

**THE IMPACT OF COMPETITION ON THE PRODUCT-MARKET STRATEGIES OF
ENTITIES IN THE PHARMACEUTICAL INDUSTRY**

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KEYWORDS

Ansoff's matrix

Competition

Pharmaceutical industry

Porter's five forces

Product-market strategies

Ratio analysis

SLEUTELTERME

Ansoff se matriks

Kompetisie

Farmaseutiese industrie

Porter se vyf kragte

Produk-markstrategieë

Verhoudingsanalise

OPSOMMING

Daar bestaan min twyfel dat die kompetisie in die farmaseutiese industrie beduidend toegeneem het oor die afgelope paar jaar. Groei in die farmaseutiese industrie in Suid-Afrika is in onlangse jare negatief beïnvloed deur die verhoogde kompetisie vanaf vervaardigers van generiese geneesmiddels. Sodra 'n geneesmiddel se patentreg verval, is mededingers reeds gereed met 'n generiese ekwivalent – wat 'n prysdaling tot gevolg het. Farmaseutiese maatskappye word dus gedwing om hul bestaande strategieë deurentyd te evalueer ten einde te verseker dat hulle finansiële prestasie op die gewenste vlakke bly.

Hierdie studie het ten doel om te bepaal hoeveel waarde die farmaseutiese industrie aan kompetisie heg tydens die strategieformuleringsproses. Die studie sal ook poog om aan te toon hoe entiteite hul produk-markstrategieë, soos geïdentifiseer deur Ansoff, oor die afgelope vyf jaar aangepas het. As 'n sekondêre doelwit beoog hierdie navorsing om te bepaal of die vlak van kompetisie in die industrie 'n negatiewe uitwerking gehad het op die finansiële prestasie van entiteite wat binne-in hierdie industrie kompeteer.

Entiteite in die farmaseutiese industrie beskou die vlakke van kompetisie as baie hoog, gevolglik is dit een van die primêre faktore wat deur hulle in ag geneem word wanneer hulle besluit watter produk-markstrategie om te volg. As gevolg hiervan het die produk-markstrategieë wat deur entiteite in die farmaseutiese industrie gevolg word, oor die afgelope vyf jaar wesenlik verander. Geen strategie is egter oorheersend nie.

Gedurende die afgelope vyf jaar het die meerderheid van die entiteite in die farmaseutiese industrie 'n verbeterde winsgewendheidsposisie, risiko- en kontantvloeverhoudings, sowel as 'n toename in omset, netto wins en netto batewaarde getoon. Hierdie verbetering in die finansiële prestasie is ten spyte van die toename in kompetisie. Die gevolgtrekking kan dus gemaak word dat die vlak van kompetisie in die farmaseutiese industrie nie direk weerspieël word in die algehele finansiële prestasie van maatskappye in die industrie nie.

ABSTRACT

There can be little doubt that competition in the pharmaceutical industry has increased considerably over the past few years. Growth in the pharmaceutical industry in South Africa has been affected adversely in recent years by the increased competition from generic drug manufacturers. As soon as a drug comes off patent, competitors are ready with generic copies, resulting in price drops. Pharmaceutical companies are therefore forced to continually evaluate their existing strategies, to ensure that their financial performance remains at the desired level.

This study aims to determine the importance that entities in the pharmaceutical industry attach to competition during the strategy-formulation process. The study will also attempt to provide an understanding of how entities have adapted their product-market strategies, as identified by Ansoff, over the past five years. As an ancillary objective, this research aims to determine whether the level of competition in the industry has adversely affected the financial performance of the entities competing within the industry.

Entities within the pharmaceutical industry consider the level of competition in the industry to be very high, and, accordingly, it is one of the major factors that they consider when determining which product-market strategy to adopt. Because of this, the product-market strategies adopted by entities in the pharmaceutical industry have changed substantially over the past five years. No strategy is, however, dominant.

Over the past five years, most of the entities in the pharmaceutical industry have displayed improved profitability, risk and cash flow-ratios, as well as growth in revenue, net profit and net asset value. This improvement in financial performance is despite an increased level of competition. It can therefore be concluded that the level of competition in the pharmaceutical industry is not reflected directly in the overall financial performance of companies in the industry.

