

**MARKET ORIENTATION AND NEW PRODUCT DEVELOPMENT BY
PHARMACEUTICAL FIRMS OPERATING IN KENYA**


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DECLARATION

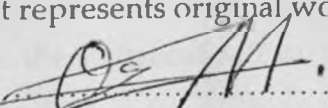
This project is my original work and has not been submitted for a degree in any other university.

Signed  Date 6th November 2009

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This project was carried out and submitted with my approval as the university supervisor. It represents original work of the candidate.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Discovering and commercialising of new drug molecules is critical for the future assets of a pharmaceutical company. However, bringing a molecule from discovery to manufacturing is a long and costly process that implicates several phases: Three development clinical test phases, Phase I to Phase III, the filing of a New Drug Application, NDA, and the final approval by governmental regulatory authorities. Thereafter, manufacturing starts and eventually a phase IV trial is conducted to further analyze side effects on larger populations, and the company finally realizes return on its investment (WHO, ASEAN TRIPS report, 2006). After having decided to launch a discovered molecule into the development pipeline, the company is able, at any moment to reevaluate the interest of ,one, Continuing the process ,two, Selling the molecule to another company and getting back the research investment ,three, Subcontracting partially or totally the remaining process to complete the research phases until NDA and Manufacturing .

Once the new product begins to be manufactured, the company has to schedule this new production and has the choice between 3 possibilities, Integrating this new production into the existing production capacities, and/or Planning to extend the production capacities to adjust it to the new requirements and/or decision to subcontract partially or in totality the production of this product. In this case, early contacts have to be taken with the partner, selected upon his capabilities, financial health, knowledge and experience according the product to be manufactured. Products originating from this route are usually "branded original" products. These products usually have World Trade Organization patent protection for periods of up to 15 years. The product is then availed globally through applications to individual country regulatory authorities which review scientific evidence of efficacy and

safety before being authorized for sale in such markets (WHO,ASEAN TRIPS report,2006).Other companies will not go through such a process. They will copy formulations of already licensed products, depending on patent protection and commercial success. Using replicated data from phase I –IV tests, they will submit their “generics” for commercialization approval by regulatory authorities who only subject such generics to quality tests (WHO,ASEAN TRIPS report,2006).

1.1.1.Market Orientation

According to Jaworski and Kohli (1996), Market orientation lies at the heart of business and management practice in today’s modern business organization. It is based in marketing theory as the operationalization of the marketing concept. Market orientation concerns learning about the market, in other words, developing an understanding of the market, and using it for marketing actions. Market orientation is conceptualized as a culture or philosophy on the one hand or a set of information processing activities on the other. Both conceptualizations are operationalised and used to investigate the relationship with business performance indicators. Most studies report a positive, and in some cases moderated, relationship between market orientation and business performance indicators for various markets (Biemans and Harmsen, 1995).The product development literature emphasizes the importance of market orientation as well. A strong market orientation makes all the difference when it comes to separating successful versus unsuccessful industrial products. Various product development studies consider market orientation a driver of product development performance and one of the controllable factors influencing new product success.

The understanding of customer needs with the purpose of supplying superior customer value is central both to market orientation (Narver, Slater, et al, 1998. Jaworski and Kohli, 1996) and to new product development (Griffin and Hauser, 1993; Zirger and Maidique 1990. Cooper and Kleinschmidt 1995; Kohli and Jaworski 1990; Biemans and Harmsen, 1995). Most definitions of market orientation include reference to both the use of market information and inter-functional coordination.

1.1.2. Product Development

Product development can be defined as the transformation of a market opportunity and a set of assumptions about product technology into a product available for sale. As shown in Table 1, there are at least four common perspectives of product design and development: marketing, organizations, engineering design, and operations management (Krishnan and Ulrich, 2001). In addition to the perspectives highlighted in this table, these dimensions often differ in the level of abstraction at which product development is studied. For instance, the organizational perspective is focused at a relatively aggregate level on the determinants of project success. On the other hand, much of the engineering and marketing literature is at a more detailed level of abstraction, with the focus being the individual product engineer or market researcher and the issues confronting them. Several publications give excellent review of the engineering design literature, marketing perspective and the operations perspective, and some of them even serve to bridge two or more perspectives.

Market oriented new product development can according to Kohli and Jaworski (1990) be defined as:

"The development of new products, which is based on the generation of market information, the dissemination of the information across departments and responsiveness of various departments to it."

In their analysis, Montoya-Weiss and Calantone (1994) conclude that a large number of studies state that, among others, factors related to market orientation determine new product performance. These factors can either be considered a part of market orientation, such as proficiency of predevelopment activities, proficiency of marketing activities, and protocol or as a consequence of having a market orientation such as product advantage. This conceptualization and operationalization of market orientation in the managerial context of critical processes is relevant for two reasons. First, when managers do not know how to operationalize market orientation in management practice, in other words, how to identify what needs to be changed, they may perceive the cost of being market-oriented as a real barrier. However, these managers fail to realize that not being market-oriented is a major cause of business failure (Biemans and Harmsen, 1995).

Second, a conceptualization and operationalization of market orientation at the level of critical processes will stimulate academic research on implementing and enhancing market orientation. In addition to not knowing what to change, managers perceive a lack of guidelines about the implementation of market orientation in their organization. In other words, they do not know how to change, among other arguments, because academic research does not provide these guidelines

1.1.3.The Pharmaceutical industry in Kenya

The trend towards globalization and the massive consolidation across the pharmaceutical sector in recent years, with minimal growth in the estimated Ksh 15 billion pharmaceutical market with over 9000 products registered to be marketed in Kenya (Kenya pharmaceutical industry overview, research and markets, report, 2008) is placing particular pressures on pharmaceutical organizations operating in Kenya to develop flexible and effective marketing systems that enable them to stay ahead of the competition. Implementing such

integration-based strategies requires significant product innovations that are capable of meeting the emerging disease and regulatory challenges of the country, such as HIV/AIDS and multi drug resistant tuberculosis, but also flexible enough to respond to both business and social environments (Kenya Pharmaceutical industry, Export processing zone, 2005). The industry has clearly three distinct types of companies; the first group is the branded original product multinationals or their subsidiaries operating in the region with headquarters in Kenya. These have large research and development bases and usually hold global patents on their products according to World Trade Organization, WTO, statutes (Kenya Pharmaceutical industry, Export processing zone, 2005).

Such firms include Boehringer Ingelheim, Bristol-Myers Squibb, GlaxoSmithKline, Merck & Company, Hoffman La Roche, Pfizer, and Abbott Laboratories and others. The second group deals in generics -functional copies of the drugs developed by the large multinationals, these generics can either be branded or non-branded such companies are principally Indian companies in origin, although not exclusively, which have recently invaded the Kenyan market with lowly priced products with less emphasis/expenditure on marketing and include Glenmark pharmaceuticals, Cipla pharmaceuticals, Cadilla pharmaceuticals, Torrent pharmaceuticals among other .

The third group, locally owned companies which are mainly retail pharmacies or start off as such and later become distribution agencies for both branded and generic pharmaceutical companies such companies include, Omaera and countrywide pharmaceuticals among others. None of the companies is involved in research and development of new compounds locally and all invariably are importers of either finished and globally branded products, all three types of companies or import bulk raw material which is then packed and branded locally -Indigenous firms and some multinationals (Kenya Pharmaceutical industry, Export processing zone, 2005). The pharmaceutical industry consists

of three segments namely the manufacturers, distributors and retailers. All these play a major role in supporting the country's health sector, which is estimated to have about 4,557 health facilities countrywide. Kenya is currently the largest producer of pharmaceutical products in the Common Market for Eastern and Southern Africa (COMESA) region, supplying about 50% of the regions' market. Out of the region's estimated of 50 recognized pharmaceutical manufacturers; approximately 30 are based in Kenya (Kenya Pharmaceutical industry, Export processing zone, 2005).

There are 210 registered wholesalers/distributors in Kenya, of which only 50 import or manufacture and market and develop products (Pharmacy and poisons board register, 2008). It is approximated that about 9,000 pharmaceutical products have been registered for sale in Kenya .These are categorized according to particular levels of outlet as freesales/OTC (Over The Counter), pharmacy technologist dispensable, or pharmacist dispensable/prescription only (Kenya Pharmaceutical industry, Export processing zone, 2005).

Kenya has in place a pharmacy and poisons board which regulates the industry. Over the last few years there have been several legislative and regulatory changes with a view to meeting the changing health care structures and healthcare delivery to the entire population, many of whom have not previously had access to services. Aspects of the new legislation include generic substitution, price control, marketing restrictions, limited drug lists, international tendering, and a fast track registration system and the introduction of parallel importing of certain drug classes. This means an effective supply of high quality drugs at the lowest possible price. The state itself purchases 50% of all drugs by volume but yields only 30% of total value as suppliers sell to the state at drastically lower prices than to the private sector (Kenya Pharmaceutical industry, Export processing zone, 2005).The

generic market is expected to grow to in excess of Ksh 5 billion by 2010 a 50% increase in value within the last 10 years. The private market is estimated at Ksh 8 billion during 2008 of which approximately Ksh 5 billion is private sector and Ksh 3 billion is in the public sector. There is a published essential drug list for primary, secondary and tertiary care by the ministry of health.

Prices are also regulated by formularies by the larger hospitals and to some extent health insurance companies, this is not popular with the industry as it somewhat is restrictive and anti-competitive (Kenya Pharmaceutical industry, Export processing zone, 2005). Healthcare is partially funded through taxation in the public and private sector and by medical insurance and individually in the private sector. Managed healthcare is gaining popularity as a means of containing costs and providing affordable quality health care for a greater number of persons (Kenya Pharmaceutical industry, Export processing zone , 2005).

Frequently top managers in pharmaceutical firms are heavily biased towards technical disciplines such as medical and biological sciences (Knight, 1986). Marketing and general management skills are often significant areas of weakness within such firms. Science based entrepreneurs tend to over-emphasize the purely scientific and technological sides of their business, the "push of the science" thereby neglecting other key strategic issues such as the demands or "pull" of the marketplace (Knight, 1986). Push in this case is the result of scientifically innovative product hunting for a use as a potential solution to a problem while markets "pull" discovery by demanding solutions to specific problems. Pharmaceutical firms, frequently rely on a product and technology focus instead of the needs of the customer. Kenyan pharmaceutical firms are often the customers, and their needs may or may not be technology derived given the cost of such technological innovations vis-à-vis the purchasing power of their markets.

1.2 Statement of the problem

In the last decade many pharmaceutical companies in Kenya have introduced new products into the Kenyan market with varying results, some have been successful yet others have not despite some of these products being blockbusters in the international markets. It is likely that the reason for failure of new products among pharmaceutical firms could be due to lack of customer focus in the development stages and even when the product is availed in the market place. For a new product that people are not aware of, it must be seen to be addressing their needs if it is to attract their attention. In this regard the customer should always be top of mind during all new product development stages from pre-marketing to marketing stages (Thomke, 2003). Conceptualizing market orientation at the level of the product development process is relevant because market orientation is a highly critical factor for new product success, Biemans and Harmsen (1995), note that having a market orientation in product development has proven to be a highly critical factor for new product success

As mentioned in the introduction, it has already been extensively shown that market orientation is positively related to firm performance (Narver, and Slater 1990, Jaworski and Kohli, 1993. Matsuno and Mentzer, 2000; Pelham, 1999). However, technological turbulence, in this case new product development, in an industry may lessen the importance of market orientation because technology provides a second avenue for firms to achieve superior performance (Kohli and Jaworski, 1990), this is especially true in the Kenyan mobile telephone industry with dominant players like Safaricom, Zain, Orange, and Yu, where new products and hence competition is technology based. There are studies that relate market orientation to product development in terms of new product success or performance (Pelham, 1999; Narver and Slater, 1990; Takayama and Watanabe, 2002; Matsumo and Mentzer, 2000; Dawes, 2000). None of these studies however specifically relate to the pharmaceutical industry furthermore no study has been carried out on the pharmaceutical

industry in Kenya on the relationship between product development and market orientation.

