UNIVERSITY OF EDUCATION, WINNEBA

THE IMPACT OF INNOVATION ON SALE OF PHARMACEUTICAL PRODUCTS:
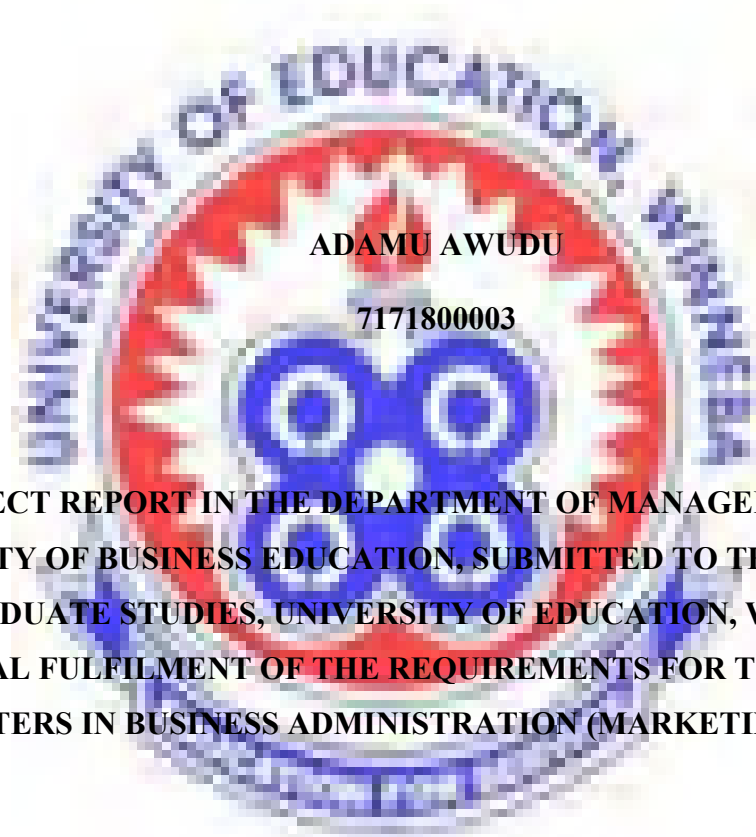
CASE STUDY OF KINAPHARMA GHANA LIMITED

ADAMU AWUDU

2019

UNIVERSITY OF EDUCATION, WINNEBA

THE IMPACT OF INNOVATION ON SALE OF PHARMACEUTICAL PRODUCTS:

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A PROJECT REPORT IN THE DEPARTMENT OF MANAGEMENT STUDIES, FACULTY OF BUSINESS EDUCATION, SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES, UNIVERSITY OF EDUCATION, WINNEBA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS IN BUSINESS ADMINISTRATION (MARKETING) DEGREE

JULY, 2019

DECLARATION

STUDENT'S DECLARATION

I, **ADAMU AWUDU**, declare that this Thesis with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE …………………………………

DATE………………………………………….

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines on supervision of Thesis laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. FAISAL IDDRISU

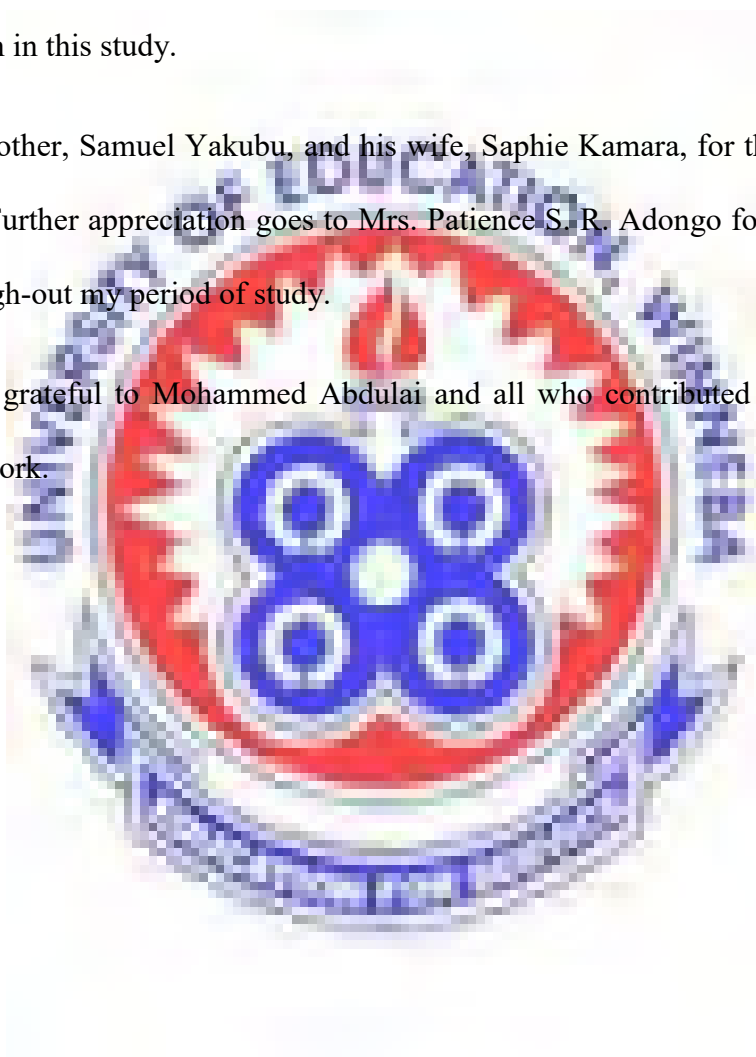SIGNATURE: ………………………………

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ACKNOWLEDGEMENT

DEDICATION

I dedicate this work to my lovely wife, Kausar Mahmoud.

ABSTRACT

Innovation in a company's products, in addition to product introduction, has been the main factor to differentiate product from competitors' offerings, and has played an important role in marketing, whilst it is considered as the main selling factor. The main objective of the study is to examine the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Limited. The population for the study consisted of 400 staff members of Kinapharma Ghana Ltd. Two hundred (200) of the members were picked through the purposive sampling technique to represent the sample size. Questionnaire was the main data collection instrument used and the data gathered were analyzed quantitatively through mean, standard deviations and multiple regression analysis where results were presented in the form of tables. Key findings from the study include the following; the product innovation strategies used by Kinapharma Ghana Ltd. were found to include: entering a new market, creating customer value, increasing profitability and increasing market share through innovation. On the impact of innovation on sales at Kinapharma Ghana Ltd., the results showed that product, organizational and marketing innovation were positively related to sales at Kinapharma Ghana Ltd. But process innovation was found to be negatively associated to sales in this company. This indicates that there is a perfect linear relationship between overall organizational innovation and sales at Kinapharma Ghana Ltd. Also, the study revealed that some of the major challenges of innovation at Kinapharma Ghana Ltd. were that: more production methods have to be tried, innovation involves a lot of expensive researches, the pharmaceutical industry is too dynamic and the pharmaceutical industry is too complex. The study recommends that in order to help create and manage higher customer value, Kinapharma Ghana Ltd. and other pharmaceutical companies need to pay considerable attention to customers by creating a system of continuous assessment and evaluation of customer satisfaction as well as proper accountability to customer complaints. Also, employees in the pharmaceutical firms should be encouraged to keep looking anew at the way they approach innovation. Employees must be motivated to think creatively to spring up wonderful ideas that are worth implementing to bring success.

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LIST OF ABBREVIATIONS

DTCA   - Direct-To-Consumer Advertising

IPR   - Intellectual Property Rights

IM   - Innovation Management

OECD   - Organisation for Economic Co-operation and Development

SMEs   - Small- and Medium Sized Enterprises

SPSS   - Statistical Package for Social Sciences

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Innovation means novelty, new things being done, or old things being done in new ways to increase the performance in terms of sales, profitability and market shares in an organization (Chesbrough, 2016). It is an application of technological, institutional, human resources and discoveries of productive processes, resulting in new practices, products, markets, institutions and organizations that need organizational improvement or performance in terms of sales, profitability and market shares (OECD, 2015).

Innovation is the life power of the pharmaceutical industry, and is the main driving force in the growth of the global pharmaceutical industry (Geroski, Machin & Van Reenen, 2013). The pharmaceutical industry is recognized as one of the most important and biggest industries in the world and has always been considered as a source of interest to economists and policy makers. Innovation in the Pharmaceutical industry can be a product, process or marketing innovation adopted in order to increase performance of enterprises in terms of sales volume or otherwise (Han, Kim, & Srivastava, 2014).

External pressures such as highly competitive environment, rapid technological changes, and short product lifecycles have made innovation important strategy for companies in general and for dynamic industries such as pharmaceutical companies in particular (Han et al., 2014). This uncertainty in innovation put pharmaceutical companies under pressure to produce successful products. Therefore, innovation success factors in pharmaceutical

industry need more attention to reach acceptable level of financial return. Therefore, looking more closely to success factors of new products in this industry might help pharmaceutical industry achieve more successful new products.

Introducing successful new products, which the growth and development of a firm depend on, requires technological knowledge and ability to transform it into valuable new products (Martin & Namusonge, 2014). In addition, complementary assets to facilitate the manufacturing, marketing, sales, and distribution of those products are required. The advancement in technology has given pharmaceutical firms more opportunities to develop higher added-value products (Martin & Namusonge, 2014). These firms are motivated to introduce varieties of new and innovative medical products to meet the ever changing needs of customers.

1.2 Statement of the Problem

Emergence of new demands from consumers due to changes in consumption habits and patterns and also increased awareness of health issues among consumers pose the need to provide new and innovative pharmaceutical products (Paryu, 2013). Innovation in a company's products, in addition to product introduction, has been the main factor to differentiate product from competitors' offerings, and has played an important role in marketing, whilst it is considered as the main selling factor (Greane, 2015). On the other hand, given the economic conditions today, innovation is a crucial component in product manufacture which has been seriously given little attention by most pharmaceutical companies (Foster, 2015).

Pharmaceutical drugs require extra care in its innovation as compared to other products; this is mainly because innovation defects can create problems that may result in the changing nature of drugs, which can lead to untreated illness or even death in patients (Foster, 2015). Due to this, there is the need for pharmaceutical companies to pay much attention to drug innovation for them to have the trust of customers which will eventually lead to increase in sales of such products.

Pharmaceuticals industry in Ghana is expected to reach $1 billion in value by end of 2018, but seventy percent (70%) of pharmaceutical products used in the country are imported (myjoyonline.com, 2018). Even though there are more local manufacturers, most of them don't have adequate innovative capacity to fill the gap so as to meet the needs of local consumers. Recognizing the importance of innovation in pharmaceutical industries and according to the focus towards innovation as a tool for competitive advantage, this research therefore aims to investigate the impact of innovation on product sales at Kinapharma Ghana Ltd.

1.3 Objectives of the Study

The main objective of the study is to examine the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Limited. Based on that the following specific objectives were stated to guide the study;

1. To find out the product innovation strategies used by Kinapharma Ghana Ltd.

2. To examine the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Ltd.

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3. To identify the major challenges encountered in innovating products at Kinapharma Ghana Ltd.

1.4   Research Questions

1. What are the product innovation strategies used by Kinapharma Ghana Ltd.

2. What is the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Ltd?

3. What are the major challenges encountered in innovation of products at Kinapharma Ghana Ltd?

1.5   Justification of the Study

This study will serve as a source of reference for other researchers and companies who may need appropriate information on product innovation especially in the pharmaceutical industries. Policy makers like the ministry of health, the food and drugs board authority, the pharmaceutical council and non-governmental agencies would also be informed in making decisions that will protect and develop infant drug manufacturing industries and to help enhance their product innovation methods to help towards increasing productivity of the economy. More importantly, investors and entrepreneurs may find it useful as the study will unveil the impact of innovation on sale of pharmaceutical products as well as the challenges they are bound to encounter in innovation so as to help them develop measures to mitigate the negative effects. With the pharmaceutical industry knowing its own success factors in innovation can allocate their budget in an efficient manner in order to boost significantly the success rate of new products. The ever changing needs and preference of consumers of

pharmaceutical products also necessitated this study to help know some of the factors that propels innovation such as diversity of technologies, different level of competition, and capabilities of industries in order to meet these needs.