CHAPTER 1

BACKGROUND, PURPOSE, SCOPE AND METHOD OF STUDY

1.1. Background and introduction

There can be little doubt that competition in the pharmaceutical industry has increased considerably over the past few years. Growth in the pharmaceutical industry in South Africa has been affected adversely in recent years by the increased competition from generic drug manufacturers (Wesgro, 2000). According to Schroff (2002), generic competition is viewed by marketers as a death knell for brand name products. As soon as a drug comes off patent, competitors are ready with generic copies, resulting in price drops (Jonash, 2000). Pharmaceutical companies are therefore forced to continually evaluate their existing strategies in order to ensure that their financial performance remains at the desired level.

An essential element of success in the pharmaceutical industry is the ability to compete globally (Dorris, 2003). The market is transforming, with an influx of more companies and products, which calls for long-term strategic initiatives in order to compete (Anon., 2002a).

Competition in any industry is not stagnant and rests on the search for strategic differences, as well as innovation (Porter, 1998). Companies should therefore adopt a suitable product-market strategy that will provide them with a long-term competitive advantage that remains in place long after a product's patent has expired. Smith (2003) defines intended competitive advantage as effective strategies that direct the allocation of resources across internal functions by making explicit the nature of intended competitive advantage. From this definition, Smith (2003) further defines effective strategies as those that minimize the effects of competition in the market place.

Ansoff (1968:99) developed a matrix that aims to demonstrate the choices of product-market strategies available to a firm. A summary of the choices is as follows:

1. **Market penetration strategies** – the main objective of this strategy is to increase sales in the firm's present line of business.
2. **Product development strategies** – this strategy involves extending the product range available to the firm's existing markets.
3. **Market development strategies** – this involves the firm developing by finding another segment of

buyers for existing products.

4. **Diversification strategies** – here the firm becomes involved in an entirely new industry, or in a different stage in the value chain of its present industry.

Entities in the pharmaceutical industry should therefore make a choice - do they change their product-market strategy, or maintain the status quo and stick to “old faithful”. The question then remains, how these decisions manifest themselves in the company’s performance indicators over a period of a few years.

1.2. Problem statement and motivation

1.2.1. Motivation

As a result of the changing competitive environment of the 21st century the emerging paradigm of competition emphasizes the following (Kotzé, 2002):

1. **Value.** Customers are demanding better quality at lower prices. Generic products satisfy this consumer need by providing a substitute product at a much-reduced price.
2. **Time and mobility.** Shorter design and product life cycles are emphasized. At the turn of the millennium, the average lifespan of a patent was 17 – 25 years, after which that knowledge could be used to develop a generic equivalent (Institute for Global Dialogue, 2000). However, according to Tren (2004), testing of the drug molecule, product development and clinical trials can take up to 14 years. Once this has been completed, there is still the lengthy registration process and permission has to be obtained for the drug to be marketed. Bath (2002) further emphasizes this lengthy process by stating that approximately 7 out of 17 years of patent protection are spent researching and developing a potential drug. This means that a patented drug may only have a sales life of six to ten years to recoup the extensive costs of research and development and provide its owner with a sufficient return. If a change in strategy can reduce the time that it takes to get a drug on the shelf, ready for sale, the result should be increased profits through a greater sales life.
3. **Knowledge and intellectual capital.** Meridian Healthcare (2002) documents how important knowledge management is in today’s information society. Knowledge is critical to the competitiveness and long-term success of any entity, and the pharmaceutical industry is no exception. If management can manage these intangible assets effectively and efficiently, a distinct advantage over

the entities' competitors could be attained.

4. **Flexibility.** The competitive world of today requires an entity to be able to switch strategic focus relatively rapidly with minimal consumption of resources.
5. **Innovation.** Companies need to continuously find innovative ways to improve products and services, operations and processes, in order to sustain their competitiveness.
6. **Business size.** Size is not all-important any more – instead, the focus is on speed and innovation. One such strategy has been adopted by a company that, rather than produce drugs that have potential markets of millions of people, specializes in high-end, expensive drug products that treat a few patients with rare diseases (Watson, 2003).

According to Kotzé (2002), the ultimate aim of an effectively formulated and implemented business strategy should be to obtain a sustainable competitive advantage. A typical business strategy formulation process links relevant internal factors (strengths, weaknesses, executive ambitions, values and objectives) with relevant external factors (opportunities, threats, macro-environmental trends, industry-driving forces and anticipated competitive actions) and the relevant entity aims to balance its strategy to combat all of the identified factors. Against the changing competitive environment, Kotzé (2002) identifies three major shortcomings of this process:

1. There is not nearly enough emphasis on the importance and management of intellectual capital.
2. A passive approach to strategy formulation is being followed, rather than a more aggressive, dynamic tactic.
3. The focus of the strategy-formulation process is on niche markets and cost leadership differentiation, which do not lead to sustainable competitive advantage within the new competitive paradigm.