Only a few of the above studies conceptualize the integration of market orientation and product development. These studies can be classified using the distinction between the cognitive and behavioral perspectives of market orientation. Such studies which Interpret product development and market orientation from a resource-based perspective though allow the identification of the distinctive capabilities that constitute market-oriented product development. Such studies have been mainly limited to, theoretical concepts such as competence and capability (Han et al, 1998), describe market orientation as features of a product development team or develop market information tools and techniques with product development (Griffin and Hauser 1993; Hurley et al, 1998).

1.3 Research objectives

- i. To determine the relationship between market orientation and product development by Pharmaceutical firms in Kenya
- ii. To identify the challenges faced by Kenyan pharmaceutical firms in product development.
- iii. To determine factors other than market orientation that are important in new product development in pharmaceutical firms in Kenya

1.4 Importance of the study

The study will therefore form a basis for further research in the same area or industry. It would in particular be of significance to those who would like to pursue research on new product development and marketing innovation in the Kenyan pharmaceutical industry pinpointing their successes and weaknesses. The study will also pinpoint improvement and touch-point areas for successful product development by pharmaceutical firms in Kenya and by extension ,other industries.

CHAPTER TWO

LITERATURE REVIEW

2.1 Market orientation

Since the 1980s, market orientation pervades academic research and management Practice. It is rooted in marketing theory as the operationalization of the marketing concept. Market orientation concerns learning about the market, in other words: developing an understanding of the market, and using it for marketing actions. A marketing orientation holds that the main tasks of the organization is to determine the needs and wants of the target market and satisfy them through the design, communication, pricing and delivery of appropriate and competitively viable products and services (Kotler and Clarke, 1987). Pharmaceutical firm objectives are usually commercial, humanitarian, regulatory and sometimes social, these pose a problem for these firms, as they become marketing oriented and commit themselves to satisfying market needs and wants.

What a patient needs from a pharmaceutical company is a good quality, reasonably priced medicine and yet some of these needs may be difficult to satisfy, either because they go against the society interest or against the patients long-run interests (such as cigarette smoking), patients may also have needs that they do not recognize (need for balanced nutrition. The firm may then want to press these onto the consumer, which invariably becomes costly and thus the high cost of new product development for pharmaceutical products (Takayama and Watanabe, 2002). A marketing orientation can contribute greatly to organizations effectiveness and this would be reflected in the way it exhibits the five major attributes of market orientation (Matsumo and Mentzer, 2000).

The firm should have a customer philosophy which acknowledges the primacy of the market place and of customer needs and wants in shaping the organizations plans and operations; The firm should have an integrated marketing system with staff carrying out marketing, analysis, planning implementation and control; Management should have a system of getting adequate marketing information needed to conduct effective marketing; The firm should have a strategic orientation. Management should generate innovative strategies and plans for achieving the firm's long term objectives; and lastly the firm should be efficient in its operations, marketing activities should be selected and handled in a cost effective manner (Pelham, 1999).

To date, market orientation studies emphasize the conceptualization of market orientation and the validation of measurement scales. Market orientation is conceptualized as a culture or philosophy on the one hand or a set of information processing activities on the other. Both conceptualizations are Operationalized and used to investigate the relationship with business performance indicators. Most studies report a positive, and in some cases moderated relationship between market orientation and business performance indicators for various markets (Han et al, 1998; Hurley and Hult, 1998; Jaworski and Kohli, 1993; Narver and Slater, 1990; Pelham and Wilson, 1996; Slater and Narver, 1998).

Market orientation was defined by Narver and Slater (1990) as the competitive strategy that most efficiently generates the right kinds of behavior to create enhanced value for the consumer and therefore assures better long-term results for corporations. According to these authors, market orientation is based on orientation towards the customer, orientation towards competitors and inter-functional coordination. Kohli and Jaworski (1990) identify three structural components of market orientation, generation and analysis of all relevant information about the market; dissemination of this information among the various departments of the organization in order to coordinate and

arrange strategic planning; and implementation of strategic initiatives designed to satisfy the market. Other authors have put forward similar definitions of market orientation. For example, Biemans and Harmsen (1995) define market orientation as the intensity with which companies, obtain and use information on customers, develop strategic plans on the basis of that information, and implement these plans, thus responding to customers' wishes and needs. In reviewing this construct, Griffin and Hauser (1993) have provided a broader definition of market orientation, which he defines as a competitive strategy that involves all functional areas and levels of the organization and embraces the different market participants. These participants or market forces are the final customer, the intermediate customer (distributor), competitors and environmental factors.

To create and hold on to a competitive advantage, companies must analyze and act on every one of these market forces with proper coordination between their functions. As a result, in this theoretical framework, market orientation can be conceptualized as consisting of nine facets, analysis of the final customers, analysis of intermediate customers, distributors, analysis of the competitors, analysis of the market environment, Strategic actions on the final customers, Strategic actions on intermediate customers, distributors, Strategic actions on the competitors, Strategic actions on the market environment, and Inter-functional coordination (Ghosh, 2001).

That market orientation is conceptualized as consisting of nine facets should not be taken to imply that market orientation is a multidimensional concept. It has been shown that these facets are well accounted for by a one factor model. Therefore, these nine facets should be taken as the conceptual components of a one-dimensional construct of market orientation, and one-dimensional measure of market orientation is called for.

2.2 Product development

An organization that wishes to succeed, entrepreneurial organization, must set up systems that will lead to successful new product launches (Kotler and Clarke, 1997). This is a proper way of introducing new products that usually raises the probability of success. The steps involved in new product development include, Idea generation, Idea screening, Concept development and testing, Marketing strategy, Business analysis, Product development, Market testing and Commercialization. A product Idea is a possible product described in objective and functional terms that a firm can see itself offering to the market.

Firms may differ in their need for new product ideas though invariably such ideas emanate from either monitoring their client needs and wants through direct surveys, projective tests, focus group discussions and the letters and complaints they generate or monitoring competitors for successful new activities/products. The idea is usually produced through inspiration, serendipity, client request or formal creativity techniques (Thomke, 2003). A pharmaceutical firm has very little control over the first three processes; they can however train their executives to use certain creativity techniques, which include; Client problem analysis, which involves interviewing patients and asking the clients to identify problems they have with current products.

Product modification analysis, which involves examining the various attribute of current products and coming up with ways to modify, magnify, substitute, rearrange, reverse or combine one or more features of a product or more than one product; and finally Brainstorming, which involves a group people being given a specific problem to think and deliberate about. People are then encouraged to come up with new ideas-the wilder the better (Huston and sakkab, 2006).

The purpose of idea screening is to eliminate those that do not warrant further attention. This might result in an excellent idea being dropped or a bad idea being adopted for further development. Each idea that is developed takes substantial management time and money, it is therefore important to eliminate all but the most promising ideas. At this stage the firm should consider whether the idea meets a need, has adequate market, and has a growth potential and whether the idea is compatible with its objectives. The firm will also look at whether it has the requisite capital, necessary staff capabilities and physical facilities or if it can acquire such facilities. A strong negative answer to any of these questions should disqualify the idea. The ones, which pass then, go to the next stage of concept development (Thomke, 2003; Huston and Sakkab, 2006).

A product concept is a particular subjective consumer meaning that the firm tries to build into the product idea. This finally leads to the product image, which is the particular subjective picture that the consumers finally acquire of the product. A product idea can result in to several concepts. The various concepts generated from the product idea are then taken to consumers to get their reaction. Each concept should be presented in a manner that allows the consumer to understand it clearly and allow them to express their level of interest. At this stage it is important to understand that people do not always carry out their stated intentions (Thomke, 2003; Huston and Sakkab, 2006).

The firm should develop a preliminary strategy it will use to introduce the product to the market. Evaluation of full revenue and cost implications are done. The marketing strategy should describe the size, structure and behavior of the target market, the intended positioning of the new product in this market and the utilization and revenue goals in the first few years. Secondly the marketing strategy should outline the new products intended price, distribution strategy, promotion strategy and the marketing budget for the first year. Thirdly the marketing plan should describe the intended long run

revenue and profit goals and marketing mix strategy over time (Thomke, 2003; Huston and Sakkab, 2006). Estimates of sales revenue and costs of bringing the new product to market allow profitability projections. Usually a break-even analysis is done to determine the break even point. The expected costs are segregated into fixed costs and variable costs and break even point is calculated as

$$\text{Break even point} = \text{Fixed cost} / (\text{unit selling price} - \text{Unit variable cost})$$

This is the point where neither losses nor profits are made from the product sales (Thomke, 2003; Huston and Sakkab, 2006). The product is produced and tested in small numbers without setting up a whole new business. Usually prototypes are developed which are then put through functional and consumer tests. In market testing the product is and the marketing program are introduced into an authentic consumer setup to determine how well the product will perform before making the final decision to launch it in the market place (Thomke, 2003; Huston and Sakkab, 2006).

The previous processes should give management enough information to make a final decision on a full-scale launch of the product. In doing this the consumer adoption process should be followed as a guide and specific marketing plans set up to create awareness, interest, evaluation, trial and adoption as speedily as possible. This will be done by highlighting the products relative advantage and compatibility to what consumers are already using, explaining any complexities to allow easy informed use, encouraging trials and word of mouth description by those who have used the product to others. The product development literature emphasizes the importance of market orientation as well. In 1979, Cooper already concluded that a strong market orientation makes all the difference when it comes to separating successful versus unsuccessful industrial products.

Various product development studies consider market orientation a driver of product development performance and one of the controllable factors influencing new product success (Cooper and Klein Schmidt 1995; Montoya-Weiss and Calantone 1994). Montoya-Weiss and Calantone (1994) state that a large number of studies state that, among others, factors related to market orientation determine new product performance. These factors can either be considered a part of market orientation (such as proficiency of predevelopment activities, proficiency of marketing activities, and protocol) or as a consequence of having a market orientation, such as product advantage.

This is what is called a science push in technologically oriented companies like pharmaceutical companies. Science push results from research and scientific discovery in physics, medicine, chemistry, and biology. New product ideas can arise from science push, hunting for a use as a potential solution to a problem. Cohen and Levinthal (1989), suggest that in order for a firm to be able to exploit external technological knowledge, it needs to have the internal skills to understand this knowledge and its potential uses. This ability to exploit knowledge from external sources is called absorptive capacity (Cohen and Levinthal, 1989). At the other end of the continuum are markets that "pull" discovery by demanding solutions to specific problems.

A market-oriented firm generates intelligence on these problems and potential solutions, disseminates that intelligence inside the firm and is responsive to it in its actions (Kohli and Jaworski, 1990). Finally, innovation processes in a pharmaceutical firm combine both the market pull and science push to end up with successful solutions for markets. Although both the marketing and product development literature acknowledges the importance of having a market orientation, hardly any study reports about the conceptualization and operationalization of market orientation in the managerial context of critical processes, such as, product development.

This conceptualization and operationalization of market orientation in the managerial context of critical processes is relevant for two reasons. First, when managers do not know how to operationalize market orientation in management practice, in other words, how to identify what needs to be changed, they may perceive the cost of being market-oriented as a real barrier (Hall and Bagchi-Sen, 2002). However, these managers fail to realize that *not* being market-oriented is very costly to a business, resulting in high levels of customer complaint and expensive response mechanisms; maintaining expensive services and product attributes that are not valued by customers; holding prices too low, because customer values systems are not understood; constantly investing in promotional and selling activities to win new business to replace that lost to competitors, because they are better drivers of customer satisfaction; and lost opportunities to develop new markets from a platform of a secure customer base held in place by sustained service and quality performance (Hall and Bagchi-Sen, 2002).