1.6   Brief Research Methodology

The survey method was utilized in gathering data from the study respondents which was principally by the use of questionnaires. This method was preferred to others such as the case study, experimental and observational designs, because it helps to gather more information from a large number of people especially respondents who are mostly busy serving customers or those scattered geographically. Surveys are also easy to administer. All staff members of Kinapharma Ghana Ltd constituted the population of the study numbering about four hundred (400). To ensure availability and proper data analysis, the purposive sampling method was used to select 200 of them. The data collected was entered into the Statistical Package for Social Sciences (SPSS) and analyzed quantitatively using standard deviations, mean and multiple regression analysis while drawing inferences from the literature review for proper analysis. Quantitative analysis was used because it is more reliable and objective because subjectivity of researcher in methodology is less and also it uses statistics to generalize a finding (Cohen, 2012).

1.7 Organization of Study

The study was grouped into five chapters. The first chapter gives an initial outline of the study. It considers the background to the study, the research problem, the research objective, justification of the study, brief research methodology and the organization of the

study. Chapter two reviewed some current knowledge and literature of the study. This included materials from journals, magazines, and the internet amongst others. Chapter three explains the research methodology and the method to be used to analyze the data. Chapter four dealt with the analysis of the data collected and the discussion of the findings. Finally, chapter five weaves the discussion together into a conclusion with appropriate recommendations made.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents works of what other scholars have written about the innovation within the Ghanaian pharmaceutical industry. It looks at the various theories written by various scholars on innovation and conceptual framework was also illustrated. Empirical studies by different authors were also reviewed taking into consideration their methodologies used and their findings.

2.1 Innovation

An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations (Ndalira, Ngugi & Chepkulei, 2013). The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) to the firm. Innovation activities are all scientific, technological, organizational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations (Ndalira et al., 2013).

Today, many firms are competing in a turbulent dynamic environment characterized by constant and rapid changes in products offered on the market (Nooteboom, 2014). A firm's capability of renewal is considered important for both survival and future prosperity; as such, firms rely on their product innovation ability (Raymond & St-Pierre, 2010). In most

cases, companies perform incremental innovations that focus on minor improvements or simple adjustments. Over time, companies acting in turbulent environments will encounter great leaps in, for instance, technology. Examples in modern times include the first mobile phone, pocket calculator, or jet engine (Ndalira et al., 2013). In this sense, a firm's innovation process cannot solely focus on incremental innovation; thus, these radical innovations may be perceived as a key source of a firm's long-term competitive advantage (Greve & Taylor, 2012).

Combining this with a tendency for shorter product life cycles, which increases the number of both incremental and radical innovation processes, leads to a greater need to understand a firm's innovation processes (Ndalira et al., 2013). Studies have identified different factors in incremental and radical innovation processes. One important factor in both cases is the use of cross-functional teams (Brown & Eisenhardt, 2015) or cross-professional. An assumption in the use of cross-functional or cross-professional teams is that individuals need other perspectives during the innovation process (Nooteboom, 2014). On the contrary, there is an implicit assumption in use of teams where individuals represent the same function or profession that they are unable to defy the perspectives of others.

In relation to innovation, this forms a paradox, since innovation by definition is represented by a new thought or/and action (Raymond & St-Pierre, 2010). How can something new be made when everyone sees it in the same way? One possible explanation is to view the innovation process as consisting of individuals who are exposed to social processes, which reshape their thoughts, actions, and interactions within this process (Nooteboom, 2014). However, there is a fundamental question concerning firm's innovation process to be addressed: if innovation is a social process, then how do individuals perform their specific

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tasks within the context of innovation? As a social process, innovation results from the interaction of individuals, but the action may also be divided in tasks to be solved.

Participating individuals must agree on some level; in this way, they are interdependent even though individuals independently may perform thought and action (Nooteboom, 2014). It seems as if action toward innovation results from a dynamic interplay between social and cognitive dimensions of individuals participating in the innovation process (Ndalira et al., 2013).

2.1.1 The Creation of Organizational Innovations

Attempts have been made to explore the concept 'creation' of organizational innovations, e.g. the studies of Birkinshaw & Mol (2009) and Birkinshaw et al. (2012). Both these studies have focused on how management innovations are 'created'. However, while focused on the creation of organizational innovations, the studies also include mechanisms by which the new innovation is put into practice. Mechanisms for putting an organizational innovation into practice are in this chapter included in the section 'Diffusion of organizational innovations', since they are viewed as part of the intra-firm diffusion process.

However, while the authors in both studies do include mechanisms for intra-firm diffusion as part of the creation process, they do not seem to include the body of research literature on diffusion of innovations. Birkinshaw et al. (2012, p. 825) consider this body of literature to be focused on diffusion of management innovations across industries or countries, and state that this literature has little to contribute to the understanding of the creation and implementation of management innovations. As will be presented later in this section, however, the 'creation' is hard to separate from both the inter-firm and intra-firm diffusion

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of the innovation. Still, let us start this section by presenting some findings from the study of Birkinshaw et al. (2012).

Birkinshaw et al. (2012) explored how a management innovation is 'created', a concept that has been under-researched (Kimberly, 2010; Birkinshaw et al. 2012). The core result of their work was a model influenced by factors such as the environmental context, the organizational context, and external and internal change agents. The four influencing sets of factors are very briefly explored and do not give any detailed information on which mechanisms in the external and organizational context influence the creation of management innovations, or how change agents affect this concept.

The environmental context is described such as: "the broad set of stimuli – exogenous to the focal organization – that shapes the management discourse and thereby influences the priorities and efforts of external change agents as they engage with organizations" (Ernest, 2012). External change agents are considered to be management intellectuals, idea entrepreneurs, independent consultants, academics and gurus proactive in creating interest in, influencing the development of, and legitimizing the effectiveness and retention of new management practices (DiMaggio, 2011). Finally, internal change agents are considered to be "employees of the innovating company proactive in creating interest in, experimenting with, and validating the management innovation in question (DiMaggio, 2011; Howell & Higgins, 2009)".

2.1.2 Innovation Management (IM)

Managing innovation can be defined as the ability to invent and implement the managed practices, procedures, structures or mechanisms that are new to the market and are aimed at

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promoting organizational objectives. Innovation management includes the introduction of new features and originality to an organization, and represents a specific format of the organizational change. It can also be defined as bringing about differences in structure, quality or conditions through managing an organization's activities (Birkinshaw *et al.,* 2012).

According to Volberda *et al*. (2013), SMEs and large companies show that not only is successful innovation led by technological innovation, but also that it relies strongly on innovation management. Innovation management involves changing a company's organizational structure, practices and procedures and availing of the company' technological knowledge principles and its performance in relation to innovation (productivity as well as competitiveness). Many recent studies demonstrate that innovation management "explains a substantial degree of firms" (Volberda *et. al*., 2013).

According to (Ernest, 2012), innovation management (IM) involves determining, generating, funding and measuring innovation in an organization so as to generate business value; it supports the introduction of main products to the market and provides innovative procedures or solutions to enhance business (Auletta, 2009). The importance of IM is manifested in integrating strategies and business for innovation, improving information technology in order to lead to successful business value through innovation, engaging in effective communication to demonstrate business value, while monitoring effectiveness, reviewing innovation procedures and optimising resources according to progress reports (Auletta, 2009).

For these reasons, organizations should develop their innovation management. The mature

capability of innovation management contributes to boosting business value as a result of innovations, recognition of value and accelerating the pace of innovations into the market. The greater the IM level achieved by an organization, the more it can benefit from the advantages of IM. Enhancing business value with IM can be done by considering four main actions:

Determining the scope and the aim of IM and the essential business of innovation development within the organization, comprehending the maturity level of the innovation capability in the organization, developing and managing innovation capability consistently in order to improve IM and Tracking and observing IM developments and demonstrating the advancement and value that are delivered over time. IM includes various aspects of innovation capability, including strategy and management, people and culture, and processes, tools and metrics (Ernest, 2012).

2.1.3 How to Sustain Innovations in Organizations

Sustaining an organizational innovation emphasizes that a firm or organization should maintain a particular organizational innovation for a certain time period, which could be a sign of inertia (Buchanan et al., 2005). However, as pointed out above, innovations are constantly re-invented, and thus the concept of "sustaining" has to be elaborated upon. According to Buchanan et al. (2005), sustaining could refer to an improvement trajectory, rather than to a particular organizational innovation. According to the authors, this implies a more dynamic perspective on sustaining organizational change. The static view of sustaining a particular organizational innovation would then be only temporarily relevant.

After conducting a review of the literature on sustaining organizational change, Buchanan et al. (2005) identified four sets of factors that all play a role: 1) external context that includes factors such as turbulence and uncertainty in the external environment; 2) internal context that refers to a firm's history and therefore its receptiveness to change; 3) substance of change (e.g., whether the organizational innovation is perceived as important for the firm), change process and timing; and 4) seven organizational factors (managerial, leadership, cultural, organizational, individual, political, and financial) that influence sustaining (factors that can be configured and interact in different ways). The relative importance of each set (and each factor within each set) was not identified by the authors, but Buchanan et al. (2005) emphasized that the interplay between the factors plays an important role.

Buchanan et al. (2005) identified a number of factors similar to those found in studies on the creation and diffusion of organizational innovations. The external context and the firm's inertia and path dependency seem to play a role in all three processes. In addition, the innovation's perceived importance for the organization and the timing of the innovation matter in all three processes. Two aspects are partly new in Buchanan et al.'s (2005) model: first, the change process as such, which was not discussed by Birkinshaw et al. (2008) and was discussed only indirectly as an issue of standardization in the "implementation" step in; and second, the external turbulence and uncertainty, which was identified as an inhibitor for sustaining an organizational innovation.

The latter finding is of interest, as it could mean that it would be harder for a firm to sustain a particular organizational innovation in a rapidly changing industry than in a case in which the industry is more mature (Auletta, 2009). This in turn means that the focus would be on an improvement trajectory, instead of a particular organizational innovation, which could be

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of even higher relevance for firms in rapidly changing industries and could therefore fit well with the ideas regarding the constant renewal that is necessary in rapidly changing industries developed by Brown and Eisenhardt (2008). Sustaining of a particular organizational innovation therefore can only be temporal and seems to be less relevant in rapidly changing environments.

The improvement trajectory can be viewed as a number of synergistic and complementary organizational innovations, since the firm and its search and learning processes are path-dependent. In the event that a later implemented organizational innovation is not synergistic with, or complementary to, the already-implemented innovation, the new innovation might be seen as the start of a new improvement trajectory. Standardization, road maps, and narratives could be used to either strengthen a certain trajectory or communicate and make sense of a new direction (Shiba, 2013).

At certain points in time, influenced by external and internal changes, it could be assumed that a given trajectory is partly (or totally) broken, and therefore partly (or fully) exchanged with a trajectory that has a new goal, and therefore a new direction—for example, if a firm changes its focus from cost-cutting to innovation (Auletta, 2009). However, the shift from one trajectory to another can be very problematic when the values/beliefs, skills, practices, and systems that were once core capabilities turn into core rigidities, and there is also a need to consider the role of unlearning to catalyze learning processes in order to change beliefs and routines in organizations (Akgün, 2011).

