The productivity of an organisation increases through strategic change through the use of new technology	156	1	5	4.06
5	Technology change has boosted the efficiency and effectiveness used in completing tasks	156	1	5	4.35

Source: SPSS Ver. 24

Test of Hypotheses

Hypothesis One: There is a significant effect of technological change on the productivity of pharmaceutical firms in South-Eastern, Nigeria.

Table 5: Linear regression result showing the effect of technological change on the productivity of pharmaceutical firms

Adjusted R-Squared	.245
F-Statistic	7.321
Prob. (F)	0.000**
t-statistic	4.77
Prob. (t-statistic)	0.000**

Source: SPSS Ver. 24

The model had an adjusted R squared value of .245; therefore the proportion of variance in the dependent variable explained by the independent variable is 24.5%. The F statistic ratio is used to check the statistical significance of the model showed a value of 7.32; p -value $<.05$; therefore the hypothesis that all the regression coefficients are zero is rejected. The t statistic of technological change is 4.77 ($p<.05$), which confirms that technological change has a positive and statistically significant effect on productivity. Thus, the study finds evidence to refute the null hypothesis and accept the alternative.

Hypothesis two: There is a significant effect of leadership change on the productivity of pharmaceutical firms in South-Eastern, Nigeria.

Table 6: Linear regression result showing the effect of leadership change on the productivity of pharmaceutical firms

Adjusted R-Squared	.470
F-Statistic	9.453
Prob. (F)	0.000**
t-statistic	3.98
Prob. (t-statistic)	0.000**

Source: SPSS Ver. 24

The model had an adjusted R squared value of .470; therefore the proportion of variance in the dependent variable explained by the independent variable is 47.0%. The F statistic ratio is used to check the statistical significance of the model showed a value of 9.453; p -value $<.05$; therefore the hypothesis that all the regression coefficients are zero is rejected. The t statistic of leadership change is 3.98 ($p<.05$), which confirms that leadership change has a positive and statistically significant effect on productivity. Thus, the study finds evidence to refute the null hypothesis and accept the alternative.

Discussion of Findings

The first hypothesis revealed that technological change had a significant effect on the productivity of pharmaceutical firms. This supports the study by Nwinyokpugi (2018) in Nigeria on financial institutions; which reported that change management is significantly positively related to employees' productivity. The study by Nuskiya (2018) in Sri Lanka; showed that information technology adoption reduced employee workload, increased employee satisfaction and motivation, reduced absenteeism, and decreased error rate. In another related study, Cheworei (2017) in Kenya; found that the adoption of new information systems has a strategic long-term effect on the organisation. Such change is capable of renewing staff involvement and engagement to improve performance. This effect is however premised on the level of employee awareness of the information technology change. This was encapsulated in the

study of Kahoro (2017) on a sample of Kenya ferry services firms. The study reported that information technology awareness had a strong effect on change management. Also, Ndahiro, Shukla, and Oduor (2015) in Rwanda; documented that change management lead to increased output among government institutions.

Thomas (2014) using a case study of a telecommunication firm, found that technology change has a significant effect on performance. This is according to the study by Imran, Maqbool, and Shafique (2014) in Pakistan; is because technological advancement has a significant effect on the training and motivation of employees. Another study by Al-Jaradat, Nagresh, Al-Shegran, and Jadellah (2013) on employees in University Libraries in Jordan showed that technological change positively and significantly affected employee performance. Another line of research has also demonstrated the influence of technology on the change management process. For instance, the study by Wadood, Gharleghi, and Samadi (2016) on a sample of high-tech firms; reported that technological innovation was a significant predictor of change in management. Lim, Wang, and Oo (2016) found that information and communication technology was among the most significant enabler of a successful change management implementation.

The second hypothesis showed that leadership change has a significant effect on the productivity of pharmaceutical firms. The effect of leadership change has also been documented in other studies using varying samples. Wanza and Nkuraru (2016) in Kenya; found that leadership change influenced employees' performance at all levels in a University. Osei-Bonsu (2014) in Ghana; found that change management has a positive impact on employee job satisfaction. The study by Sande, Walela, and Wamukoya (2015) on a sample drawn from public secondary schools in Kenya; also demonstrated that change management practices adopted by the institutions significantly influenced performance. However, contrary to the study by Wadood, Gharleghi, and Samadi (2016) on a sample of high-tech firms; showed that leadership skill is not a significant predictor of change in management. In another study by Fong, Ting, Hui, Ying, and Ee (2011) in Malaysia; leadership has a negative significant relationship with employee performance.

Conclusion

The study found an effect of change management on the productivity of pharmaceutical companies in South-Eastern, Nigeria. The results demonstrated that change management in areas of technology and leadership had a significant effect on the productivity of pharmaceutical firms. The study makes the following recommendations based on the major findings from the research:

1. Managers should embrace technological change as a strategic response to productivity and competition in the modern business environment. Technological changes that can lead to a lower production cost compared to competitors are strongly encouraged to gain a competitive advantage in the industry. In addition, technological changes can enable new product lines to be developed and product differentiation is encouraged to boost the productivity of the firm. The staff should also be equipped with the technical know-how that is not common with competitors.
2. Leaders should initiate change drivers that focus on productivity. A dynamic leadership based on industry experience and competence is capable of improving the productivity of an organisation. When it comes to planning change, managers should involve a hands-on and skilled team who can cover areas of productivity. In the context of sustainability, responsible leadership can be enshrined within the organisational production process by integrating social and environmental considerations into business decision-making processes.

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