Therefore market orientation remains incomplete if practitioners do not understand the *modus operandi* that gives rise to superior customer value and corporate performance. Second, a conceptualization and operationalization of market orientation at the level of critical processes will stimulate academic research on implementing and enhancing market orientation. In addition to not knowing what to change, managers perceive a series of guidelines about the implementation of market orientation in their organization. In other words, they do not know how to change, among other arguments, because academic research does not provide these guidelines (Day 1994; Narver and Slater. 1998).

2.3 Market-oriented product development

This can be described as a series of market-related information processing activities geared towards product development. Information is collected inside and outside the organization, disseminated through the organization, and used to perform various product development activities. Product development and market orientation can both be regarded as information processing activities. In other words, developing products from a market-oriented perspective consists of technical and market information processing activities (Thomke, 2003; Huston and Sakkab, 2006).

In existing research, company networks in biotechnology are typically studied from the point of view of technology related knowledge transfer, research and development, performance, and perhaps the firm's success. Networks are of specific importance in product development and market orientation in pharmaceutical firms. The network perspective is critical as many pharmaceutical firms may contribute only parts of a total product solution to end-users. For example, a small pharmaceutical firm may have an "active" therapeutic, while another firm has the appropriate delivery system for that therapeutic, and finally a third firm - usually a larger pharmaceutical company - has a distribution network for the final product. Thus, these firms form a network within which research and development and market intelligence generation and dissemination take place (Thomke, 2003; Huston and Sakkab, 2006).

This research will consider market-orientation and product development from an integrated cognitive and behavioral perspective, which views market-orientation and product development as a combination of an organizational capability and the accompanying information processing behavior directed at learning about markets and the effect of this on successfully commercializing products. This integration of cognitive and behavioral perspectives is best understood from an organizational learning point of view as is explained below.

Organizational learning can be described as a number of sequential information processing activities. An organization learns about the market through its sequential information processing activities in terms of the acquisition, distribution, interpretation and utilization of market information. This is the behavioral part of market orientation (Cohen and Levinthal, 1989). The interpretation of market information occurs through a process of sorting, classification, and simplification. This learning process generates market information and converts it into market knowledge that is part of organizational cognition. However, the way these information-processing activities are executed and the subsequent performance of products in the marketplace are determined by organizational cognitive elements as well. These cognitive elements include the individual and shared beliefs, knowledge and skills, which reside in the collective knowledge systems, such as databases, decision rules and standard operation procedures. These knowledge systems, together with existing shared mental models, function as the organization's memory (Cohen and Levinthal, 1989).

The evaluation of outcomes of the information processing activities, and reflecting on these activities, may lead to cognitive development in terms of changing existing knowledge and skills or even shared beliefs and accordingly the firm's knowledge systems, augmented memory, to improve the information processing activities, that is, behavioral development and to start a new information processing cycle. Similarly, Biemans and Harmsen (1995), although they do not see market orientation as a capability, argue that organizational learning capabilities contribute to developing a market orientation by encouraging market-oriented thinking and behavior. Thus, the cognitive and behavioral elements from market orientation are closely related through the concept of organizational learning. This organizational learning perspective can also be applied to the context of product development. In creating a new product, a firm needs to make a number of decisions. Each decision triggers an information inquiry leading to the information acquisition, distribution,

interpretation and utilization activities, according to the procedures and decision rules of existing knowledge systems and shared mental models. Through the activities mentioned earlier, a firm gathers and combines market and technical information into knowledge about product specifications, product concepts, prototypes etc. Evaluation of these activities may contribute to knowledge and skills to improve these activities or result in a search for missing knowledge to improve these activities (Cohen and Levinthal, 1989). Thus, evaluation of activities contributes to a firm's product development knowledge and skills. The research will study market-oriented product development from an integrated cognitive and behavioral perspective for two reasons. First, a full understanding of market orientation requires knowledge of both actual behavior of organizations, and the quality of this behavior.

To investigate the quality of organizational behavior we need insight in underlying beliefs, knowledge, structures and systems. Second, the integrated cognitive/behavioral perspective is necessary when the aim is to generate managerial guidelines for changing an organization's degree of market orientation. On the one hand, taking only a behavioral perspective would not suffice, because changes in behavior may occur without the corresponding development of a firm's cognitive systems. And organizational learning theory demonstrates that while cognition may influence behavior, one is not necessarily an accurate reflection of the other (Thomke, 2003). On the other hand, taking only a cognitive perspective would not suffice either, because changes in cognition may occur without the resulting changes in organizational behavior. Thus, organizational learning theory, which integrates the cognitive and behavioral perspective offers a more holistic approach to market-orientated product development and theoretically founds the organizational change point of view. While the cognitive elements embodied the organization's product development capability, in terms of knowledge, skills and systems, the behavioral elements consist of information processing activities in each stage of the product development process (Zirger and Maidique, 1990). When developing

new products, a firm may collect information about both direct and indirect customers through group discussions, customer visits, direct observation, sales meetings, market tests, customer satisfaction studies, published market research reports, line of business reports, archival information such as postmortems on previous product development projects, and the Internet. In addition to information about customers, firms also need to collect information about competitors, market trends, new technological developments, laws and governmental regulations. What type of information is collected and how it is collected depends on the stage of the development process. For example, in the idea generation stage market studies are relevant, whereas in the concept stage one needs input about customer requirements and in the testing stage; customer evaluations of developed prototypes are needed. Subsequently, the gathered market information needs to be disseminated across functions (Dawes, 2000).

Market information is disseminated through formal channels, such as written documents including memos, newsletters, customer visit reports, e-mail networks, presentations and meetings, as well as through informal channels such as informal communication networks inside the firm. The critical issue concerns the determination of the kind of information that is needed by certain functions at a particular moment in time. Depending on the stage of the development process, different functions need to be involved. When more functions are involved in gathering market information, there may be less need for dissemination. During all product development stages, the collected and disseminated market information needs to be utilized in combination with the available technical information. During the early stages, the technical and commercial feasibility need to be determined before substantial amounts of money get committed to the project. But also during later stages, market information plays an important role in decision-making about product concepts, prototypes and launch strategies (Thomke, 2003; Huston and Sakkab, 2006). These activities that are performed during each stage of the

product development process are aimed at creating market knowledge and ultimately converting this knowledge into a successful product. These market learning activities are enabled by the organizational learning capability, in other words, the execution of these activities is embodied in market information processing knowledge and skills, technical systems and managerial systems, all of which are embedded in the organization's values and norms (Thomke,2003; Huston and Sakkab,2006).

All these information-processing activities may be hindered by barriers, such as avoiding ambiguity, compartmentalized thinking, and inertia (Adams et al. 1998). These barriers influence the actual as well as the espoused way of performing these activities. In addition, the actual way of performing these activities may not necessarily coincide with the espoused way of performing, due to another type of barrier. This type of barrier is the result of the difference between organizational thinking and acting (Thomke, 2003; Huston and Sakkab, 2006). Solving both types of barriers is part of the learning process through which the market learning activities can be improved.

The following is a description of the organizational cognition elements and how the pharmaceutical firm's collection, dissemination and utilization activities are enabled by the organizational learning capability. There is also a description of how the evaluation of these activities may lead to enhanced knowledge and consequently, improved technical and managerial systems and product commercialization, in other words how market learning can be improved in order to improve market success of new products (Zirger and Maidique, 1990)

Organizational cognition consists of the shared cognitive models that can be broken down in definable organizational elements analogous to the capability concept. The cognitive part of market-oriented product development consists of specific values and norms, knowledge and skills, technical and managerial knowledge systems (Zirger and Maidique, 1990). Together they form the

organization's market learning capability. The market-oriented values and norms refer to individual and shared beliefs, which put the customer's interest first before historically rooted technical competence (Deschamps and Nayak 1995) refers to these fundamental values and norms as axiomatic knowledge, in other words "why are things done the way they are?" This knowledge is used to make sense of the product development context, such as, the served markets and the relevance of market information. In a market-oriented organization, the values and norms reflect the understanding that market information, especially customer and competitor information, is a critical input for the development process.

This understanding is reflected by the firm's product development philosophy, for example, in the pharmaceutical industry where the customer should attain good results (cure) without necessarily understanding how the drug works. This means translating scientific research experience and expertise into product characteristics. This understanding could also be demonstrated in how pharmaceutical companies treat competitor information with close analysis of competitor products and marketing processes to see how competitors deal with technical issues and how the firm can learn from them ,a practice that is also known as reverse engineering.

These values and norms support the other three dimensions of organizational cognition in the sense that they direct the content and interpretation of knowledge in these dimensions. In addition to information about customers and competitors, information about other relevant stakeholders, such as indirect customers, suppliers, government and research institutes needs to be taken into consideration (Zirger and Maidique, 1990).The existence of market-oriented values and norms in product development needs to be distinguished from the firm's product development strategy, which can be described in terms of market-pull versus technology-push (Cooper 1995). With a market-pull strategy, the market explicitly demanding specific product functions initiates

product development. Having market-oriented values and norms does not necessarily mean that one should start with explicit market demand and follow a market-pull strategy. An organization with market-oriented values and norms can also employ a technology-push strategy or a balanced combination of both market-pull and technology push. However, in the case of a technology-push strategy, being market-oriented requires investigating at an early stage of the development process whether there is sufficient market demand for the new technological functions to be developed.

Knowledge and skills in the context of market-oriented product development comprise a detailed individual and shared understanding of the kind of market information that is needed, why, when and how it should be acquired, disseminated, and combined with technical information in order to create successful new products. Day (1994) classifies this tacit knowledge into endorsed and procedural knowledge. Endorsed knowledge refers to an organizational system of policies and strategies, in other words, "the preferred way of doing things", which are the rules for acquiring, disseminating and interpreting information about markets. Procedural knowledge is represented in a task system governed by tacit rules, in other words, the routines "how things are actually done". This individual and shared understanding is analogous to managerial representations, or mental models. It refers to the potential information processing behavior, the evaluation of the information and determines the quality of the required information (Day, 1994).

This understanding concerns knowing exactly what kind of market information is needed at every stage of the development process. For example, does a pharmaceutical firm need market information at the level of the individual Customer ,doctor or patient, at the level of the market segment such as, specialist or at the level of the total market (Christensen,1997). At the level of the individual customer the firm may ask which customers might be interested in joint development projects. At the market segment level it may ask which

segments appear most promising for rapid diffusion of the new product. And at the market level, the firm may wonder about market potential and market growth. Market information does not only consist of customer information, but also of information about external factors that influence customer needs and wants. For instance, a firm may discover that their main competitors offers competitive advantage through a higher image of quality and lower prices to customers, the firm may then respond by improving their own image of quality, lowering product costs and adding a new service that competitors did not offer yet.

In addition to knowledge about the kind of market information, a market-oriented firm also needs skills to collect, disseminate and combine this information with technical information as input for making product development decisions. In the pharmaceutical markets, direct contact with customers is an important source of information. It is important therefore to, for example, define customer requirements or to evaluate new compounds (Cooper, 1995). Direct contact with customers sometimes takes the form of a structured customer visit program (Cooper, 1995).

In pharmaceutical firms, it is important to identify the business functions and individuals that are in contact with customers like pharmacists; nurses and doctors in order to co-ordinate these contacts and create consistent marketing messages. This is because co-ordination problems are bound to occur due to the large number of different persons having contact with customers. Distributing all the gathered information across all functions will easily result in information overload, and prevent the firm from tracking the main issues. The format in which the information is presented is important as well and is closely related to the use of information. In addition, cultural differences between business functions are critical and may prevent the existence of shared mental models concerning product development. Especially, the differences between Marketing and Research and Development hinder the

effective information exchange and co-ordination (Griffin and Hauser 1996). Firms can translate functional customer requirements into technical product specifications and employ cross-functional development teams ,for example, a firm may start with formulating product specifications on the basis of cross-functional meetings with customers. Based on this market information and knowledge of technological aspects, the technical specifications are drawn up and refined. In addition, market tests may be used to determine whether sufficient market demand exists for a product with these technical specifications.