Alänge and Steiber (2011) found that the importance of top management involvement and visible support in order to implement organizational innovations was of greater magnitude

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than in the case of technical innovations, as a major organizational change takes years to implement and affects a large number of people within the organization. However, top management commitment alone was not enough for sustaining an organizational innovation. Alänge and Steiber (2011) also identified the need for a more long-term view in order to sustain organizational innovations—a view that goes beyond the time that the average CEO stays at the helm. This observation pointed to the importance of including owners and boards in the matter of organizational innovations, a finding that has not been emphasized in earlier research. In fact, very little has been written overall about boards' roles in the creation, diffusion, and sustaining of organizational innovations. The empirical finding in Alänge and Steiber (2011), however, was that boards affect the sustaining of major organizational innovations.

2.2 Stages in Product development

New product development is the initial step before the product life cycle can be examined, and plays a vital role in the manufacturing process (Abrahamson, 2010). To prevent loss of profits or liquidation for businesses in the long term, new products have to be created to replace the old products. Peter Drucker suggests in his book 'Innovation and Entrepreneurship' that both product innovation and entrepreneurship are interconnected and must be used together in unison for a business to be successful, and this relates to the process of new product development (Bayerl, Jacobs & Denef, 2013).

These are the few stages that a business has to undergo when introducing a new product line into the market:

- **Market research**: This can be done in the form of primary and secondary market research where the business will gather as much information as possible about the present tastes and preferences of its potential consumers, and the gaps filled in the business's particular industry. Secondary market research involves gathering data that has already been collected by another party, and is primarily based on information that has been founded from previous studies. One advantage of secondary market research over primary market research is that it is low-cost, thus enabling the business to be able to invest its time into other more important matters and new potential business ventures. Primary market research involves the business gathering data individually, and this can be done via various sampling methods (Bayerl, Jacobs & Denef, 2013). Other forms of primary market research include focus groups, interviews, questionnaires, etc. One advantage of primary market research over secondary market research is that it delivers much more specific results than secondary market research, and is only available to the business itself, rather than secondary research which is made globally available, as data has already been collected.

- **Product development and testing**: This stage involves creating a test product called a prototype. The prototype ensures the business that its product is functioning properly, and all the necessary arrangements are made to enhance the product as much as possible. After the prototype has been devised, the business can now use test marketing where the business introduces a product to a small group of individuals to give the company insight into the effectiveness of the product from the views of their potential customers (Abrahamson, 2010).

- **Feasibility study**: The business will now look at the legal and financial restrictions of launching the product into the market. This is where the business will create sales forecasts, establish the price of the product, the overall costs of production and profitability estimates. The business also has to consider legal aspects in terms of safety and Intellectual Property Rights (IPR).

After all these stages have been successfully run through, then the business can officially launch the product.

2.3 Strategies in Innovating Products

2.3.1 Creating customer value

Customer Value is the level of satisfaction of your customer towards your business. The word "Value" can have a number of definitions or meanings. It's often related to price for those in business, as well as for many consumers. It could also be interpreted as the worth of something, not necessarily tangible products either. Both products and services have value (Muhumed, 2016).

This is where you hear customers talking about getting the value for money, used typically when talking about price-sensitive customers. On the flipside, there's money for value, which means people are willing to pay for the things they see as valuable benefits (Ndalira et al., 2013). Customer value is the perception of what a product or service is worth to a customer versus the possible alternatives. Worth means whether the customer feels that he or she received benefits and services over what was paid (Nooteboom, 2014).

To the customer, the benefits can also vary which can shift the value. Value for one customer may not be the same as another. What's important to one may not be important to

another segment of your audience. Value is created through the development and improvement of processes, much like other things in your business (Muhumed, 2016). It's also a subset of the culture and vision of your company. While culture and mindset can be difficult to change, it's entirely possible to shift those things to put far more emphasis on creating customer value and better customer experiences (Ndalira et al., 2013).

Value, or perceived value, can change over the course of the customer's journey. They'll have some idea of the value you offer when they're first introduced to your product or brand, and this will change once they begin to interact with you and your product or service, your people, and even other customers (Raymond & St-Pierre, 2010). Communicating value and establishing customer value is important because the results of your efforts to create value are measured in the customers' perception of that value (Muhumed, 2016).

2.3.2 Increase market share

Companies increase market share through innovation, strengthening customer relationships, smart hiring practices, and acquiring competitors. A company's market share is the percentage it controls of the total market for its products and services (Nooteboom, 2014). Market share is calculated by measuring the percentage of sales or percentage of units a company has in the overall market. Using the percentage of sales method, if a company has $1 million in annual sales and the total sales for the year in its industry is $100 million, the company's market share is 1%. Under the percentage of units method, a company that sells 50,000 units annually in an industry where 5 million units are sold per year also has a market share of 1%.

Higher market share puts companies at a competitive advantage. Companies with high market share often receive better prices from suppliers, as their larger order volumes increase their buying power (Ndalira et al., 2013). Also, increased market share and greater production go hand-in-hand, with the latter decreasing a company's cost to produce an individual unit due to economies of scale.

Innovation is one method by which a company may increase market share. When a firm brings to market a new technology its competitors have yet to offer, consumers wishing to own the technology buy it from that company, even if they previously did business with a competitor (Ndalira et al., 2013). Many of those consumers become loyal customers, which adds to the company's market share and decreases market share for the company from which they switched (Muhumed, 2016).

By strengthening customer relationships, companies protect their existing market share by preventing current customers from jumping ship when a competitor rolls out a hot new offer. Better still, companies can grow market share using the same simple tactic, as satisfied customers frequently speak of their positive experience to friends and relatives who then become new customers (Ndalira et al., 2013). Gaining market share via word of mouth increases a company's revenues without concomitant increases in marketing expenses.

Companies with the highest market share in their industries almost invariably have the most skilled and dedicated employees (Nooteboom, 2014). Bringing the best employees on board reduces expenses related to turnover and training, and enables companies to devote more resources to focusing on their core competencies. Offering competitive salaries and benefits is one proven way to attract the best employees; however, employees in the 21st century

also seek intangible benefits such as flexible schedules and casual work environments (Muhumed, 2016).

Lastly, one of the surest methods to increase market share is acquiring a competitor. By doing so, a company accomplishes two things. It taps into the newly acquired firm's existing customer base, and it reduces the number of firms fighting for a slice of the same pie by one (Nooteboom, 2014). A shrewd executive, whether in charge of a small business or a large corporation, always has his eye out for a good acquisition deal when his company is in a growth mode.

2.3.3 Enter a new market

Once a business is established and thriving in its home market, it is often seen as the right time to branch out into a new market. There is every possibility that the company understands its existing market, its customer base and their requirements and knows how to meet these needs effectively (Raymond & St-Pierre, 2010). If the company enjoys strong sales, has great brand awareness and the business is stable overall, it may be the right time to take the plunge (Ndalira et al., 2013).

However, as with all new ventures, there are risks attached to this move and it is not a step to be taken lightly. A new market will not be so comfortable and there will be new competitors and unknown threats (Muhumed, 2016). The key to success is a disciplined approach with the appropriate level of investment into a thorough market analysis.

It is of foremost importance to clearly identify who you will be selling to. This may sound simple, but there is often an overly optimistic need to capture a larger share of a new market.

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A smaller market will make it easier to assess customer requirements and ensure that a larger chunk of a smaller market is obtained rather than an insignificant part of a large share (Ndalira et al., 2013). It is also imperative to set a clear timeframe within which the desired target share is to be achieved and results of the move are to be assessed.

Once a clear market is identified, it is necessary to identify potential points of entry. To minimize initial investment and maximize future revenues it becomes vital to study key possible entrance points, weigh pros and cons of each and then make an informed decision. The final choice should also ideally allow for future growth possibilities, both inside the new market as well as into adjoining ones (Muhumed, 2016). Any entrance point chosen should be assessed against a set of criteria, such as, does it allow access to an underserved market? Is there a strong need that can be fulfilled? Are the key decision makers among the target audience accessible and do they have the funding needed to find the new solution attractive? Are there any existing competitors and is the new solution strong enough to counter their resources and knowledge of the market?

All the activity thus far leads right into the roadmap for future steps – the strategy for entry into the market. The first step is to price your product. It needs to strike a balance between affordability for the target audience and feasibility for the business (Nooteboom, 2014). It also needs to take into consideration existing pricing strategies and how to place the new product within them. Once the price points are defined, the new product or solution can now be positioned accordingly (Ndalira et al., 2013). How do you want to be perceived by the customer? With this target perception in hand, the communication strategy comes into play, where the target audiences as well as the methods to be used to reach them are identified and consolidated. All levels of the target audience need to be considered carefully, including

influencers, decision makers, media, end users among others (Raymond & St-Pierre, 2010). And once all this is carefully set in place, the distribution model is designed which is the most effective means of putting the product into the user's hands (Muhumed, 2016).

Any strategy needs to be followed up with a detailed action plan. This turns a high level plan into an on-ground implementation solution. This should include details of all required marketing plans and campaigns as well as timelines for all these to be set into motion. Clearly defined milestones such as sales targets, market share etc. need to be decided upon with all the key stakeholders (Raymond & St-Pierre, 2010). Processes also need to be defined and communicated for all activities such as what will be the sales cycle followed and how will leads be pursued and closed.

2.3.4 Increase profitability

Close management of your costs can drive your profitability. Most businesses can find some wastage to reduce, it's important not to cut costs at the expense of the quality of your products and services (Ndalira et al., 2013). Using activity-based costing is an effective way to find the real cost of specific business activities. Activity-based costing shows you how much it costs you to carry out a specific business function by attributing proportions of all your costs - such as salaries, premises or raw materials - to specific activities (Muhumed, 2016).

The initial analysis may take a little time but using activity-based costing often shows up costs (and therefore potential efficiencies) that you would not normally uncover using more traditional costing methods. It's a good idea to review your pricing regularly. Changes in

your marketplace may mean that you can raise your prices without risking sales. However, it's wise to test any price rises before you make them permanent (Ndalira et al., 2013).

It's not just your price list that affects your profitability - the type of customers you're selling to can also make a big difference. Consider the Pareto principle (often known as the 80/20 rule) and how it could apply to your business. In simple terms, applying the Pareto principle suggests that around 80 per cent of your profit is gained from 20 percent of your products or services (Muhumed, 2016). The same percentage of profit is often also gained from the same percentage of customers.

Focusing on your most profitable customers - even if it means letting the less profitable ones go - could boost your profitability, so long as it is handled carefully (Raymond & St-Pierre, 2010). One of the most obvious routes to increasing your profitability is to buy more effectively. It makes sense to review your supplier base regularly and see if you can buy the same raw materials more cheaply or efficiently. However, try to ensure that you maintain quality at the same time (Nooteboom, 2014).

Identifying your key areas of expenditure will show where you spend most money. Once you know where your money is going, shop around. Try bargaining with your suppliers - ask if you can have price reductions or discounts for early payment (Raymond & St-Pierre, 2010). Consider using your status as a valued customer to agree long-term contracts or realistic annual minimum spends with regular suppliers to obtain a better price. You could also buy as part of a consortium with other similar businesses. If you can't strike a better deal, consider switching to other suppliers.

Review the number of suppliers you use. Buying from too many can be inefficient - it takes up more time and dilutes your buying power (Raymond & St-Pierre, 2010). However, avoid placing all your business with one or two suppliers - it could leave you very vulnerable if things go wrong. It makes sense to encourage customers that provide high sales and high profit (Muhumed, 2016). You can also significantly boost your profitability by nurturing customers that provide high profit on low sales.

If customers are providing low profit from high sales, you can maybe revise pricing to generate more revenue from them. If customers are generating both low sales and low profits, consider whether it's worth your while continuing to do business with them (Raymond & St-Pierre, 2010). Stepping back on a regular basis and questioning whether there are more efficient ways to reach your goals is no bad thing (Ndalira et al., 2013). For example, you may always produce a particular type of product at a specific time in the month. But would it ease your cash flow if you produced, shipped and invoiced it earlier, or later, in the month?