The information from the first market test is described in a standard format report including recommendations and “lessons learned” about the product characteristics that are important for potential customers. Subsequently, potential customers test the developed prototype under real-life conditions (Huston and Sakkab, 2006). Based on the results of the second market test, recommendations and “lessons learned” are formulated about the prototype's functioning, the development of accompanying services and other customer expectations. Next, specific recommendations are drawn up and executed. These knowledge and skills not only reside in individual mindsets, but are also formalized in technical knowledge systems.

Technical knowledge systems constitute the formalizations of the above-mentioned endorsed knowledge and skills that enable market information processing behavior. These systems are the result of long structuring and codification processes, which visualize and de-individualize knowledge and skills, and thus put individual knowledge and skills into explicit organizational memory (Barabba, 1995). Thus, this explicit knowledge can be examined, challenged and assessed. Common explicit procedure rules, which may be formalized into manuals, are for example: starting the product development process with a brainstorm session which involves major customers and key suppliers, installing customer-involved apprenticeships, and developing and

testing prototypes with key customers. An example of information-gathering activities that are part of the technical knowledge system is the aforementioned customer visit program, which states which information is required, how it can be obtained, who is involved, and who plays what role (Cohen and Levinthal, 1989). The information dissemination activities may also be embedded in procedures, which determine the format and the receivers of the information. A firm may formulate procedures for the participation of suppliers in the development team, regular meetings with research institutes, and contacts with internal specialists, who keep track of governmental regulations. Other examples of technical knowledge systems are market information processing tools used during product development (Barabba, 1995)

Managerial knowledge systems represent formal and informal ways of controlling and creating the knowledge and skills that enable the market learning process. Knowledge controlling systems facilitate the systematic use of knowledge and skills, and the operation of technical systems. Knowledge-creating systems enable processing organizational information resulting in new knowledge and skills that may lead to modification of both technical and managerial systems. Again, actual market information processing may differ from what is espoused by the firm.

Learning about this difference between the espoused and actual way of doing things may generate knowledge about how things "should be done" in the future, in other words resolve barriers to market information processing. It may lead to a re-assessment of market information processing rules, policies and strategies and, for example in the case of an inconsistency, result in different norms and strategies, which is referred to as augmented knowledge (Barabba, 1995). The resulting new policies and strategies may reside in both technical and managerial systems. An example of a critical managerial knowledge-creating system is Total Quality Management, TQM. TQM may be used among

other things, to improve its market information processing activities. TQM consists of procedures that describe the evaluation content, the evaluation process, and the formulation of improvement projects such as to adjust the procedure for conducting market tests. Other examples of managerial knowledge-creating systems are rewarding employees on the basis of customer satisfaction, training programs, internships, and cooperation with external partners (Barabba, 1995), knowledge-controlling systems that are essential to facilitate the use of knowledge and skills, as well as the operation of technical systems to process market information, are the product development organization structure and a product development process model. The way the product development function is structured within the organization influences market information processing.

This is analogous to the notion from organizational learning theory that variables such as openness, participative and reflective, centralization and formalization influence market information processing (Jaworski and Kohli 1993). Companies could have a separate department, called product planning, that exists outside the hierarchical functional management lines of Research and Development, Marketing and Sales. This department gathers market information, uses it to develop broad insight into customer needs and wants and competitor product characteristics, and shares these insights with technical departments.

An existing organizational structure connects the various functions involved in product development, for example through a project matrix structure. This allows for the creation of a cross-functional product development team and facilitates inter-functional co-ordination during information processing activities. A product development process model or method is based on project management principles used by the firm to structure product development process activities such as the famous stage-gate model (Cooper 1983). Firms could also use a model consisting of several, parallel, development tasks,

evaluation and decision moments and responsibilities. Within this model, technical knowledge systems, such as procedures and tools are incorporated depending on the complexity of the product and the required flexibility in the development process. Such a systematic and structured approach to product development enables a firm to control development costs, product quality and time-to-market (Huston and Sakkab, 2006). A product development process model may also function as a knowledge creating system. The evaluation moments at the end of every stage, as well as the postmortem after the development project is concluded, allow for reflection on the available market knowledge, the quality of the technical knowledge systems and the quality of the process model.

A systematic evaluation of a firm's product development efforts is essential to get feedback on information processing activities (Kotler and Clarke, 1987). When the process model and the embedded technical systems are adjusted on the basis of this feedback and the improved model is applied to future product development projects, the firm increases its knowledge about how, when and why information-processing activities need to be carried out. Other examples of knowledge-controlling systems are the firm's product development strategy, and technology/product roadmaps (Hurley and Hult, 1998).

With respect to the collection of information, the managerial knowledge systems incorporate both the technical knowledge system and organizational structure. The development process model contains the information collection procedure; it is planned when the customer visit is prepared, needs to take place and when and how it is evaluated. The organizational structure, which is for example a matrix structure, facilitates determining the responsible people involved and the application of teamwork principles (Thomke, 2003). The evaluation of a customer (Huston and Sakkab, 2006), doctor, visit may show that the quality of the gathered information is insufficient. This may be caused

by the customer (doctor) being unprepared or by a flawed customer visit procedure. In the former case a new customer visit needs to be arranged. In the latter case, the procedure needs to be redesigned. With respect to collecting information pharmaceutical companies mainly use their sales representatives, this information is then usually co-coordinated through product managers and sales managers. It facilitates this co-ordination by following a procedure for customer visits, technical knowledge system and using an organizational matrix structure -managerial knowledge system, to control information processing. Information dissemination as well as information utilization procedures are established in a product development process model.

Simply having a procedure will not automatically result in dissemination of market information according to this procedure. In addition, Huston and Sakkab (2006) demonstrate that different functional areas do not always actually use information. Evaluating actual dissemination and utilization practices may be necessary and may lead to adjustment of the technical system and managerial systems. For example, in an evaluation, the above-mentioned dissemination problems with respect to the format and the receivers can be assessed, resulting in the appropriate adjustments into procedures.

These adjustments are, for example, a standard format for documents and a distribution list of persons (technical knowledge system) and incorporating prescribed distribution patterns in the product development process model, managerial knowledge system. Thus, the actual information activities are supposed to be carried out according to the procedures, technical knowledge systems, embedded in knowledge, controlling systems, translating knowledge from customers and other relevant parties into a product. Evaluation moments go/no go decisions, residing in knowledge-creating systems can be used to determine whether the available market knowledge meets the required quality standards and whether additional information needs to be gathered. These evaluation moments can also be used to determine whether existing

procedures for information collection, dissemination or utilization, technical knowledge systems, need to be adjusted or whether managerial knowledge systems need to be altered to better embed these technical knowledge systems (Huston and Sakkab, 2006). The capability and information processing activities of market-oriented product development and their relationship cannot only be applied to the individual stages of the development process, as mentioned above, but also to the development process as a holistic process. At the level of individual stages, information-processing activities are found in every stage of the process. Moreover, in every stage, the emphasis is supposed to be on combining market information with technical information.

At the level of the holistic development process, market-oriented product development can be thought of as organizational learning about markets and about developing new products (Huston and Sakkab, 2006). This learning process consists of information acquisition, distribution, interpretation, and utilization of information about previous development projects -experience and know-how, market trends and technology developments. For instance, evaluation of the product development process may bring to light that a changed competitive situation requires a faster time-to market.

This may result in the establishment of concurrent research and development, collaborative efforts with various partners and investments in information systems (Huston and Sakkab, 2006). The innovation process in pharmaceutical firms can be quite complex because basic research, product development, as well as manufacturing, distribution, and marketing of a commercial product can include several sector players. Strategic alliances and other collaborative agreements among universities, health insurance firms, and larger companies such as "big pharma" are widely used for achieving innovation (Hall and Bagchi-Sen, 2002). Innovations are sparked by scientific breakthroughs in the laboratory while those innovations that receive further developmental funding

and approval to move ahead in pharmaceutical firms are those that have a readily identifiable markets or customers.

These markets may well be other members of a “network” or research cluster to which this innovation is a component of complete product or solution. While technology firms are easily “accused” of being driven primarily by technologies and ignoring the markets, also the opposite is sometimes true. Especially in the case of larger companies, breakthrough product innovation is sometimes inhibited by a firm’s strong presence and successful marketing of existing product lines in certain market segments (Christensen, 1997). Market knowledge that is acquired through marketing the existing product only benefits or accumulates the expertise related to that very product, and makes the company blind to issues relevant for the commercialization of a potential new innovation. In this case, there is a paradox between product strength in a market and product innovation by new technology (Takayama and Watanabe, 2002).

2.4 Organizational success

Review of new product strategy and its evaluation is the last phase in product planning and management. Formulation and consideration of alternative product strategies or deciding on a change of product strategy requires an assessment of the current strategy, periodic evaluation of the current strategy is necessary to determine the success or failure of the implemented strategy. Performance evaluation should thus consist of environmental as well as internal assessment and should comprise, Establishment of environmental assumptions basic to the envisaged plan; Monitoring the environmental factors so as to detect any significant deviation; Reassessing the plans, goals and strategy if there are recognizable deviations and Initiating strategy formulation and implementation process(Huston and Sakkab, 2006),Critical factors upon which the success of organizational strategy can be evaluated include both quantitative and qualitative elements. Thus, to be objective and precise, how a

firm has performed over time and relative to its competitors can be appraised in terms of such quantitative measures as: Net profit, Market price of shares, Dividend rate, Earnings on capital employed, Return on equity, Market share, Growth in sales volume, Production cost and efficiency, Distribution costs and efficiency, Employee turnover, absenteeism and satisfaction indices (Huston and Sakkab, 2006). Success is correlated to performance measures if most of the indicators are positive. There is often a high degree of inter correlation among the performance variables, so that they may be expected to move up or down simultaneously but it may be difficult to measure success if some of the indicators are negative, others are positive and yet others are constant and in such cases one has to trade off between positive and negative indicators depending on the strategic importance of the criteria, short and long term implications and ease of computation (Huston and Sakkab, 2006).

Other measures which detail return on value added and may be used, include Value added for measurement of growth (sales revenue minus cost of raw materials and purchased parts; Return on value added (ROVA) to measure efficiency

$$\text{ROVA} = \frac{\text{profit before tax} \times 100}{\text{value added}}$$

and ROVA/ROI as a measure of asset utility

Value added is considered a superior measure as it directly measures contribution made by a firm to society. Factors that would indicate decline, hence signals for turnaround include: Declining profit margin, Declining market share, Rapidly increasing debt, Declining working capital and Increasing managerial turn over. Qualitative measures of success on the other hand would include, Internal consistency of product strategy with other company policies and the goals it is pursuing; Appropriateness of the strategy with regard to the available resources including, financial, manpower, skills and physical facilities; Consistency with the operating environment for long run success. Policies should take account of current and future environments;

Acceptability of the degree of risk involved in the strategy. This will depend on the managements preference towards risk which in turn will be dependent on the amount of resources (invested in the product strategy) whose continued existence or value is not assured, the time period in which the resources are committed connected with the difficulty of predicting long term environmental changes, and proportion of resources committed to the single venture; Appropriateness of the time horizons set for the strategy and Workability of the strategy (Huston and Sakkab, 2006).

2.5 New products and organizational performance

New products and new product innovations present opportunities for firms in terms of growth and expansion into new areas as well as allow firms to gain competitive advantage. Innovation by itself is defined as the generation, acceptance, and implementation of new ideas, processes, products or services. The new product innovation process includes the acquisition, dissemination and use of new knowledge (Kohli and Jaworski, 1990) and successful implementation of creative ideas within an organization in the development of new products (Knight, 1986). There seems to be wide agreement that firm innovativeness in product development and success are highly correlated and research have been conducted by many scholars to measure how they are linked (Hurley and Hult, 1998). Corporate entrepreneurship focuses on experimentation, involving innovativeness (e.g. in new product development), risk taking and proactiveness and can generate competitive advantage for a firm in dynamic and turbulent markets.