It's useful to get an idea about how comparable businesses approach similar issues. This is known as benchmarking. Benchmarking can be on a basic, like-for-like level - such as comparing energy costs between similar businesses - or it can be more detailed, such as sharing data and analyzing production and stockholding patterns with other businesses you trust(Raymond & St-Pierre, 2010).

The additional perspective that benchmarking offers can provide new ideas and momentum to make your business more efficient. Improving your business' profitability can help you to reduce costs, increase turnover and productivity, and help you to plan for change and growth

(Muhumed, 2016). How you increase your business' profitability will depend on a number of factors - such as the business sector you work in, the size of your business, or its operating costs.

2.4 Challenges in Pharmaceutical Product Innovation

Firms engaged in developing innovative products and services have been found to compete more profitably through the development of new products and processes, before competitors in first mover advantage, growing market share, return on investment, and overall firm accomplishments. Innovative companies are realized to be able to respond to environmental challenges faster and better compared to the non-innovative ones (Ndalira et al., 2013).

Therefore, organizations have been lead to consider innovation as a central part of their corporate strategy, and to offer products that are well adapted to the needs of target customers in order to create a sustainable competitive advantage and to survive in the competitive markets (Muhumed, 2016).

The pharmaceutical industry is marked as interacting in an increasingly dynamic and complex environment. The concept of innovation has received special attention as a means to create competitive advantages in this industry. A survey performed by McKinsey (2014) showed that innovation is thought as one of the three growth factors of the company by more than 70 percent of senior managers in the next three to five years. According to Schumpeter (2017) innovation is practicing new forms of production methods, and includes the introduction of new products and new methods of production, as well as creating new markets and new sources of raw materials and semi-manufactured products (Raymond & St-Pierre, 2010).

Jimenez (2011) believes that some effective factors in innovation include: individual and organizational learning, organizational knowledge, market opportunities, sharing of knowledge and information of employees, size and history of the company, cultural values, different equipment, the change in the number of employees, improving technological skills of staff (Muhumed, 2016).

Hayes & Finnegan (2015) proposed factors affecting innovation as development of information technology tools, lack of centralization and flexibility in duties, highly competitive prices and market shares. Gatignon and Robertson (2012) claimed that competitive factors play a decisive role in the development and implementation of innovative strategies.

Investigating models affecting innovation, Jafarnejad (2016) has referred to internal and external variables that directly or indirectly affect the innovation process. He introduced external variables as the economic environment, supply and market factors, details of industry structure as well as government policies, and named the factors of enterprise systems as internal variables.

The costs incurred by the research and development of a new medicinal product are enormous. For example, as reported Haerben Pharmaceutical company posted on its company blog in 2012 that the average cost of bringing a new drug to market is $1.3 billion (Rosli & Sidek, 2013). Spending measured from 1997 to 2011 by major pharmaceutical companies show that bringing a new drug to the market costs on average $4 billion and can be up to $11 billion.

From research to market, the average time is 13 to 16 years. The clinical trial phase can take up to 6-8 years for a chronic disease such as cancer (chronic forms of the disease). Patient enrollment in clinical trials is shown to represent a good 50% of the time, contributing to lengthened time to market. The authorities now take twice less time than 30 years ago to review a dossier for approval of a new medicinal product3. However, the clinical phase remains very long (Ndalira et al., 2013).

The duration of patent protection worldwide is 20 to 25 years (Rosli & Sidek, 2013). Research based companies, who invest a lot of money on their research – on average more than 15% of their revenues, want to secure and protect their discoveries as soon as possible (Rosli & Sidek, 2013). Therefore, companies tend to apply for patent protection very early in the development process, prior to pre-clinical studies, and try and accelerate time to market, so as to count on a decade's exclusive revenues post marketing.

Lack of a culture of innovativeness in a company can also bring about low level of innovations in a firm. If the company's employees do not have a right attitude towards innovation, then it is likely they will not engage in many innovative processes (Bayerl, Jacobs & Denef, 2013). To deal with this, the following can be instituted in companies to help out very well:

- Build Clarity and alignment around innovation. Aligning your team around a common definition of the term 'innovation' is the first step. Provide a common framework and language around the topic and ensure people understand that innovation is not simply 'the act of coming up with new ideas'.

- Create psychological safety. Taking an honest look at how people within your organization react to failure can be a very telling factor when innovation is the goal.

If the culture of your organization is one that blames, shames and punishes, the chances that people will feel comfortable displaying behaviors other than sheer compliance are slim to none.

- Encourage dialogue. Honest and open dialogue can only take place once people feel comfortable to share their true feelings. Bring people together and create space for them to look each other in the eye and talk through their ideas. This will stimulate and reinforce the behaviors necessary to evolve toward an innovation culture.

- Challenge your assumptions. It's amazing to me how many people operate day in and day out using a fundamental set of "rules" that don't actually exist anywhere. This is often the case, for example, in highly regulated industries where the regulation mindset bleeds over into every decision that is made. Regulations are in place for a reason, but they shouldn't prevent you from challenging the rules you've put upon yourself over the years (Bayerl, Jacobs & Denef, 2013).

- Invite diversity. Bringing together a diverse workforce can really amplify your ability to innovate. In fact, research suggests that having a diverse set of experiences, perspectives, and backgrounds is crucial to innovation and the development of new ideas.

2.5 Theoretical Review

2.5.1 Learning Models

Learning models in particular exploit the uncertainty physicians perceive regarding the quality of a new pharmaceutical drug. Physicians reduce their uncertainty about the quality of a new drug over time on the basis of feedback from patients as well as the firm's

marketing efforts. Several studies have specified models to capture physicians' learning with regard to new pharmaceutical drugs as these drugs diffuse into the market (Camacho, 2011; Narayanan, 2015; Narayanan & Manchanda, 2017).

Coscelli and Shum (2014) suggest that the slow diffusion time of a new pharmaceutical drug in an existing product category is due to slow learning by risk-averse physicians. The only source of information in their model is patient feedback. Narayanan (2015) investigated how the role of marketing communication for new products changes over time in the presence of learning. They specified a learning model in which marketing communication by firms as well as physicians' accumulated usage experience contribute to physicians' learning about a new drug. Narayanan (2015) found that marketing efforts by pharmaceutical companies— i.e., detailing—have a primarily indirect effect (i.e., learning) in the early stages of the new drug's life cycle and a primarily direct (i.e., persuasive) effect at later stages. Narayanan and Manchanda (2017) find significant heterogeneity across physicians in learning rates and show that there are asymmetries in the evolution of physicians' responsiveness to detailing over time.

Chintagunta (2017) suggest that the information physicians retrieve from patients who were prescribed a new drug is subsequently used in the physicians' learning process to update their beliefs regarding both the drug's overall quality and a patient's idiosyncratic match with the drug. Their results suggest that physicians are influenced by many sources of information, including patient satisfaction, Medline articles, reports in the mass media and direct-to-consumer advertising (DTCA).

Camacho (2011) developed a generalized quasi-Bayesian learning model that allows for decision-making biases that occur in physician decision making. In essence, they argue that physicians can retrieve some pieces of information from memory more easily than they can retrieve others. They show that physicians' belief updating, and thus the speed of their new drug adoption process, is strongly influenced by the salience of patient feedback. They find that negative patient feedback—feedback from patients whom the physician needed to switch to a different drug—receives 7–10 times more weight than positive feedback does in the physician's quality belief formation. The authors show that this effect greatly reduces the speed of diffusion of the new drug. Firms can use learning models to gain knowledge about patterns in physician adoption of new drugs, and they can subsequently take such patterns into account when planning the launch and forecasting the sales of a new pharmaceutical drug.

The model by Camacho (2011) can even be used to adjust predictions downwards after taking into account early switch-outs of patients from the new drug to other drugs in the market. Their model can also be used to predict, using counterfactual experiments, what would happen if a firm could reduce the number of patients abandoning the new pharmaceutical drug shortly after its launch. In addition, one can use the estimated parameters of a learning model for a given drug to predict the speed at which physicians would switch patients to a new, similar drug (Nooteboom, 2014).

2.5.2 Sales Model

Overall sales differ from adoption in that they encompass repeat purchases. Whereas in durable markets (e.g., microwave ovens or refrigerators), for instance, repurchase frequency

is quite low, in many pharmaceutical markets (e.g., drugs for chronic conditions, such as high cholesterol or hypertension) the repurchase rate is very high (Salim & Sulaiman, 2011). Given the high repurchase frequency in some markets, marketing scientists have also developed models to forecast sales rather than adoption. The development of models for sales rather than for adoption can assist in understanding the overall dynamics in the market, and such models can potentially provide insight into the relative roles of repeat purchase versus initial adoption in the sales of a new product (Terziovski, 2010).

The development of market-level sales models to forecast the commercial potential of a new drug is also driven by the availability of data. Often, data on past sales are more readily available than data on past adoption by physicians or by patients (Salim & Sulaiman, 2011). One type of sales model, using observations of aggregate sales, explicitly accounts for the trial and repeat-purchase process by identifying distributions for trial rates and for repeat-purchase rates (Hardie, 2015; Shankar, 2015). Parametric sales models typically rely on the assumptions that there is a linear relationship between the model variables and that the repeat-purchase rate for a given brand is constant.

Several researchers have implemented trial-repeat models to investigate sales growth of new pharmaceuticals, incorporating, for instance, the influence of detailing visits (i.e., sales calls by pharmaceutical representatives), word-of-mouth effects, and competition (Ding & Eliashberg, 2012; Hahn, 2015).

The validity of the interpretation of trial-repeat models critically hinges upon the validity of the models' identifying assumptions with regard to the trial-repeat-purchase process (Hahn, 2015). Therefore, in forecasting the sales of new drugs, other scholars have preferred semi-

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parametric methods, which do not entail any assumptions on the underlying purchase process.

Stremersch and Lemmens (2017) used regression splices to model new drug sales across the world. This flexible approach can be viewed as a compromise between linear regression and nonparametric regression sales models. The advantage of splices compared with other specifications lies in the fact that splices do not impose any assumption (linear, quadratic, or cubic) regarding the interactions among explanatory variables over time. Such flexibility is important in the case of sales growth models of pharmaceuticals.

Additional sales-derived metrics have previously been developed and can be used to build forecasting models. One such metric is new product takeoff, which refers to the first strong increase in sales after an initial period of low sales. The metric of takeoff has been developed for and applied to high-tech products and durables (Agarwal & Bayus 2012; Van Everdingen, 2017), although it has not been tested, let alone used for forecasting purposes, in pharmaceutical markets.

The use of sales models in forecasting is similar to the use of diffusion models. First, like diffusion models, sales models can be used to make forecasts once the product is available in the market, and initial sales patterns can be used to reliably calibrate the model (Hahn, 2015). Often, at least 1 year of monthly data needs to be available to be able to achieve a reliable calibration of the model. Second, one can use the pattern of sales growth of another molecule to predict the growth pattern of a soon-to-be launched molecule that is similar in terms of clinical support and market conditions (e.g., market structure and spending).

2.5.3 Bass Diffusion Model

This model investigates the aggregate first-purchase growth process in a given social system. In this model, also called the mixed-influence model, an adopter of a new product is potentially subject to two types of influence: internal influence, i.e., influence that occurs within the social system, and external influence, i.e., influence that is external to the social system (Twaliwi & Isaac, 2017). Internal influence results from interactions between adopters (e.g., physicians or patients who have adopted in the past) and potential adopters (e.g., physicians and patients who will adopt in the future) in the social system. External influence includes all influence outside the social system, such as, for instance, commercial efforts by the firm (i.e., detailing, sampling, advertising, conferences, etc.) (Twaliwi & Isaac, 2017).

Several extensions of the original Bass model have been introduced over the past four decades in order to reflect a number of market complexities. Such extensions incorporate, for instance, the notion of the influence of marketing-mix variables on the diffusion process (Mesak & Darrat, 2012; Libai, 2015), product replacement and repeat purchases (Islam & Meade, 2012), substitution between generations (Padmanabhan & Bass, 2012), competition among products (Givon, 2015), and heterogeneity in the social system (Van den Bulte & Joshi, 2013). Beyond its many applications across a wide variety of industries, the Bass model and its successors have been repeatedly used in the study of the diffusion of new medical treatments.

Berndt (2013), for instance, studied the diffusion of antiulcer drugs in the USA. They used the Bass (2009) model to characterize network effects in drug diffusion. In another diffusion study, Vakratsas and Kolsarici (2012) distinguished between early market and main market

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adopters in a diffusion model for a new pharmaceutical drug. This notion of differentiating between two segments of adopters is similar to the dual-market approach suggested for technological markets (Goldenberg, 2012; Moore, 2012).

However, in the context of the adoption of a new pharmaceutical drug, Vakratsas and Kolsarici (2012) associate this dual-market phenomenon with the early adopters being patients who have severe health problems and whose latent demand has accumulated prior to the new drug's introduction, whereas the later adopters are patients with milder conditions whose adoption may have been triggered by the launch itself. Marketing scholars have also used diffusion models other than the Bass model to characterize market penetration of pharmaceutical drugs. For instance, Desiraju (2014) examined the effect of market characteristics on the maximum penetration potential and diffusion speed for a new category of prescription drugs in both developing and developed countries, using a logistic specification as in Van den Bulte (2012). Van den Bulte and Lilien (2013) used a discrete-time hazard model to show that several studies analyzing the diffusion of the drug tetracycline confounded social contagion with marketing effects. That is, they showed that when marketing efforts were controlled for in diffusion models, contagion effects disappeared, underscoring the importance of controlling for potential confounds when studying the role of social contagion in new drug diffusion.

The breakthroughs discussed above have helped to provide a better understanding of the determinants of new drug diffusion. The developed models can be helpful in gauging the commercial potential of a new treatment in two main ways. First, after a new drug is launched, these models can assist in making predictions of the drug's future commercial potential (for instance, Ofek's (2012) application of the Bass model in forecasting the future

diffusion of drug-eluting stents). However, these forecasts are most reliable only after the inflection point—the point at which the growth in the cumulative number of adopters starts to decline—has passed.

A second way in which one can use these diffusion models is to guesstimate the commercial potential of a new drug using the diffusion path of a similar drug. Such a similar drug should resemble the focal drug in its product characteristics, and the diffusion process must occur in similar market conditions Ofek (2015) application of the Bass model for this purpose in the case of e-books and the background note in Ofek (2012); while some of us have used this method inside pharmaceutical firms, unfortunately, no pharmaceutical application exists in the public domain, to our knowledge).

2.5.4 Collaboration for Innovation

The high stakes associated with exclusivity rights, unpredictable outcomes, fierce competition, and first-to-market races in the pharmaceutical industry have given rise to a multiplicity of business models and inter-firm arrangements to choose from or gravitate between (Bakare, 2014). The industry is evolving fast, mixing-and-matching from a smorgasbord of options based on fluctuating demands and environmental shifts.

Large vertically integrated firms coexist and collaborate with organizations with a strictly narrow focus, alliances and partnerships are frequently formed and dissolved, new entry of small specialized firms is common, mergers and acquisitions are a familiar fixture, and the occasional spin-offs of divisions into autonomous ventures are no surprise either (Gu& Shao, 2015). Pharmaceutical innovation is no longer a stand-alone activity undertaken by

individual firms in total isolation. An increasing practice of technology transfers and know-how diffusion across firms builds upon the positive momentum created by the openness of fundamental science. In addition to staying alert to the intellectual output of public sector institutions, firms seek to lower the total costs of new drug creation and shorten the time to market through strategic alliances and licensing agreements (Bakare, 2014).

Calculated knowledge exchanges introduce system efficiencies by exploiting synergies between various assets and resources held or developed by the individual firms (Gu & Shao, 2015). Sharing know-how can facilitate and accelerate the innovation process and would explain the ever-increasing number of licensing deals, partnerships, and strategic alliances among pharmaceutical firms. Besides, the industry remains prone to occasional consolidations through mergers and acquisitions (Bakare, 2014). The persistence of such tendencies indicates that economies of scale and scope may be too valuable to forgo despite the benefits of specialization. There is evidence that drugs developed in a partnership are significantly more likely to succeed in Phase 2 and 3 of clinical trials (Njogu, 2014).

In a sample dominated by small and medium-size firms, Danzon (2015) find that inter-firm cooperation in Phase 3 of clinical trials produces a 15 % greater probability of approval compared to independent efforts. These odds may actually be old news to the industry as indicated by current business practices, which show that compared to large pharmaceutical firms, biotech firms are less likely to take drug candidates to clinical trials on their own (Arora, 2013). Large pharmaceutical firms are in a position to enjoy the vast awareness, credibility, and the brand equity that small firms find lacking (Njogu, 2014). Owing to their sizable budgets and greater scale of operations, large firms are poised to have easier access

to capital. They are also more likely to possess the necessary marketing resources small firms may find hard to acquire (Gu & Shao, 2015).

Also, inimitable assets like a steadfast reputation for process rigor and product quality might turn out to be critical for sustaining a competitive edge in crowded therapy markets (Njogu, 2014). Such intangible assets could be more easily accruable to large firms because of their vast drug portfolios and long track records of market presence and innovation (Bakare, 2014).

Generally, small firms would find large firms attractive to partner with because of their considerable resources and intangible assets. Yet, in a partnership, large firms will have to share the eventual market proceeds with another firm (Bakare, 2014). If small firms can benefit from the immediate access to funding, downstream assets, and experience that alliances with large pharmaceutical firms make possible, what are the advantages from in-licensing agreements and other forms of cooperation for the large firms?

2.6 Empirical Review

This section talks about some of the key studies undertaken on the impact of innovation on sales volume and overall performance of pharmaceutical companies across the globe. The pharmaceutical industry is essentially defined by innovation. Research on the forefront of science, the creation of new knowledge bases, the invention of new medicines, and the improvement of existing drugs constitute the fuel that propels the firms in this industry (Njogu, 2014).

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Firstly, in 2012, Gheysari, Rasli, Roghanian and Norhalim studied the relationship between product innovation and its sales volume in the market. They found out that there is a positive linear relationship between these two variables and this findings were confirmed by Shabaninejad, Mirsalehian and Mehralian (2016) who also found that product innovation can have an impact on a firm's sales.

Cainelli, Frank and Sertu (2009) analyzed the relationship between innovation and sales performance in Italian pharmaceutical companies. Three various mechanisms were identified. The first one considers the innovation as a determinant of increase in sales whereas the second one regards the sales as a powerful determinant of innovation activity. The third considers a dynamic relation between the innovation and the financial performance. They found that the performance positively affects innovation and that innovation activities have a positive impact on sales' growth and on productivity.

In the same context, Lopes and Godinho (2015) presented a model that links innovation effort to sales volume in the Portuguese Pharmaceutical company sector. In order to estimate the complex nature of the relationship between innovation and sales volume, they use a system of three simultaneous equations. The first one explains the innovation effort intensity by its determinants. The second one relates service innovation to the innovation effort intensity. Finally, the third relationship links sales volume to the innovation and to the effort intensity. They found that innovation effort intensity has a positive and significant effect on output and sales increase. Thus, if firms spend more on innovation activities they will have a higher probability to develop a sales in the market and improve on productivity.

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As an empirical research, Mansury and Love (2012) examined the innovation impact on performance of sales in American Pharmaceutical company firms. They distinguished between "new-to-market" and "new-to-firm innovation". This study pays particular attention to the role of the innovation externalities and their effect on sales performance. The authors found that product innovation and its extent has a positive effect on sales' growth, but no effect on productivity.

This finding contradicts the results found by Mairesse and Mohnen (2013) who found out a positive relationship between the sales level and product innovation but process innovation has not any effect on the sales. From a business perspective, the positive momentum created by successful innovation can have dramatic, long-lasting implications for the pharmaceutical firm (Dranove & Meltzer, 2014). The impact of a new drug launch often goes beyond the hefty profits associated with patent protection and first-mover advantage. Incremental, follow-up improvements involving greater efficacy, fewer or less severe side effects, a more convenient dosage regimen, changes in the application method, modified formulations, or new indications can significantly expand the market potential for the firm by making the drug appropriate for new patients (e.g., patients who can benefit from different dosage protocols) (Dranove & Meltzer, 2014).

In an appraisal on the effect of several innovation dimensions on sales volumes of Pharmaceutical company firms in Malaysia, a study conducted in 2013 targeted 284 industries across Malaysia. Using a hierarchical regression analysis, the study finds that product innovation and process innovation affect firm sales significantly; impact of the former being stronger but found no relationship between organizational innovation and firm sales (Rosli & Sidek, 2013).

Accordingly, a study by Terziovski (2010) which investigated the relationship between innovation and sales of Pharmaceutical companies in Indonesia found that innovation has a positive effect on firm's sales. Moreover, a research conducted in Kenya by Ndalira, Ngugiand Chepkulei (2013) went on to affirm that innovation plays a significant role in the growth of sales in the pharmaceutical industry.

Twaliwi and Isaac (2017) probed the effect of innovation on sales performance of Pharmaceutical company firms in Gwagwalada-Abuja. Data was collected from 348 firms in five consecutive years (2010 to 2015), and then carried out regression analysis by using Ordinary Least Squares (OLS) Method to estimate the effect. The study revealed that innovation has a positive effect on their sales. It specifically found that the (positive) product innovation, process innovation and marketing innovation are statistically significant. In spite of this, the study uncovers that Pharmaceutical companies in Gwagwalada-Abuja do not frequently adopt innovation, and thus, recommends for these firms to adopt new innovation methods in order to improve their performances. This current study adopts the regression model from this study, and expands the model to avoid likely endogeneity problem. Obviously, there is a huge literature regarding the effect of innovation on sales and performance. Since the majority of them conclude that there is a positive relationship between the two variables, the researcher has selected few of them.

Although most Pharmaceutical companies face a number of barriers including absence of innovation resources, methods and managerial capabilities, it is apparent that innovation is, nonetheless, popular among Pharmaceutical companies worldwide. Innovation improved the performance of Pharmaceutical companies in Malaysia, Indonesia, Kenya and Nigeria as revealed by Rosli & Sidek, (2013), Terziovski, (2010), Ndalira, Ngugi & Chepkulei,

(2013) and Twaliwi & Isaac (2017) respectively. Given the popularity of the concept 'innovation' and the abundance of the literature concerning its impact on business sales and performance, it is hardly acceptable fact that a study like this has had little attention in Ghana, where a lot of Pharmaceutical companies exist. This study, therefore, aims to fill this gap and hence, examines the effect of innovation on product sales in Pharmaceutical industries in Ghana.