2.6 Market orientation and organizational performance

Several studies have found a consistent positive relationship between businesses 'degree' of Market Orientation and their economic performance (Kohli and Jaworski, 1993; Narver and Slater, 1990; Pelham and Wilson, 1996; Jaworski and Kohli, 1996; Slater and Narver, 1994) Yet, in most of these studies (Narver and Slater, 1990; Pelham and Wilson, 1996; Jaworski and

Kohli, 1996) a wide cross-section of industries was employed as target population. In so doing, the observed co-variation between market orientation and economic performance confounds within industry and between-industry market orientation variability. It is important to separate these two sources of variability since, from an applied perspective, interest lies in assessing increments in firms' economic performance due to within-industry market orientation variability.

This research shall isolate the within-industry variation by adopting a single industry –pharmaceutical, approach. This clearly prevents the generalization of the results outside the scope of the industry considered. On the other side, we can meaningfully assess the impact of unit increments in market orientation on firms' economic performance, and sound inferences can be drawn on the target population based on the representativeness of the sample used. The confounding of within-industry and between industry variations is not the only threat to the validity of inferences drawn on the relationship between market orientation and economic performance. A second threat is the noise introduced by environmental variables such as market turbulence, market growth rate, buyer and supplier power, and competitive intensity on business performance.

A standard approach to minimize this threat is to focus the research on a single market. The drawback of this approach is that we are not able to capture firms' behavior in facing increasing globalization and market integration. As a compromise between these two ends, the present study targets the Kenyan market. In this market, the key characteristics of a single market are preserved, but it is also an environment in which we can presently observe how firms struggle in meeting the challenges of internationalization and market integration. A third threat to the validity of inferences drawn on the relationship between market orientation and economic performance lies in the use of subjective measures of economic performance such as managers' evaluations of their companies' performance(Montoya-Weiss and

Calantone,1994).Positive effects of market orientation on economic performance have been reported when subjective assessments of performance are used. However, when objective measures of economic performance have been used, mixed results emerged. For instance, Pelham (1996) and Knight (1986) report a positive relationship between market orientation and objectively measured economic performance. However, Jaworski and Kohli (1993), Jaworski and Kohli (1996), and failed to find any significant relationship. Clearly, when market orientation and economic performance are concurrently assessed by the firms' managers, a perceptual bias may be introduced. A case in point, Han and Srivastava (1998) found within one single company (which has only one performance) a substantial degree of variation in subjective performance assessments.

In fact, they report a positive relationship between market orientation and judgments about the company performance within a single company. As they have pointed out that it might be that managers have a more positive view of their company's market orientation when they perceive their company to be performing well (Han and Srivastava, 1998).Hence, it is important to employ objective measures of economic performance. Market Orientation in the pharmaceutical industry is of particular interest from a service viewpoint, as it works with branded products in which service and quality, are crucial elements and yet the products have to be sold through intermediaries, doctors and pharmacists, to reach the final customer.

The competitive characteristics generated by globalization provide an additional interest in studying market orientation in this area. The pharmaceutical industry traditionally operates subject to strict regulations. Increase in competition within the sector and has provoked a major restructuring of pharmaceutical companies. The competitive climate in Kenya has also been influenced by a downside in the economic cycle and changes in consumer behavior. Kenyan customers now show greater service expectations and less

loyalty. As a result, rivalry among competitors is increasing, as is the importance of competitive strategies adapted to this sector's needs. In this background, the degree of orientation towards the customer, distributors, competition, and the general socio-economic environment is becoming an increasingly important area of study, not only for academics but for the business world as well.

2.7 Market orientation, product development and firm success

Market orientation and entrepreneurial drive in product development provides cultural foundation for organizational learning which enables an organization to achieve a higher level of performance and better customer value (Hall and Bagchi-Sen, 2002). Researchers have also concluded that organizational learning is associated with the development of new knowledge, which in turn, is crucial for firm innovativeness and firm performance (Hall and Bagchi-Sen, 2002). Significant new product innovations allow firms to establish dominant competitive positions, and afford newcomer firms an opportunity to gain an edge in the market. Such innovations are also associated with high risks and may require more firm resources. A product or a process orientation of firm innovativeness will result in success if the firm undertakes actions valued by the market (Harmsen et al, 1995).

Product oriented firms need to be competent in understanding its customers and ensure that customers recognize the production possibilities facilitated by its processes. Consumer needs and purchase interest determination may be valid for screening continuous product innovations and market orientation which may deter businesses from being interested in short term customer needs which can be detrimental to innovation and long-term success of a company. Jaworski and Kohli (1996) suggest that market orientation might be an antecedent to innovation and market - oriented organizations tend to be more innovative and successful (Hall and Bagchi-sen, 2002).

Firms have to pay more attention to the needs of customers in the prevalent business environment that is highly competitive and offer them quality products and services to satisfy their ever-rising expectations. Hence, firms need a strategy that aligns the organization with the stakeholders and a business approach with customer or market orientation. Market orientation, new product performance and firm performance are the core aspects of strategic marketing (Hall and Bagchi-Sen, 2002) together with firm innovativeness (Calantone et al, 2002). Increasing attention given to market orientation by both researchers and practitioners is based on the assumption that market orientation improves organizational performance and relies not only on the concept of competitive orientation (Thomke, 2003).

Competitive effects play an important role in the strategy of firms and in their innovation strategy and performance. As commonly reported in the literature market orientation may have a direct impact on performance and indirect effects may exist too. Research and Development, market orientation and the interaction between them drive innovation and firm innovativeness-willingness and capacity to innovate, that in turn drive customer acceptance (Harmsen et al, 1995).

2.8 Other factors which may affect product development

The pharmaceutical sector is product intensive and heavily regulated for much of its business. Blockbuster drugs can generate millions of shillings in sales but require years of effort and vast expenses in the design, approval and early marketing stages. Time to market is critical as is second-guessing what the demand and competitive landscape will look post launch. The industry has very intricate supply chains which have to handle the very different challenges of over the counter ,OTC, and prescription products as well as managing a range of other complex issues including regulatory controls, availability and often the very disruptive effects of patent expiry, the demands of branding and product marketing directly to consumer, the impact of an ageing population,

continually increasing competition and the pressure to reduce margins from the health care market are all challenges to be overcome by the modern Pharmaceutical firm operating in Kenya today. The effects of the highly volatile and uncertain environment (economic and Political) on the firm need to be qualified (Montoya-Weiss and Calantone,1994;Thomke,2003; Huston and Sakkab,2006).Other factors which affect business in general also need to be examined, these include the effects of globalization, which is currently driving the greater economic, social and political agenda in the world, Consumerism with consumers increasingly having greater access to information and consequently demanding better products and services, the rapid development in technology has influenced pharmaceutical product development the world over.

It is important to know where the pharmaceutical firms operating in Kenya are on the learning curve (Montoya-Weiss and Calantone, 1994; Thomke, 2003; Huston and Sakkab, 2006).Other influences on the global pharmaceutical market include industry harmonization of pharmacopeias, regulatory and trade practices across the world. These are factors, which drive change in global industry. There is need to know how they have influenced the pharmaceutical firms operating in Kenya

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

This study was a census survey of the pharmaceutical firms operating in Kenya with headquarters in Nairobi. The survey method was adopted as the study makes comparisons between firms regarding the impact of market orientation on success of new product development and the firm. For such a comparison to be done a wide variety of firms need to be considered. Kothari (2001) observed that the survey method is concerned with describing, recording, analyzing conditions or relationships that exist or existed or opinions that are held, processes that are going on, effects that are evident or trends that are developing and variables are selected and observed on the basis of their existence.

3.2 Population

For purposes of this study, the population of interest included all pharmaceutical companies who manufacture or import pharmaceutical products in Kenya and are based in Nairobi and are thus involved in new product development, as registered at the Pharmacy and Poisons Board (PPB) of Kenya, which maintains a register of all pharmaceutical firms allowed to operate in Kenya. According to the 2008 pharmacy and poisons board register there are 50 such pharmaceutical firms .

3.3 Data Collection

The study used both primary and secondary data. Secondary data was obtained from the pharmacy and poisons board, which keeps a record of regulated activities of pharmaceutical firm operating in Kenya, and company records of those companies involved in the study. The data was used to determine performance, specifically sales turnover, market share and profits. Primary data was used to determine the firm strategy and was obtained from persons vested with the responsibility of marketing and developing plans for

new product development. These were Chief Executive Officers, heads of marketing or holders of positions mandated to play the role and functions of marketing and new product introduction, as they would be familiar with the processes and problems their firms encounter in new product development and marketing. The study used structured and unstructured questionnaires (see appendix) to collect primary data. All the targeted respondents were in Nairobi. The questionnaire was distributed to and collected from the above senior managers using email. The questionnaire contained both open and closed-ended questions.

The questionnaire was divided into four sections as ,Section A was concerned with demographics, Section B examined the market oriented nature of respondent pharmaceutical firms, Section C examined product development by the respondent firms and the success of product development while Section D, was used to identify other factors which may influence product development in pharmaceutical firms. The questionnaire was self administered by the managers and delivered to the managers' offices or sent via electronic mail and collected later or e-mailed back by the correspondent.

3.4 Data Analysis

Data analysis involved two stages, data preparation and preliminary data analysis. The data preparation included editing, coding and data entry to ensure the accuracy of the data and its conversion from raw data to reduced and classified forms appropriate for analysis. The data was analyzed by using SPSS 10.0 statistical program due to its speed, accuracy and sophisticated capabilities. Percentages are used to show market share and growth or decline. Co-relational analysis is used in order to evaluate the relationships between product development and market orientation.

Frequency tables are used to inspect the range of responses and their repeated occurrence. Preliminary evaluation of relationships involving nominally scaled variables employed cross tabulation. The results are presented in tables to allow for statistical testing and interpretation.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter has four sections, the next section, gives a summary of the profile of the pharmaceutical companies which participated in the survey while the second section addresses the first objective of the study which is to determine the relationship between market orientation and product development by pharmaceutical firms in Kenya. Data is presented in tables on, market orientation, product development and the observed relationships under market orientation and product development. The third section is a presentation of issues identified in the study as challenges facing Kenyan pharmaceutical in product development as the second objective of the study .The fourth and last section is a presentation of data on other factors other than market orientation which respondents identified as critical to product development and addresses the third objective of the study.

The data was collected using structured questionnaires. Data on extent of market oriented practice was collected on a 5 point scale of "greatest extent", "great extent", "moderate", "little extent" and "not at all", scoring was done from 1 for "Greatest extent" to 5 for "Not at all". The analysis was then done using SPSS 10 by calculating the mean score and standard deviation for each activity. Pearson correlation coefficient was used to determine the relationship between market orientation and product development. The results are presented in tables.

4.2 Profile of Pharmaceutical Companies

The study was limited to pharmaceutical companies operating in Kenya from Nairobi. These companies would also be involved in the marketing and/or selling/distribution of pharmaceutical products in Kenya. There were 14 respondents out of an original sample population of 27 .The rest of the firms

which did not respond cited confidentiality of the information requested and unavailability of the appropriate manager to respond. The respondents were people with the responsibility of developing and executing product marketing and development strategy in Kenya. Their responses were collected through a structured questionnaire, and were considered valid for analysis. Of the companies which responded 50% were wholly locally owned and the other 50% were local subsidiaries of multinational companies. The companies had a mean number of employees of 81 and a mean annual sales turnover of Ksh 328 million. The mean duration of operations in Kenya was 38 years.

4.3 Market Orientation and Product Development

All the respondent firms had a functional marketing department with a senior manager in charge of all marketing functions including budgeting. The mean annual marketing budget was Ksh 44.5 million. With 42.9% of the firms getting marketing support on various items from outside Kenya from their foreign principals as (Table 4.3) .This kind of support allows such companies to import the know how which might be lacking from within and also spares internal resources. It is however not evident that this has aided product development in such companies.

Table 4.3. Marketing support from overseas principals

Type of Marketing Support	Frequency	Percentage
Non	8	57.1
Professional incentives, promotional materials	3	21.4
consumer research	1	7.1
Promotional materials, road shows and international conference	1	7.1
scientific information	1	7.1
Total	14	99.8%

Source: Survey Data Analysis

The analysis for the components of market orientation Tables 4.3.1 indicates that most companies carry out market oriented activities with constant

monitoring of the evolution of current and potential customer requirements being carried out to the greatest extent, with a mean of 1.4, and collection of information on how products integrate into the activities of distributors being carried out to a great extent with a mean of 2.4. Most companies however appear to only moderately encourage informal exchange of information (mean of 2.4) extensive, computer based systems which provided for systematic storage, maintenance, update and analysis of marketing data. This can be explained by the fact that pharmaceuticals are highly technical products with very specific usage by medical specialists thereby necessitating detailed information gathering to enable targeting of relevant medical professionals who use them on third parties (patients) to cure specific illnesses.

Table 4.3.1: Market orientation activities

Activity	Mean	Std.Deviation
We constantly monitor the evolution of our current and potential customers' requirements	1.4286	.51355
We permanently measure the degree of our distributor's satisfaction	1.7857	.69929
We have accurate knowledge of the problems that marketing our products may cause to our distributors	1.8571	.36314
We permanently measure our customers' degree of satisfaction	1.9286	.73005
We always have full, updated, information on the evolution of the image of our products held by our current and potential customers	2.0000	.67937
We know the factors influencing our customers' purchasing habits very well	2.0000	.55470
The company prepares contingency plans.	2.0714	.91687
We carry out strategic market planning as well as annual marketing planning.	2.0714	.82874
We monitor the evolution of our distributors' requirements	2.1429	.66299
We always have full, current, information for monitoring the image of our products as held by distributors	2.2857	.72627
We collect information necessary for detecting the appearance of new market segments (i.e., groups of customers with new requirements)	2.357	.7449
We collect information on how our products integrate into our distributors' activities	2.4286	.85163

Source: Survey Data Analysis

Table 4.3.2 shows that firms to the greatest extent have implemented gathering and dissemination of information to the extent that each person in the company feels individually committed to customer satisfaction (mean of 1.57), with major market information to the greatest extent being spread across

all the companies' functional areas with a mean of 1.8. Informal exchanges of market information between the companies different function is also encouraged to a great extent (mean of 2.4)

Table 4.3.2: Information gathering and dissemination.

Function	Mean	Std.Deviation
We have implemented actions so that each person in the company feels individually committed to customer satisfaction	1.5714	.85163
Major market information is always spread over all the company's functional areas	1.8571	.77033
We periodically organize interlunation meetings to analyze all important market information	2.0714	.61573
Marketing strategies are always drawn up in agreement with the other business functions	2.1429	1.09945
We encourage informal exchanges of information between the company's different functions	2.4286	1.28388

Source: Survey Data Analysis

Table 4.3.3 below shows the extent to which company information systems contain relevant and up-to-date marketing data. A majority of the companies ,it appears ,to a great extent maintain market information routinely on hard copy (mean of 2.4) There are companies which to a great extent have limited information which is not maintained on an ongoing basis(mean of 2.5) .The least number of companies have to a great extent extensive ,computer based systems which provide systematic storage ,maintenance, update and analysis of marketing data.

Table 4.3.3 Extent to which information system contain relevant and up-to-date marketing data.

Function	Mean	Std.Deviation
Adequate records are maintained and are maintained on a routine basis, essentially on hardcopy form	2.4	0.65
Such information is limited and is not maintained on an ongoing basis	2.5	0.94
An extensive, computer based system is provided for systematic storage, maintenance, update and analysis of marketing data.	2.7	0.99

Source: Survey Data Analysis

The survey data indicates that each company introduced an average of 13.8 new products in within the last 10 years with the mean annual distribution as shown in Table 4.3.4., with each product growing an average of 20.43% annually.

Table 4.3.4: Products introduced in last 10 years.

Year	99	00	01	02	03	04	05	06	07	08
Mean of new products	0.77	0.38	0.46	0.57	0.86	0.64	1.3	2.14	2.07	0.93
Std.Deviation	1.3	0.87	0.66	1.66	2.11	0.84	1.5	2.2	2.6	0.92

Source: Survey Data Analysis

Product development strategies pursued by the firms to maximize end-user response, from the survey, are to the greatest extent market segmentation with a mean score of 1.36, consumer research with a mean score of 1.7 and product concept development and testing with a mean score of 1.86. The use of incentives is carried out to a great extent (Table 4.3.5.)

Table 4.3.5: strategies used to maximize end-user response to products

Function	Mean	Std.Deviation
Market segmentation	1.36	0.63
Consumer research	1.7	0.99
Product concept development and testing	1.86	0.77
Use of incentives	2.0	0.78
None of the above	0.0	0.0

Source: Survey Data Analysis

Managers thought the Opinion of the consumers of their medicines to be very important (78.6%) or important (21.4%) in the product development process. New products contribute 10.35% of sales, 6.43% of sales growth, and 2.43% of market share and 10.7% of company profits. (table4.3.6). The proportion of marketing spend dedicated to product development stood at 35%

Table 4.3.6: Contribution of New Products

Contribution	% mean of contribution	Std.Deviation
Sales growth	6.43	6.6
Market share	2.43	2.3
Profits	10.7	13.28

Source: Survey Data Analysis

Table 4.3.8 shows that product development ideas were generated from, customer suggestions and interviews (42.9%), management decision (42.9%) and corporate decisions (14.3%).

Table 4.3.8: Product development idea generation

Systematic procedure	Frequency	Percentage
Customer suggestions and interviews	6	42.9
Competitor activity	0	0.0
Management decision	6	42.9
Corporate decision	2	14.3
Total	14	100.0

Source: Survey Data Analysis

further more 92.9% of respondents indicated they have a procedure for tracking and analyzing the effectiveness of product marketing activities and market penetration with regular evaluation of their current products and systematic studies of potential new products (Table 4.3.9) . The most frequently used tracking and analysis done is through, sales representative feedback and market analysis; customer feedback, statistical analysis of market trends, customer lists, market surveys, and prescription audits at pharmacies and dispensing chemists, market research with quarterly questionnaires.

Table 4.3.9. Presence of procedure for tracking, analyzing effectiveness of new product marketing and market penetration.

Procedure of tracking	Frequency	Percentage
Yes	13	92.9
No	1	7.1
Total	14	100.0

Source: Survey Data Analysis

Correlation analysis at 0.05 confidence level (2-tailed) shows a positive correlation for all companies between market orientation and new products introduced over the last 10 years with the values of the Pearson coefficient ranging from $r=0.060$ to $r=1$ (perfect correlation), as table 4.3.10 indicates. The results show that the higher the degree of market orientation, the higher the number of products introduced.

Table 4.3.10 Correlation between market orientation and new products introduced

Company	1	2	3	4	5	6	7	8	9	10	11	12	13	14
New products (last ten years)	1.5	7	7	7	7	10	10	15	15	15	15	15	30	30
Correlation of market orientation and product development	0.060	0.278	0.278	0.278	0.283	0.341	0.373	0.547	0.571	0.573	0.596	0.598	0.876	1

Source: Survey Data Analysis

4.4 Challenges faced in product development

Challenges identified as facing pharmaceutical firms in product development included, high cost of the product development process (50%), tedious and unpredictable regulatory process at the pharmacy and poisons board (100%) was sited as the main challenge by the companies, lack of qualified and experienced personnel (57%) where such personnel are available they are very expensive, some companies(29%) sited difficulty in sourcing products from other countries such as India, China, Europe and USA, the product might be available but with unsatisfactory regulatory data for Kenyan pharmacy and poisons board requirements. Product patents and trade rights (43%) and lack of a centralized source of accurate market information (57%) were also listed as challenges .

Table 4.4: Challenges faced by pharmaceutical firms in product development

Challenge	Percentage of companies
High costs of product development process.	50%
Regulatory challenges	100%
Lack of qualified/experienced personnel	57%
Product sourcing	29%
Product patents and trade rights	43%
Accurate market information	57%

Source: Survey Data Analysis

4.5 Other factors affecting New product development

Other factors identified as having an impact on product development (as a total effect on all firms/industry) include, regulatory, social, political, economic, technological factors and ethics in marketing of pharmaceutical products as shown on table 4.5.

Table 4.5: Other factors which influence product development

Factor s	Mean	Std.Deviation
Regulatory(legal) factors	1.5	0.85
Social factors	2.8	0.70
Political factors	3.1	0.73
Economic/financial factors	2.3	0.83
Technological factors	2.6	1.02
Ethics	2.4	1.3

Source: Survey Data Analysis

Regulatory factors have the greatest effect in product development and political factors have the least effect impact on product development as shown in the table.

CHAPTER FIVE

SUMMARY, DISCUSSIONS AND CONCLUSIONS

5.1 Introduction

This chapter has four sections of summary, discussions and conclusions made from the study. The first section outlines each of the three research objectives and discusses the findings. This section discusses the relationship between market orientation and product development, challenges faced in product development, and other factors, other than market orientation which may impact product development in pharmaceutical firms in Kenya. The next section is a discussion of the limitations of the study. The third section gives recommendations for further research areas on market orientation and product development. The last section of the chapter gives the implications of the research findings on policy and practice in industry.

5.2 Summary, Discussions and Conclusions

The first objective of the study was to determine the relationship between market orientation and product development by pharmaceutical firms operating in Kenya . Correlation analysis (table 4.3.10) at 0.05 confidence level (2-tailed) shows a positive correlation for all companies between market orientation and new products introduced over the last 10 years with the values of the Pearson coefficient ranging from $r=0.060$ to $r=1$ (perfect correlation).The results show that the higher the degree of market orientation, the higher the number of products introduced

The Kenyan pharmaceutical market is rapidly evolving as shown by the number of new entrants and new products introduced into the market in the last 10 years (table4.3.4).Most of these new products are sourced from outside Kenya in Europe, United States, India, China, Korea and even South Africa and Egypt (Pharmacy and poisons board, 2008). Such companies research and develop the active constituents of drugs and therefore posses the regulatory

data and information necessary for product registration and sale in Kenya. Registration and marketing in Kenya is done by their local subsidiaries or agents and such companies (principals) often provide marketing and regulatory support materially and financially (Table 4.2). The change in demographics and socio economics such as rise in poverty levels with a resultant and inevitable change of government policy towards healthcare (The Kenyan government has already allowed importation of cheaper generic products used in the management of tuberculosis, malaria and HIV/AIDS. The government is also considering provision of universal primary healthcare through the National social security fund and government hospitals and dispensaries) demands strategies which will meet these challenges.

Customers of pharmaceutical products are highly specialized medical personnel and are well informed about medicines and more demanding than before. Responsiveness to their needs and changing disease patterns globally becomes important for the success of pharmaceutical firms and calls for the introduction of new products and services together with innovation capacity for a firm. The study findings, on table 4.3.1, show that to the greatest extent firms permanently measure the degree of satisfaction of their customers (mean score of 1.9), know the factors that influence customer purchasing habits (mean score of 2.0) to a great extent and lookout for the emergence of new customer segments (mean score of 2.3) and collect information on customer perception of their products to a great extent (mean score of 2.0).