2.7 Conceptual Framework

A conceptual framework represents the researcher's synthesis of literature on how to explain a phenomenon. It maps out the actions required in the course of the study given his previous knowledge of other researchers' point of view and his observations on the subject of research. The conceptual framework in this study describes the variables in this study which are Sales and Innovation in pharmaceutical industries and below is an illustration. OECD (2017) classifies innovation into four types: product innovation, process innovation, marketing innovation and organizational innovation.
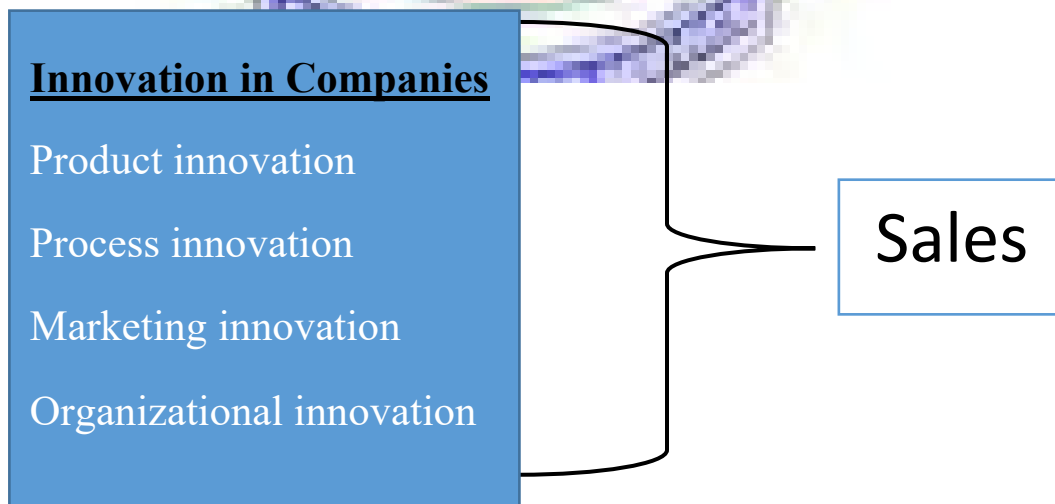

Figure 1: Impact of Innovation on Sales (Author's construct, 2019)

2.7.1 Product Innovation

Is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses (Nooteboom, 2014). This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Product innovations can utilize new knowledge or technologies, or can be based on new uses or combinations of existing knowledge or technologies.

The development of new products, changes in design of established products, or use of new materials or components in the manufacture of established products (Dougherty & Hardy, 2015). Numerous examples of product innovation include introducing new products, enhanced quality and improving its overall performance (Bayerl, Jacobs & Denef, 2013). Product innovation, alongside cost-cutting innovation and process innovation, are three different classifications of innovation which aim to develop a company's production methods. Thus product innovation can be divided into two categories of innovation: radical innovation which aims at developing a new product, and incremental innovation which aims at improving existing products (Berendse, Duijnhoven & Veenwijk, 2014).

Advantages of product innovation include: Growth, expansion and gaining a competitive advantage: A business that is capable of differentiating their product from other businesses in the same industry to large extent will be able to reap profits (Berendse et al., 2014). This can be applied to how smaller businesses can use product innovation to better differentiate their product from others. Product differentiation can be defined as "A marketing process that showcases the differences between products (Dougherty & Hardy, 2015).

Differentiation looks to make a product more attractive by contrasting its unique qualities with other competing products. Successful product differentiation creates a competitive advantage for the seller, as customers view these products as unique or superior (Bessant & Rush, 2016). Therefore, small businesses that are able to utilize product innovation effectively will be able to expand and grow into larger businesses, while gaining a competitive advantage over its remaining competitors (Dougherty & Hardy, 2015).

Businesses that once again are able to successfully utilize product innovation will thus entice customers from rival brands to buy its product instead as it becomes more attractive to the customer (Carlsson & Jacobsson, 2014). Some disadvantages of product innovation include: Counter effect of product innovation: Not all businesses/competitors do not always create products/resources from scratch, but rather substitute different resources to create productive innovation and this could have an opposite effect of what the business/ competitor is trying to do (Bessant & Rush, 2016). Thus, some of these businesses/ competitors could be driven out of the industry and will not last long enough to enhance their product during their time in the industry.

When a business attempts to innovate its product, it will inject lots of capital and time into it, which requires severe experimentation. Constant experimentation could result in failure for the business and will also cause the business to incur significantly higher costs. Furthermore, it could take years for a business to successfully innovate a product, thus resulting in an uncertain return (Carlsson & Jacobsson, 2014).

For product innovation to occur, the business will have to change the way it runs, and this could lead to the breaking down of relationships between the business and its customers,

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suppliers and business partners (Carlsson & Jacobsson, 2014). In addition, changing too much of a business's product could lead to the business gaining a less reputable image due to a loss of credibility and consistency.

Production innovation has been investigated in accordance with a wide range of managerial phenomena, including sales of firms in the emerging countries (Li & Atuahena-Gima, 2013), continuous innovation in mature firms (Dougherty & Hardy, 2015), collaborative networks (Nieto & Santamaria, 2013), human resource systems and organizational culture (Lau and Ngo, 2014), and leadership (Gruber, 2012). Product innovation is usually the result of producing and commercialization of new goods (products or services) or with improved performance characteristics.

Product innovations assist pharmaceutical firms to distinguish themselves from their competitors, through proffering solutions to individual or national challenges. Product innovation remains one of the major roots of competitive advantage to firms (Mohd & Syamsuriana, 2013). This is because when firms engage in innovation, the quality of their goods and services is improved upon and this enhances the performance as well as the competitive advantage of the firm (Forker, 2015). As noted by Hult (2014), product innovation shields a firm from threats and competitors creates opportunity for the innovating firm to enjoy the 'first mover' advantage.

Bayus (2013) proved that product innovation had positive and significant link with organizational sales volume. Alegre (2016) opined that product innovation dimension was strongly and positively associated with firm sales volumes. Also, Espallardo and Ballester (2017) in their study affirmed that product innovation positively impacts firm sales.

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Likewise, Varis and Littunen (2010) noted that introduction of product innovation is positively associated with firm sales.

2.7.2 Process Innovation

"Process innovation means the implementation of a new or significantly improved production or delivery method (including significant changes in techniques, equipment and/or software). Minor changes or improvements, an increase in production or service capabilities through the addition of manufacturing or logistical systems which are very similar to those already in use, ceasing to use a process, simple capital replacement or extension, changes resulting purely from changes in factor prices, customization, regular seasonal and other cyclical changes, trading of new or significantly improved products are not considered innovations."

Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products (Nooteboom, 2014). Process Innovation is very essential in the manufacturing process of a firm as it gives a firm an advantage over its competitors. Interestingly, studies have revealed that process innovation is positively related to performance of firms and high sales (Mohd & Syamsuriana, 2013; Nham, 2016). Also, Anderson (2017) in his study noted that there is a relationship between new technology and high sales volume. Other evidence by Gunday (2011) reaffirmed that process innovation is significantly correlated to increased sales.

2.7.3 Marketing Innovation

Its' the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (Ndalira et al., 2013). Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales (Nooteboom, 2014).

Innovation marketing covers all innovation management activities that contribute to the promotion of the market success of new products and services. Innovation marketing thus includes a very wide range of tasks, specifically all activities that are related to customer and market orientation and that enable a successful marketing of a new product or service (Cooke, 2011).

In the front-end of the innovation process, innovation marketing contributes to the identification of future and new market opportunities and research into customer needs: Research into customer requirements in specific market segments or product categories (Johne & Davies, 2012). This is about the current needs in the course of a concrete innovation project, but also about the anticipation of future needs and, as a result, the derivation of new innovation potentials. Research into market potentials such as the attractiveness of a market, the size of a market, the potential for new products, etc.

In the course of the product development process, innovation marketing has the task of continuously involving customers and users in the process. The aim is to collect feedback from customers and the market on current developments (Johne & Davies, 2012). In the form of concept, prototype and beta tests, feedback on new products is obtained in order to

test the future acceptance of the product and to incorporate the experiences and ideas into the development process for further development (Dubois & Gadde, 2013). A major task in innovation marketing is the marketing of the new product or service, which is a continuous task and docks with the product lifecycle management.

The mere description of the task and role of innovation marketing makes it clear how important the function in the innovation process is (Dubois & Gadde, 2013). Innovation marketing plays a role in all phases and thus ensures customer and market orientation, an important lever to avoid the failure of an innovation (Cooke, 2011).

However, if innovation marketing is not enforced and pursued with priority, there are many risks and dangers that must be avoided in an innovation project. If there is a lack of information about the market, customers, users and their needs or if they are inadequate (e. g. not representative or incomplete), wrong decisions are made with regard to the product or the target market, which can drive a project in the wrong direction and, as a result, drive it to the wall (Dubois & Gadde, 2013). For example, the product is misplaced, the wrong target market is chosen or irrelevant needs are addressed.

The product does not sell. This does not necessarily mean that the product is bad. There are mediocre products that are marketed perfectly and are therefore more successful than those that are top of the line but are badly marketed (Sandvik, 2013). Marketing is therefore an important success factor, both internally and externally.

These two points make it clear that innovation marketing is an important lever for the success of innovation. Around 60 to 80 percent of new products fail and many of the reasons are based on a lack of customer orientation and marketing (Sandvik, 2013). That's why

innovation managers and project managers have to deal with innovation marketing and work closely with marketing and sales (Dubois & Gadde, 2013).

Innovation marketing works in the front end of the innovation process to explore market potentials and customer needs, gets feedback from the customer in the development process and markets the product at the back end of the process (Dubois & Gadde, 2013). Innovation marketing thus ensures that the new products and services are geared to the market and customers. This is one of the biggest success factors in innovation management to increase revenue opportunities and eliminate flops and unnecessary waste (Cooke, 2011).

Marketing innovation is carried out through marketing activities such as; pricing strategies, product package design properties, product placement and promotion activities, etc (Kepa, 2011). Studies have shown that marketing innovation positively impact sales growth of firms through the increased demand for products, which as a result, yields additional profit to innovative firms (Sandvik, 2013). Also, Otero-Neira (2017) in their study opined that market innovation positively impacts the sales of firms.

2.7.4 Organizational Innovation

Its' the implementation of a new organizational method in the firm's business practices, workplace organization or external relations (Ndalira et al., 2013). Organizational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labor productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies (Nooteboom, 2014).

Organizations in all sectors, whether commercial or noncommercial, private or public, innovate to operate efficiently and perform effectively (Edquist, 2012). Organizations introduce all types of innovations, whether technological or non-technological, product or process, radical or incremental. Innovation is not only to gain competitive advantage over rivals, it is also a means of organizational adaptation and progression (Edquist, 2012). Sustained performance or effectiveness can be gained not only by generating innovation (new to market or industry) but also by adopting innovation (new to the adopting organization). While organizations can develop competencies to generate one or few types of innovation, they can adopt all kinds of innovations along their value chain (Baldridge & Burnham, 2014).

The adaptation and progression perspective assumes that organizations innovate to respond to environmental change, renew business portfolios, and serve their customers or clients effectively in order to achieve strategic positions and boost long-term performance (Damanpour & Gopalakrishnan, 2014). It gained currency in the second half of the 20th century after the importation of system theory to organization studies (Ackoff & Emery, 2011), advancement of behavioral theory of the firm and contingency theory and the advent of the long-term planning and business strategy. Organization is defined as an open system that is composed of interdependent parts (subsystems) and is embedded in an environment with which it exchanges and interacts. The environment is also a system, albeit larger and more complex than the organization, with its own subsystems and environment. It is usually divided into two levels: general (macro) environment, and transactional (micro, operating, competitive) environment (Daft, 2016).

Changes in either environment prompt organizational actions to maintain external fit (balance with environmental components) and internal fit (harmony among internal subsystems). Effectiveness of the organization requires carrying out the systemic processes of maintaining, adapting, and progressing (Evan, 2009). Organizations can adapt to environmental changes, shifts, or jolts via developmental, transitional, or transformational change (Burke, 2012). They may even choose to preempt changes in their competitive environment by investing in the state-of-the-art technologies, processes, and services to gain competitive advantage. Independent of the type and extent of change, innovation is viewed as a means of coping with and influencing the environment.

Organizational innovation can increase the performance of firm through decreasing transaction cost and administrative cost thereby improving workplace satisfaction (Ndalira et al., 2013). Also, organizational innovation can be implemented in business practice through the application of new techniques for arranging routines and procedures for carrying out activities. It includes the introduction of new methods for the allocation of responsibilities and decision making among employees. Nham (2016) in his study revealed that organizational innovation positively affects the sales of firms. His findings showed that the higher the innovation activities of firms, the higher their sales volume. Della and Solari (2012) in their study of medium sized Milanese firms found that organizational innovation is related to high sales performance. Their work revealed firms which achieved high sales increases were those that combined investments in the new organization of work with advanced technologies.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter clarifies the study systems that were applied in the study. The procedure used to gather data to make informed conclusions is termed as methodology (Glass & Hopkins, 2014). The methodology of this study depicts the research design, the sources of information, the population, sample and sample technique, information gathering and information examination.

3.1 Research Design

A descriptive survey research plan was used for this study. Descriptive plan incorporates gathering data that depict events and further deals with outlines and presents the data collected (Glass and Hopkins, 2014). Using of this research design enabled the researcher to utilize different types of information and in addition consolidating human experience. It enabled the researcher to take a view at whatever was examined in such a significant number of different viewpoints. To be able to make substantial examination of the information gathered from the field, elucidating insights, for example, tables and frequency tables were utilized to delineate the pertinent information.

3.2 Population of the Study

Over 400 staff members of Kinapharma Ghana Ltd nationwide formed the population for this study. This populace was picked in view of the idea of work and the land area of the

researcher which took into consideration the gathering of data from many respondents to allow better analysis.

3.3 Sample Size and Sampling Technique

Practically, it would have been impossible to cover all the target population under this study due to logistical and time constraints. To overcome this problem, the convenience sampling method was used to select the Northern sector of Kinapharma Ghana Ltd out of the four available sectors of the company (i.e. Northern, Greater Accra, Eastern & Western sectors). Also, the purposive sampling procedure was utilized to select a sample size of 200 from only the Northern sector which engulfs the Ashanti, Bono, Ahafo, Upper East, Upper West, Savannah and Northern regions. The Slovin's formula (Munkail, 2004) was used to calculate the sample size as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where n=sample

N= population (400)

e=margin of error (5%= 0.05)

$$n = \frac{400}{1 + 400 \, (0.05)^2}$$

$$n = \frac{400}{2}$$

n=200

Therefore a sample size of 200 respondents was used for the study.

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3.4 Data Gathering

This section contains data on the sources of information, the sort of research instruments used to assemble the information and the technique associated with gathering the information from the respondents. The available sampling unit from which the data for this study was to be collected included four (4) different sectors in which Kinapharma Ghana Ltd has been divided into. That is, the Greater Accra sector, the Northern sector (Ashanti, Savannah, Upper East, Upper West, Bono, Ahafo and Northern regions), the eastern sector (Eastern, Volta and Oti regions) and the final sector is the Western sector (Western North, Western South and Central regions). However, to be able to gather much data from the respondents, the largest of the four sections was chosen for data collection purposes (the Ashanti sector).

3.4.1 Sources of Data Gathering

With the end goal of this study, data was assembled from two (2) central sources. These are essential (primary) data and auxiliary (secondary) data sources. Essential data were the first information that were gathered through direct endeavours particularly with the end goal of this research. The primary data were accumulated from chosen respondents through the use of questionnaire. Auxiliary data were information that had been as of now gathered for a reason that had some pertinence and utility to this study and were promptly accessible from different sources. The examination utilized auxiliary data from scholarly diaries, reference books, the web and other research works.

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3.4.2 Instrument of Data Collection

In gathering the data from the respondents a questionnaire was used for such purpose. It contained 34 items which included both close and open ended questions. The questionnaire was classified into two (2) segments. That is, segment 'A' and segment 'B.' Segment A contained data on the personal highlights of the respondents while the segment B had questions identifying with the objectives of the study.

3.4.3 Data Collection Technique

The survey questionnaires were given to staff of Kinapharma Ghana Limited who work at the sales department, marketing department, accounts section and the manufacturing unit. In the first instance, an underlying basic letter was sent to Kinapharma Ghana Ltd asking for consent to be conceded to empower the researcher gather information from their staff. This was appropriately acknowledged by the organization. The copies of the questionnaires were handed to the Area manager who offered them specifically to the members and took them back soon after they completed the process of filling. This took the researcher 2 weeks to administer. The identity of all the respondents were kept as anonymous and confidential as they wished. The researcher's mobile number was made available to some of the staff members to enable them contact me in case of any clarifications on the research instrument.

3.5 Data Analysis

The quantitative technique was employed in this study for data analysis purposes. This is about the organization and the understanding of data which is for the most part the preserve of descriptive statistical research. SPSS 16.0 was used to analyse the data collected to allow

for proper statistical analysis. The quantitative techniques employed were the multiple regression test, mean and standard deviation analysis methods. Quantitative analysis was used because it is more reliable and objective because subjectivity of researcher in methodology is less and also it uses statistics to generalize a finding (Cohen, 2012).

3.6 Reliability and Validity of Data

Reliability as indicated by Creswel (2012) is how much the information is stable and gives exact portrayal of the research outline. Validity also helps to know if the examination genuinely measures what it was proposed to gauge. At the end of the day data validity is the closest to honesty of the result of the exploration. This study accomplished validity by assessing how all the types of innovation affect sales of pharmaceutical products. With respect to reliability, an initial number of 20 individuals were picked for examining the reliability of the research instrument.

3.7 Ethical Considerations

According to Lodico, (2013) ethical issues focus on protecting the right of the research respondents. Accordingly, the following ethical issues were taken into consideration while conducting this research: An introductory letter was sent to the organizations to ask for permission to conduct the study. The purpose, potential benefits, and risks of the study, if any, were explained to the respondents. The respondents' privacy was protected through anonymity and in this study, the respondents voluntarily shared private information. With regard to this study, the researcher emphasized that all information would be treated as strictly confidential.

CHAPTER FOUR

RESULTS AND DISCUSSION OF FINDINGS

4.0 Introduction

The main objective of this investigation was to examine the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Limited. This chapter presents the analyses as well as discussions of findings of the study. The analysis is based on the objectives of the research.

4.1 Data Presentation and Analysis

4.1.1 Data Reliability

Reliability deals with how stable the information is, and to what extent does it give an exact portrayal of the research outline.

Table 4.1: Reliability Results

Cronbach Alpha	N of Items
0.88	34

Source: (Field study, 2019)

From Table 1 above, it can be seen that the reliability statistics shows an alpha of 0.88 which is higher than the acceptable reliability level of 0.7 according to Monette (2012).

4.1.2 Gender

This part has information on the demographic features on the gender of the 200 respondents who are all employees of Kinapharma Ghana Ltd.

 Table 4.2 Gender of Respondents

Variables	Frequency	Percent
Male	135	67
Female	65	33
Total	200	100

Source: Field study, 2019

The demographic information presented in Table 4.2 above illustrates that 135 of the total respondents representing 67% were males and the remaining 65 representing 33% were females. This shows that there are more male workers at Kinapharma Ghana Ltd than females.

4.1.3 Age Distribution

This area presents the age distribution of the respondents.

Table 4.3: Age of Respondents

Variables	Frequency	Percent
18-30 years	96	48
31-40 years	59	29
41-50 years	40	20
51-60 years	5	3
Total	200	100

Source: Field study, 2019

Data shown in Table 4.3 shows that 96 representing 48% were between the ages of 18-30 years, 59 representing 29% were between 31-40 years, 40 respondents representing 20% were between 41-50 years and 5 of the total respondents representing 3% were aged between 51-60 years. The data presented suggests that most of the respondents are young and vibrant workers.

4.1.4 Years of Experience

The number of years in which the respondents have worked with Kinapharma Ghana Ltd shown in the Table 4.4 as follows.

Table 4.4: Working Experience

Variables	Frequency	Percent
Less than 3 years	20	10
3-6 years	119	60
Above 6 years	61	30
Total	200	100

Source: Field study, 2019

From the analysis in Table 4.4 above, it can be observed that 20 of the total respondents representing 10% have worked for less than 3 years, 119 representing 60% have also been employees between 3-6 years and 61 respondents also representing 30% have worked for more than 6 years.

4.2 Product Innovation Strategies

This section addresses research question one.

What are the product innovation strategies used by Kinapharma Ghana Ltd?

The researcher collected data on the respondents' views of the various strategies they apply at Kinapharma Ghana Ltd. to bring about innovation in their products. The results are presented in Table 4.5 below where a mean value of 3.5 and above indicate that the respondents agreed to that statement, a mean value of 2.5 to 3.4 show a neutral response and a mean less than 2.5 tells that the respondents disagreed to that statement.

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Table 4.5: Statistics on Product Innovation Strategies

Variables	Mean	Std. Deviation
You always try to enter a new market	4.6	0.1
Creating customer value is very paramount to your company	4.5	0.1
Increasing profitability is a key strategy in your company	3.9	0.3
Your company increases market share through innovation	3.6	0.2
Your company increases market share through strengthening customer relationships	2.7	0.9

Source: Field survey, 2019

Data presented in Table 4.5 above shows the mean and standard deviation results of the product innovation strategies. Majority of the respondents agreed to the following statements that: their company always tries to enter a new market (Mean=4.6), creating customer value is very paramount to my company (Mean=4.5), increasing profitability is a key strategy in your company (Mean=3.9) and that they increases market share through innovation (Mean=3.6). The respondents were neutral on the statement that their company increases market share through strengthening customer relationships as it had a mean value of 2.7.

Majority of the respondents agreed that creating customer value is very paramount to their company because there is money for value, which means people are willing to pay for the things they see as valuable benefits as stated by Ndalira et al. (2013). Creating customer value is very crucial for company survival because customers are expecting to receive the worth of a product after using it (Nooteboom, 2014).

Again, Muhumed (2016) made an observation that when companies strengthen their innovation processes many consumers become loyal customers, which adds to the company's market share and decreases market share for the rival companies and this agrees

with the findings in this study that Kinapharma Ghana Ltd. increases market share through innovation.

Ndalira et al. (2013:14) also said that "strengthening customer relationships helps companies protect their existing market share by preventing current customers from jumping ship when a competitor rolls out a hot new offer" but the findings in this study does not confirm this as the respondents were neutral on creating market share through customer relations.

4.3 Impact of Innovation on Sales

This section addresses the research question two.

What is the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Ltd?

Multiple regression test was undertaken to discover the impact of innovation on sales at Kinapharma Ghana Ltd. Regression distinguish between the relative responsibility of every factor and decide the best indicator factors among a group of factors. Below is a summary of the regression results shown in Table 4.6.

Table 4.6: Regression Analysis

Independent (Innovation) Variables		Unstandardized Coefficients - **Sales**				
		B	Std. Error	Beta	T	Sig.
Equation 1	(Constant)	1.240	.064		12.103	.000
	Product Innovation	.831	.004	.212	9.129	.000
	Process Innovation	-.099	.012	-.184	-2.166	.002
	Marketing Innovation	.724	.003	.162	10.538	.000
	Organization Innovation	.619	.009	.118	7.162	.000

Note: ***Significant value is at 0.00
Dependent variable: Sales
Independent variables: Product, Process, Organization and Marketing innovations
Source: Field study, 2019

The statistical relationship between the independent variables (i.e. Product, Process, Marketing and Organizational innovations) and the dependent variable (Sales) are presented in the Table 4.6 above showing the coefficients of variation and the significant values for the variables tested.

The coefficients of variation for *Product Innovation* was found to be 0.831 which illustrates that the components clarify 83.1% impact of the *Product Innovation* on sales of Kinapharma Ghana Ltd. This data suggests that a better *Product Innovation* can bring about 83.1% increase in the sales of the pharmaceutical firm.