The firms also need to consider the emerging global trends in the pharmaceutical industry where mergers and acquisitions have become increasingly common resulting in faster and more innovative research in drug development (Chaturvedi and Rajan, 2000). This has resulted in cheaper but effective molecules which have increased international competitiveness of such firms (script, August 2008). These experiences can be replicated or imported into the Kenyan market. To this extent the firms have strong information

gathering and dissemination activities, spreading major market information through out all company functional areas (mean score of 1.8), using computer based information systems and encouraging both formal and informal spread of market information (Table 4.3.2 and Table 4.3.3). This has the effect of faster decision making and more efficient and effective processes (Rainer and Kazem, 1994).

Given the consistent interactions between factors of market orientation and product development, efforts of firms to enhance the collection and use of market information (Table 4.3.2 and Table 4.3.3) and implementation of market oriented strategy (table 4.3.1) is especially important to companies that want to gain competitive advantage, this is especially true given that the end user of pharmaceutical products has to go through advice from a third party, medical professional, for prescriptions and reports on benefits of the products takes longer to get back to the firm. On product idea generation (Table 4.3.6), 42% of respondent firms get new product ideas from market feedback, customer suggestions and interviews and this may allow firms to adapt successfully in the external environment which may be dynamic or stable.

The findings suggest that market orientation in pharmaceutical firms can lead to firm innovativeness and increase product development performance (Table 4.3.8). This is consistent with the findings of Baker and Sinkula (1999), as market orientation can lead to successful new product development activity. The results suggest that market orientation as a driver of pharmaceutical market information processing activity should be incorporated into conceptualizations of innovation process, since this is a continuous process dependent on the degree to which firms acquire, disseminate and respond to information obtained from customers, channels and competitors (Jaworski and Kohli, 1993).

Environmental dynamism and competition in a sub-Saharan economies force organizations to be innovative in their business development and to develop learning behavior. Managers in organizations will have to be willing to take risks, be proactive entrepreneurs and be market-oriented. This willingness is already shown by pharmaceutical firms in Kenya by the use of strategies (table 4.3.4) such as, market segmentation, consumer research product concept development and testing, and use of incentives, in trying to maximize end user response to product development initiatives. The study findings support the predicted relationships between market orientation and innovation performance. Market orientation is a source of new ideas and motivation to respond to the environment and promotes innovativeness (Hurley and Hult, 1998). Because of its external focus, market orientation is well positioned to appreciate the benefits of market driven learning and entrepreneurial values (Slater and Narver, 1998). Cultivating a market-oriented strategy may indeed, become one of the primary means to maintain competitive advantage.

The second objective of the study was to determine the challenges faced by Kenyan pharmaceutical firms in product development. The main challenges in product development cited by respondents (table 4.4) are ,regulatory (100% of firms),lack of qualified/experienced personnel (57% of firms) , high cost of product development (50% of firms),product sourcing (29% of firms) product patents and trade rights(43% of firms) and access to accurate market information(57% of firms). One of the key factors that account for the challenges, especially, the high cost and lengthy time associated pharmaceutical product development is the science. Drug development is not only science-based, but also relies on real-time advances in science to produce new products (Imran and Kasraian, 2002). Newly introduced therapies can become obsolete in such a short time that the firm may not recoup its investment. Unlike many other industries, breakthroughs in drug discoveries, although significant, tend to be only a small part of a very large picture. New research and tests provide new data that might explain why a previous

rationale didn't work or might point to a new mechanism of action that wasn't known before. Part of the difficulty with pharmaceuticals is that they are intended to solve unmet medical needs. The fact that many diseases have no known cure indicates that despite decades of scientific research and remarkable advances, we still lack understanding of the science behind many disease and treatments. For this reason, a product candidate might pass all the development stages but fail when put into the market (Sloan biotechnology industry center,2007). In addition to the uncertainty of science, other factors also affect the cost and time of drug development, which are not tied to the science at all. Instead, these factors relate to the system that guides drug development. This system includes, an extensive regulatory process, with its overarching objectives and step-by-step phases; public demands that have influenced the regulatory requirements that pharmaceutical companies must meet; The development environment that requires strong intellectual property (IP), large sums of capital and a host of organizational choices related to strategies and structures that help advance the product development process.

New drugs are regulated by the pharmacy and poisons board (PCPB) in a process which may take up to a year and limits a firm's ability to reduce product development time. The PCPB is responsible for protecting the public health by assuring the safety, efficacy, and security of drugs and biological products and helping to speed innovations that make medicines more effective, safer, and more affordable. A complete safety profile for a new product is developed only after extensive, and costly, testing. Public sentiment can also affect the cost and time it takes to put a new drug into the market. News of adverse events related to drugs has led to public outcry, increasing the pressure on PCPB to increase safety. Characteristics of the market also affect the cost and time of product development. Key characteristics include the need for strong - usually exclusive patents, sources of funding, and organizational structures that can conflict with one another. The first of these, strong patents that form the firm's Intellectual Property is critical for research based firms.

Intellectual property provides the firm with the freedom to operate while keeping others from being able to step in (trade rights). Having the freedom to operate may involve in-licensing to gain rights in specific areas, while protecting from others can involve obtaining multiple patents to keep others at bay. Patents protect the right of the firm to capture value that is derived from their science-based discoveries, but obtaining this protection through patents can be more difficult than in other industrial sectors.

Relative to other types of patents, the unique nature of pharmaceuticals and its unpredictability necessitates heightened written descriptions and more complete enabling requirements (the patent must teach those skilled in the art how to make and use the invention as broadly as claimed, without undue experimentation (Imran and Kasraian, 2002). As the firm grows and launches more products new specialized skills become required in firm. As a result new people with a range of skills needed to handle the enormous regulatory and marketing requirements. These specialist are add to the cost of the process and the more management layers formed, requires more communication, and results in more complicated decision networks - all of which can increase both the cost and time it takes to develop a new product (Sloan biotechnology center,2007).

The third and last objective of the study was to determine factors, other than market orientation, that are important in product development by pharmaceutical firms. The factors listed by respondents as important are classified as regulatory, social, political, economic/financial, technological factors and ethics. The impact of political factors on pharmaceutical product development was rated moderate (mean of 3.1) .Over the years, the industry has witnessed increased political attention due to the increased recognition of the economic importance of healthcare as a component of social welfare. Political interest has also been generated because of the increasing social and financial burden of healthcare. The pharmaceutical industry is facing

increasing political pressure to reduce prices and control costs. The government is increasing pressure on pharmaceutical firms to act in the social interest and this is likely to intensify in the future. Examples are issues around HIV/AIDS. The government's policies are becoming increasingly stringent with regards to the conduct of pharmaceutical firms.

The impact of economic factors on product development was felt to a great extent (mean of 2.3). According to the global pharmaceutical industry journal scrip of August 2003, In the last decade the pharmaceutical industry witnessed high value mergers and acquisitions. With a projected stock value growth rate of 10.5% (2003-2010) and Health Care growth rate of 12.5% (2003-2010), the audited value of the global pharmaceutical market is estimated to reach a huge 500 billion dollars by 2004. Only information technology has a higher expected growth rate of 12.6%. Majority of pharmaceutical sales originate in the US, EU and Japanese markets. Nine geographic markets account for over 80% of global pharmaceutical sales these are, US, Japan, France, Germany, UK, Italy, Canada, Brazil and Spain. Of these markets, the US is the fastest growing market and since 1995 it has accounted for close to 60% of global sales. In 2000 alone the US market grew by 16% to \$133 billion dollars making it a key

Strategic market for pharmaceuticals (scrip Aug 2003). This kind of global picture means that the multinational firms do not give Africa, with a contribution of 1% of market value, much attention in their product development efforts and as a result allocate limited resources to the region. Competitive advantage within the industry is being constantly redefined and to maintain their presence, key industry players are being forced to revamp their organizational structure, overcome huge barriers in product development, clinical trials simply to ensure continuity and maintain profitability.

The unique role pharmaceutical firms play in meeting society's need for popular wellbeing cannot be underestimated. Respondents firms indicated that social factors to a great extent (mean of 2.8) impact product development .In recent times, the impact of epidemics such as avian influenza and AIDS has also attracted popular and media attention to the industry. The effect of the intense media and political attention has resulted in increasing industry efforts to create and maintain good government-industry-society communications. The profile of the pharmaceutical consumer has changed. Consumers are now better informed and there are expectations on the industry to show that their products deliver better health and greater economic value. Also, in previously governments were either the sole or major purchasers of pharmaceutical products but the current trend shows that healthcare costs are being constantly being shifted away from the government, which acted as the traditional social purchaser, over to health insurance companies and common individuals. The increasing price sensitivity of the common consumer and financial muscle of healthcare agencies and health insurance companies is forcing firms in the industry to cut product prices thereby reducing margins. In the future, as government shifts more healthcare costs to the end consumer, consumers will increasingly pay more for access to healthcare and medicines and this will further increase their price sensitivity.

Due to a growing population on long term medication, such as diabetics, there is external pressure on the industry to reduce the price and long-term dependence on pharmaceuticals. This, in addition to the market requirement for the industry to improve current new medicines and lower product costs is increases the pressures on industry to aggressively reduce its cost base without compromising gross spend on research and development which most firms require to maintain competitiveness. A unique feature of the pharmaceutical market is that the final consumer has little or no say in the choice of medicines and treatments. Medical doctors, general practitioners and pharmacists usually act as agents of the final consumer and they are largely

responsible for the consumer's purchasing decisions. As a result of this pharmaceutical companies' direct a sizeable proportion of their marketing efforts at these agents. With the advent of the internet, consumer enlightenment has the capacity to erode the influence of the medical agents as consumers have easier access to medical information and treatments.

A modern scientific and technological advance in science is forcing industry players to adapt ever faster to the evolving environments in which they participate. Technology was rated as having a great extent of impact on product development (mean of 2.6). Scientific advancements have also increased the need for increased spending on research and development in order to encourage innovation at a global level. Over the last decade the knowledgebase of the pharmaceutical sciences has changed dramatically and continues to change at a fairly high rate. As new technologies and bodies of scientific knowledge emerge, whole new sets of opportunities and threats are being introduced. Breakthroughs in science, innovation and technology continue to create novel opportunities for new products and processes. This has increased the pace of the industry and major players must keep up with changes else become vulnerable. Over the last decade, we have seen this happen as companies that were not very effective in research and new product development were acquired

5.3. Limitations of the Study

Although the study shows a clear positive relationship between market orientation and product innovation in the pharmaceutical industry, the ability to generalize the findings of this study is limited to the sample size used in the survey. The pharmaceutical industry in 2003 had over 45 companies engaged in the importation or manufacture and distribution of pharmaceutical products. These companies are very diverse in their operations and structures. The number of respondents in this study, which was only carried out on Nairobi based firms, might not therefore represent the whole industry picture.

There is a large amount of information regarding the Kenyan pharmaceutical industry which is not published. These include market information, such as market share of various players and other market dynamics statistics. The pharmaceutical companies also do not publish records of their financial performance and consider such information highly confidential. This puts a cap on accuracy of inferences which can be made and hence the evaluation of exactly which firm is more successful than others. The unavailability of published data may also lead to future duplication of research and delays in completion of studies in this sector.

5.4 Implications for Policy and Practice

The study results suggest that pharmaceutical firms will increase their product development capacity by developing and implementing market-oriented strategies as consistent with the literature. The results suggest that a firm with a market orientation is likely to improve its product development capacity and performance. The three factors of market orientation, market intelligence generation, development of market oriented strategy and implementation of market oriented strategy are important for new product performance.