The coefficient of variation *for Process Innovation* was also found to be -0.099 which shows a -9.9% effect of *Process Innovations* on sales of Kinapharma Ghana. This data suggests the relationship between *Process Innovations* and sales is negative and hence, with a one percent increase in *Process Innovation* of Kinapharma Ghana Ltd there is going to be a corresponding 9.9% decrease in their sales.

Again, the coefficient of variation for *Marketing Innovation* was also found to be 0.724 which shows a 72.4% effect on sales of Kinapharma Ghana. This data also suggests that the relationship between *Marketing Innovation* and sales is positive and hence, with a one percent increase in *Marketing Innovation* at Kinapharma Ghana Ltd there is going to be a corresponding 72.4% increase in their sales.

Moreover, that of *Organization Innovation* was also found to be 0.619 which shows a 61.9% effect on sales of Kinapharma Ghana. This data shows that the relationship between *Organization Innovation* and sales is positive and hence, with a one percent increase in

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Organization Innovation at Kinapharma Ghana Ltd there is going to be a corresponding 61.9% increase in their sales.

The analysis above shows that three of the four independent factors tested (Product, Marketing & Organization innovations) were positively related to sales at a rate between 61% to 83%. Only *Process Innovation* was found to be negatively related to sales at Kinapharma Ghana Ltd. This indicates that there is a perfect linear relationship between overall organizational innovation and sales at Kinapharma Ghana Ltd. The level of significance of these factors' impact on Sales is discussed below.

Significance level of the effect of the independent variables on sales are presented in the Table 4.6 above. The variables are said to be significant when the (sig. value) is at the lowest of 0.00 and therefore, the higher the significant value the less significant that variable is in affecting sales. From the data presented in the Table 4.6 above, the significant values for *Product, Marketing and Organization* innovations were all found to be 0.00 which indicates that these variables have a very strong linear relationship with sales. On *Process Innovation*, the significant value was found to be 0.02 which indicates that this variable has a weaker linear relationship with sales and for that matter cannot significantly affect sales volumes at Kinapharma Ghana Ltd.

Many studies have confirmed the findings in this study. For example in 2012, Gheysari et al. studied the relationship between product innovation and sales in ten pharmaceutical firms and found out that there is a positive linear relationship between these two variables. Shabaninejad et al. (2016) also found that pharmaceutical product innovation has an impact on a firm's sales. Also, Cainelli et al. (2009) analyzed the relationship between innovation

and sales performance in Italian pharmaceutical companies. They found that innovation activities have a positive impact on sales' growth and on productivity.

4.4 Challenges in Innovation

This section addresses the research question three.

What are the major challenges encountered in innovation of products at Kinapharma Ghana Ltd?

The researcher collected data on the respondents' views of the various strategies they apply at Kinapharma Ghana Ltd. to bring about innovation in their products. The results are presented in Table 4.7 below where a mean value of 3.5 and above indicate that the respondents agreed to that statement, a mean value of 2.5 to 3.4 show a neutral response and a mean less than 2.5 tells that the respondents disagreed to that statement.

Table 4.7: Statistics on Challenges in Innovation

Variables	Mean	Std. Deviation
More production methods have to be tried	4.7	0.2
Innovation involves a lot of expensive researches	4.5	0.1
The pharmaceutical industry is too dynamic	4.5	0.4
The pharmaceutical industry is too complex	3.8	0.4
Creating new markets is tough	2.1	0.6

Source: Field survey, 2019

Table 4.7 above shows the mean and standard deviation results of the statistics on challenges in innovation. Majority of the respondents agreed that the following are the challenges they face in their innovation processes: more production methods have to be tried (Mean=4.7), innovation involves a lot of expensive researches (Mean=4.5), the pharmaceutical industry is

too dynamic (Mean=4.5) and the pharmaceutical industry is too complex (Mean=3.8). However, most of the respondents disagreed that creating new markets is tough (Mean=2.1).

Foster (2015) stated that innovation activities are very scientific, technological and financial in nature. This makes innovation more expensive especially the cost of scientific and marketing research. Rosli and Sidek (2013) reported that the average cost of bringing a new drug to the market is $1.3 billion at Haerben Pharmaceutical Company. This is very huge and goes on to confirm the findings of this study.

Most of the respondents agreed that the pharmaceutical industry is too dynamic and complex which possess a challenge to innovation at Kinapharma Ghana Ltd. this finding agrees with the finding of Nooteboom (2014) who found that pharmaceutical firms are competing in a turbulent dynamic environment characterized by constant and rapid changes in products offered on the market.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The main aim of the study was to examine the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Limited. This chapter details the summary of the key findings in this study, the conclusion and recommendations.

5.1 Summary

The study focused on finding the impact of innovation on sales at Kinapharma Ghana Ltd. the specific objectives addressed in this study include: to find out the product innovation strategies used by Kinapharma Ghana Ltd, to examine the impact of innovation on sales of pharmaceutical products at Kinapharma Ghana Ltd. and to identify the major challenges encountered in product innovation at Kinapharma Ghana Ltd.

The total population for the study constituted all staff of Kinapharma Ghana Ltd totaling over 400. The purposive sampling technique was employed to select a sample size of 200 respondents. Questionnaire was the main data collection instrument used and the data gathered were analyzed quantitatively through mean, standard deviations and Pearson correlation analysis where results were presented in the form of tables. Key findings from the study include the following;

1   The product innovation strategies used by Kinapharma Ghana Ltd. were found to include: enter a new market, creating customer value, increasing profitability and increasing market share through innovation.

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2   On the impact of innovation on sales at Kinapharma Ghana Ltd., the results showed that product, organizational and marketing innovation were positively related to sales at Kinapharma Ghana Ltd. But process innovation was found to be negatively associated to sales in this company. This indicates that there is a perfect linear relationship between overall organizational innovation and sales at Kinapharma Ghana Ltd.

3   Also, the study revealed that some of the major challenges of innovation at Kinapharma Ghana Ltd. were that: more production methods have to be tried, innovation involves a lot of expensive researches, the pharmaceutical industry is too dynamic and the pharmaceutical industry is too complex.

5.2 Conclusions

Based on the analysis of data in the previous chapter (4), the following conclusions were drawn. Firstly, it can be concluded that the product innovation strategies available at Kinapharma Ghana Ltd. are very strong and key to its marketability. A firm can build a competitive edge given its ability to design, develop and market products or services that are novel and of better quality to that of its competitors. But all depends on the product innovation strategies they employ. Thus for firms survival and growth, innovation has become a necessity for all firms including those in the pharmaceutical industry.

Also, it is concluded in this study that there is a perfect linear relationship between innovation and sales at Kinapharma Ghana Ltd. Innovation as looked in detail involve product innovation, process innovation, organizational innovation and marketing innovation. All these were tested and found to be positively related to sales.

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Moreover, Kinapharma Ghana Ltd. faces some challenges while undertaking their innovation journey and these are that: more production methods have to be tried, innovation involves a lot of expensive researches, the pharmaceutical industry is too dynamic and the pharmaceutical industry is too complex. The innovativeness of firms may be affected by both internal and external factors. External factors are basically associated with a firm's interaction with its external environment such as other firms, suppliers or buyers. However, there is more room for improvement with regards to the effective monitoring and implementation of innovation strategies to enhance the company's level of competitive advantage in the Ghanaian pharmaceutical industry.

5.3 Recommendations

The following recommendations have been provided based on the findings from this study:

Recommendations on Product Innovation Strategies

- In order to help create and manage higher customer value, Kinapharma Ghana Ltd. and other pharmaceutical companies need to pay considerable attention to customers by creating a system of continuous assessment and evaluation of customer satisfaction as well as proper accountability to customer complaints.

- Employees in the pharmaceutical firms should be encouraged to keep looking anew at the way they approach innovation. Employees must be motivated to think creatively to spring up wonderful ideas that are worth implementing to bring success. Innovative proposals offered by members should be analyzed and be practiced into the system to encourage others to take part.

Recommendations on Impact of Innovation on Sales

- The sales and marketing team at Kinapharma Ghana Ltd. need to enhance their marketing strategies to be able to sell out new products or improved products in the market to prevent fall outs on the target market.

- In addition, a sequential approach has to be followed new product development in which all necessary steps in the development process have to be carried out one after the other. These steps have to be assigned to different functional departments who work independently and are not linked to the other areas.

Recommendations on Challenges in Innovation

- For pharmaceutical firms to be able to catch up with the ever growing dynamism in the industry, managers and other necessary staff need to be well trained to gain much knowledge about product innovation most especially the early phase of the product innovation process which will provide a tool for management to understand the causes and effects in this process.

- In order to resolve the uncertainty inherent in the innovation process, new structures and processes are needed that can generate, process and transmit new ideas, knowledge and information.

5.4 Suggestions for Further Studies

There is the need to investigate the impact of innovation on the profitability of Pharmaceutical firms. The incidence of partnerships by Pharmaceutical companies in Ghana

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to bring about innovations in their products can also be looked at to determine the level of

innovation in the industry and its impact on sales.

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APPENDIX A
UNIVERSITY OF EDUCATION, WINNEBA
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI
SCHOOL OF GRADUATE STUDIES
SURVEY QUESTIONNAIRE

This questionnaire is divided into two sections, the first is the personal data and second is general questions. You are assured that whatever response given shall be treated and handled confidentially. Please write and tick (√) where appropriate.

SECTION A: DEMOGRAPHIC INFORMATION
Please tick where necessary.
1. Gender: Male [ ]   Female [ ]
2. Age: 18-30 [ ] 31-40 [ ] 41-50 [ ] 51-60 [ ]

3. How long have you been with this Institution?
Less than 3years [ ]   3 - 6years [ ]   above 6years [ ]

SECTION B: PRODUCT INNOVATION STRATEGIES
Indicate the extent to which you agree or disagree to the following statements on the 'product innovation strategies' by writing your preferred scale against each statement.

Options: 1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 - Agree5 – Strongly Agree

	ITEMS	SCALE				
		1	2	3	4	5
1.	Increasing profitability is a key strategy in your company					
2.	You always try to enter a new market					
3.	Your company increases market share through innovation					
4.	Your company increases market share through strengthening customer relationships					
5.	Creating customer value is very paramount to your company					

SECTION C: IMPACT OF INNOVATION ON SALES
Select how innovations affect sales in your institution by ticking your preferred option.
Options: 1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 - Strongly Agree 5 – Agree

(A)	PRODUCT INNOVATION					

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1.	Technical specifications are enhanced					
2	Improvement in components and materials					
3	Software are well incorporated in product designed					
4	User friendliness of product is assured					
5	Functional characteristics of products are well managed					
(B)	**PROCESS INNOVATION**					
1	Delivery method is well structured					
2	There are proper changes in processing techniques					
3	There is constant changes in equipment					
4	There is opportunity to increase product quality through process innovation					
5	The aim of process innovation is to deliver significantly improved products.					
(C)	**ORGANIZATIONAL INNOVATION**					
1	Your company insists on reducing administrative costs					
2	Transaction costs are well administered					
3	Improving workplace satisfaction is key in your company					
4	You gain access to non-tradable assets from competitors					
5	Reducing costs of supplies is your target					
(D)	**MARKETING INNOVATION**					
1	There is significant changes in product design or packaging					
2	Product placement and promotion is undertaken well in your company					
3	Pricing strategies are used to increase market share					
4	There are new positioning of your firm's product on the market					
5	You better address customer needs in the market					

SECTION E: CHALLENGES IN INNOVATION

Select the challenges you face in product innovation by ticking your preferred option

Options: 1 – Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 - Agree5 – Strongly Agree

	ITEMS	SCALE				
		1	2	3	4	5
1.	The pharmaceutical industry is too complex					
2	The pharmaceutical industry is too dynamic					
3	More production methods have to be tried					

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| 4 | Creating new markets is tough | | | | | |
| 5. | Innovation involves a lot of expensive researches | | | | | |