Despite the uncertainty of science, regulatory hurdles, public scrutiny, and a difficult environment, pharmaceutical firms can minimize the cost and time needed to develop new products. Specifically, the firm can adopt strategies and organizational design elements that help to minimize the cost and time needed to bring a product to market by managing the regulatory process and acquiring or developing the necessary range of skills and managing its growth in a manner that allows storage of market information and learning's. The pharmaceutical industry has done quite well historically, the study has revealed that firms are looking to position themselves strategically for the future. But as we enter a new era in the pharmaceutical industry with increased patent risks and lower marginal product returns, changing consumer

profile with a decreasing influence and a rapidly globalizing economy, pharmaceutical firms must structure their organizations to minimize structural inefficiencies and costs which is required to enable them compete better in the changing environment. Finally, the economic emergence of mass production economies like India and China into the pharmaceutical fray gives great opportunities to the local industry to reduce costs while maintaining therapeutic diversity and efficiency for various ailments through generics.

5.5 Recommendations for Future Research

Future research can be extended to include the links between market-orientation and product development by considering the impact of organizational structure; this is because of the fact that of the respondent firms, there was wide variation in management structure which in turn had an impact on the decision making process and hence product development process. A large comparative study could be undertaken to look at the impact of these factors on the product development process either individually or collectively and determining the co relationships between them.

An extension of this research would be to determine how market oriented product development affects the performance of the company by taking a broader look at company growth performance. This would include looking at growth of factors like sales, profits and margins, earnings on capital employed, return on equity, employee turnover within the Kenyan pharmaceutical industry. This could then form a basis for entrenching a market oriented approach to product development in company strategy as manager would be able to clearly see the long term impacts on their business performance.

An area of further research could be the impact of external support (support from principals of local firm) on the product development process. The study showed that up to 42.9 % of local firms get various kinds of support from their principals (table 4.3). The firms have also indicated that the challenges they face (table 4.4) include the high costs of product development, regulatory challenges, product sourcing and patents and trade rights. These are areas where the principals input are usually necessary. It would therefore be of strategic importance to the industry pharmaceutical to determine the impact of support from foreign principals on the degree of market orientation and product development in the industry.

APPENDIX
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LETTER TO RESPONDENTS

University of Nairobi,
Department of Business Administration,
School of Business,
P.O. BOX 30197,
NAIROBI.
1st April 2009

Dear Respondent,

I am a postgraduate student at the University of Nairobi, School of Business, in order to fulfill the degree requirements, I am undertaking a marketing research project on product development strategies followed by pharmaceutical companies in Kenya. The study is titled: "**Market Orientation and Product Development by Pharmaceutical firms in Kenya**".

Your organization /company, which falls within the population of interest, has been selected to form part of this study. This therefore is to kindly request you to assist me collect data by filling out the accompanying questionnaire or according me an opportunity to come and assist you fill it.

The information /data provided will be used exclusively for academic purposes. My supervisor and I assure you that the information you give will be treated in strict confidence. At no point will the name of your organization appear in the final report. A copy of the research project with suggestions, will be made available to your organization on request.

Your co-operation will be highly appreciated.

Yours faithfully,

Elloy Okoth Otieno.

MBA student

University of Nairobi

Dr Martin Ogutu

Supervisor & Senior Lecturer,

QUESTIONNAIRE

SECTION A

Demographics

1. Name of the company.....
2. Country of origin of your company.....
3. How long have you been operating in Kenya?
4. Do you (a) wholesale (b) retail (c) other (specify)
5. What products do you market in Kenya? What is the number of products in each category?
 - a) Prescription only medicines.....
 - b) Vaccines
 - c) Pharmacy only
 - d) All.....
6. What is the number of new products in category?
 - a) Prescription only medicines.....
 - b) Vaccines.....
 - c) Pharmacy only.....
 - d) All.....
7. What was your total number of employees as at the end of last year?
8. What is the relative size of your organization on the basis of the following (using the year 2008 records)?
 - a) Sales turnover.....
 - b) Number of employees.....
9. Designation of respondent.....

SECTION B

MARKET ORIENTATION

10. Do you have a marketing department?

- a) Yes
- b) No

11. What was your total pharmaceutical marketing budget in Ksh during last financial year?.....

12. Do you get any marketing support from your head office?.....
 If yes, please specify what type of support.....

13. Who prepares your marketing and promotion programs? Please give title.....

14. In your organizational structure, what is the position of the head of marketing department in relation to the other functional heads?

(Please tick)

Department	Higher	Same	Lower	Comments
Finance				
Human resource				
Information technology				
Medical /technical				
Operations/production				

15. To what extent do you target each of the following?

Tick accordingly in the appropriate column.

	Greatest extent	Great extent	moderately	Less extent	Not at all
Medical practitioners					
Government					
Non government Organizations					
Pharmacists					
Others (specify)					

16. What is the opinion of your consumers of medicines in relation to new products? Tick the appropriate option.

- a) Very important
- b) Important
- c) Less important
- d) Least important

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

17. To what extent is market oriented functions such as planning, regulatory management, marketing research, public relations, advertising, and promotions coordinated in the company? Tick as appropriate.

	Greatest extent	Great extent	Moderate	Little extent	Not at all
There is unproductive conflict among these functions					
There is effective integration, coordination and control					

18. To what extent do you carry out each of the following?

Please tick in the accordingly in the appropriate column.

	Greatest extent	Great extent	Moderate	Little extent	Not at all
We carry out strategic market planning as well as annual marketing planning.					
The company prepares contingency plans.					
We permanently measure our customers' degree of satisfaction					
We constantly monitor the evolution of our current and potential customers' requirements					
We know the factors influencing our customers' purchasing habits very well					
We collect information necessary for detecting the appearance of new market segments (i.e., groups of customers with new requirements)					
We always have full, updated, information on the evolution of the image of our products held by our current and potential customers					
We permanently measure the degree of our distributor's satisfaction					
We monitor the evolution of our distributors' requirements					
We collect information on how our products integrate into our distributors' activities					
We have accurate knowledge of the problems that marketing our products may cause to our distributors					
We always have full, current, information for monitoring the image of our products as held by distributors					

19. To what extent do you gather and disseminate Marketing information within the company?-tick as appropriate

	Greatest extent	Great extent	Moderate	Little extent	Not at all
Major market information is always spread over all the company's functional areas					
Marketing strategies are always drawn up in agreement with the other business functions					
We have implemented actions so that each person in the company feels individually committed to customer satisfaction					
We periodically organize interfunction meetings to analyze all important market information					
We encourage informal exchanges of information between the company's different functions					

20. To what extent does your company information system containing relevant and up-to-date marketing data?

	Greatest extent	Great extent	Moderate	Little extent	Not at all
Such information is limited and is not maintained on an ongoing basis					
Adequate records are maintained and are maintained on a routine basis, essentially on hardcopy form.					
An extensive, computer based system is provided for systematic storage, maintenance, update and analysis of marketing data.	75				

21. Of the following marketing activities used to maximize end- user response to your products please rank the following according to importance to your company on a scale of 1-5, where 1 is very important, 5 least important:

	Very important	Important	Slightly important	Not important	Indifferent
Market segmentation					
Consumer research					
Product concept development and testing					
Use of incentives					
None of the above					

SECTION C

NEW PRODUCT DEVELOPMENT

22. Frequency of new product introduction into the Kenyan market. (new products are considered to be improved products ,product extensions or new product lines)

a) How many products have you introduced in the last ten (10) years?

b) What is the number of the new products introduced by year?

- (i) 1999.....
- (ii) 2000.....
- (iii) 2001.....
- (iv) 2002.....
- (v) 2003.....
- (vi) 2004.....
- (vii) 2005.....
- (viii) 2006.....
- (ix) 2007.....
- (x) 2008.....

23. Of the New products listed above (22 b) please give the percentage (%) year on year growth.

24. Is there a formal systematic procedure for evaluating potential new products?

- There is no formal procedure
- A procedure exists but it does not include heavy inputs from marketing (please specify).....
- The procedure is well developed, and includes heavy input from marketing (please specify).....

25. Does your firm continually monitor and evaluate your product portfolio in order to identify potential new products to offer and current new products to curtail or drop?

- The company does not evaluate the marketing viability of its various products
- The company occasionally evaluates its current products and studies potential new products
- The company regularly evaluates its current products and systematically studies potential new products

26. What among the following influenced your decision to introduce and choice of new products?

- Customer suggestions and interviews
- Competitor activity
- Management decision
- Corporate decision
- Other (specify)

27. What percentage did new product profile contribute to your total sales in the financial years listed above?

Year	99	00	01	02	03	04	05	06	07	08
contribution										

a) What is the desired contribution of new products to the following?

- (i) Sales growth
- (ii) Market share
- (iii) Profits

28. What percentage of the marketing budget is dedicated to new products?.....

29. Does your firm have a procedure of tracking and analyzing the effectiveness of new product marketing activities and market penetration?.....

If yes, please specify

30. Please list challenges faced by your organization during product development.

1).....

2).....

3).....

SECTION D

OTHER FACTORS AFFECTING PRODUCT DEVELOPMENT

31. To what extent do the following factors influence new product development by your company? Tick as appropriate and briefly explain

	Greatest extent	Great extent	Moderate	Little extent	Not at all
Regulatory(legal) factors					
Social factors					
Political factors					
Economic/financial factors					
Technological factors					
Ethics					

TABLE 1

ORGANIZATIONAL PERSPECTIVES OF PRODUCT DEVELOPMENT

	Marketing	Organizations	Engineering design	Operations management
Perspective on product	A product is a bundle of attributes	A product is an artifact resulting from an organizational process	A product is a complex assembly of interacting components	A product is a sequence of development and/or production process steps
Typical performance metrics	Fit with market; market share; consumer utility; profits	Project success	Form and function; Technical performance; innovativeness; Direct costs	Efficiency; total cost; service level; lead time; capacity utilization
Dominant representational paradigm	Customer utility as a function of product attributes.	No dominant paradigm. Organizational network sometimes used	Geometric models Parametric models of technical performance	Process flow diagrams. Parametric models of process performance
Example decision variables	Product attribute levels; price	Product development team structure; Incentives	Product size, shape, configuration, function, dimensions.	Development process sequence and schedule point of differentiation in production process
Critical success factors	Product positioning and pricing ; Collecting and meeting customer needs	Organizational alignment; team characteristics	Creative concept and configuration; performance optimization	Supplier and material selection. Design of production sequence. Project management

Adapted from Krishnan.V and Ulrich K.T., Product Development Decisions: A Review of the Literature, *Management Science*/Vol. 47, No. 1, January 2001

LIST OF COMPANIES AND LOCATIONS

Alpha Medical Manufacturers Nairobi
Aventis Pasteur SA East Africa Nairobi
Bayer East Africa Limited Nairobi
Beta Healthcare (Shelys Pharmaceuticals) Nairobi
C Mehta and Co Ltd
Cadilla Pharmaceuticals
Cosmos Limited Nairobi
Dawa Pharmaceuticals Limited Nairobi
Didy Pharmaceutical Nairobi
Eli-Lilly (Suisse) SA Nairobi
Elys Chemical Industries Ltd Nairobi
Europa Pharmaceuticals
Glaxo SmithKline Nairobi
High Chem East Africa Ltd Nairobi
Ivee Aqua EPZ Limited Athi River
Kulal pharmaceuticals Ltd
Lords Healthcare Nairobi
HML ltd
Mac's Pharmaceutical Ltd Nairobi
Madawa pharmaceuticals Ltd
Manhar Brothers (Kenya) Ltd Nairobi
Novartis Rhone Poulenc Ltd Nairobi
Novelty Manufacturers Ltd Nairobi
Omaera Pharmaceuticals
Pfizer Corp (Agency) Nairobi
Pharmaceutical Manufacturing Co (K) Ltd Nairobi
Pharmaceutical Products Limited Nairobi
Phillips Pharmaceuticals Limited Nairobi
Regal Pharmaceutical Ltd Nairobi
Sunpar Pharmaceuticals
Universal Pharmaceutical Limited Nairobi

Source: Pharmacy and poisons board register 2008.