In research conducted among South African companies in 1999, senior executives indicated that “information on competitors’ strategies” was the most important category of competitive intelligence required (Neuland *et al.*, 2002:30). The reason for this appears to be that companies will adapt their own strategy in order to gain competitive advantage, once they know the strategy that their competitors are embarking on.

1.2.2. Problem statement

From the aforementioned motivation one can conclude that the areas of emphasis that companies should

focus on in the 21st century have been affected by the emerging model of competition. Weaknesses in the traditional strategy processes have led to the need to adopt an increasingly aggressive approach to strategy formulation in order to attain and maintain a sustainable competitive advantage. There should therefore be a clear adaptation of pharmaceutical entities' strategies (as a result of this increase in competition). Every business has a need to develop a winning strategy to achieve a competitive advantage, as well as the ability to execute that strategy – and fast (Mariotti, 1999).

The research problem can therefore be formulated as follows:

Has competition in the pharmaceutical industry had an impact on the product-market strategies adopted by entities in the industry over the past five years, and has it subsequently had an effect on the financial performance of the companies?

1.3. Hypothesis

The following hypothesis is presented:

Pharmaceutical entities consider competition to be an important factor in strategy-formulation and, due to the increase in competition in the industry, have adapted their product-market strategies considerably over the past five years. As a result, the level of competition in the pharmaceutical industry had a negative impact on the financial performance of the entities

1.4. Aim of study

This study aims to determine the importance entities in the pharmaceutical industry attach to competition during the strategy-formulation process. The study will also attempt to provide an understanding of how entities have adapted their product-market strategies, as identified by Ansoff (1968:99), over the past five years. As an ancillary objective, this research aims to determine whether the level of competition in the industry has adversely affected the financial performance of the entities competing within the industry.

The *general aim* of this study is therefore:

1. To evaluate the impact of the changing competitive environment on the different strategies adopted by entities within the pharmaceutical industry.

The *specific objectives* that have been developed to achieve this aim are:

1. To evaluate the sources of competition within the industry, using published literature sources as reference.
2. To define and evaluate the various product-market strategies that can be adopted by entities, using the 2X2 matrix developed by H.I. Ansoff in 1965 as the primary foundation.
3. To expand Ansoff's matrix into a 3X3 matrix, so as to take into account the changing competitive environment since the matrix was originally developed.
4. To discuss the basic financial performance indicators that will be used to evaluate the effect of competition on entities' financial performance.
5. To determine how entities in the pharmaceutical industry rate the level of competition, as well as the change in their view over the past five years. The competitive forces will also be identified. This information will be obtained by means of empirical research.
6. To identify the most common strategies adopted by entities in the pharmaceutical industry, with reference to the product-market strategies incorporated into the 3X3 matrix derived from Ansoff's matrix. The results of the empirical research will be used to identify these strategies.
7. To evaluate whether competition has had a negative impact on the financial performance of the industry players. This will be done by means of an evaluation of the movement in basic financial ratios over the past five years and these movements will be obtained through empirical research.
8. To determine whether a recommendation can be made regarding the strategic option to follow in a competitive environment. This will be determined based on the results of the empirical research.

1.5. Scope of study

The pharmaceutical industry will be investigated in this study. Entities within the pharmaceutical industry include entities that manufacture their own drugs and those that outsource certain of their manufacturing processes. A company whose main business objective is the manufacture and sale of generic drugs falls outside the scope of this study. Entities that have as their main business objective the manufacture and sale of medical and pharmaceutical supplies also fall outside the scope of the study, as do manufacturers of homeopathic drugs.

The decision to focus on the pharmaceutical industry is based on the following:

1. Competition is rife in this industry, particularly as patent protection expires and generic products are introduced into the market (Johnsen, 2003).
2. The entry of new competitors and products into the market forces entities to re-evaluate their current product-market strategies (Gwin, 2001).
3. Globally, the pharmaceutical industry is one of the largest and most competitive (Lok, 2004).

1.6. Research method

The following methods will be used in the study:

1.6.1 Literature study

A sufficient theoretical background to the concepts of “product-market strategies” and “competition” will be obtained. A basic understanding of financial performance indicators will also be obtained, in order to facilitate the evaluation of the change in performance over the past five years. Use will be made of relevant literature, which includes books, articles and other publications.

1.6.2 Empirical research

After the theoretical aspects of the study have been discussed, a questionnaire will be developed and sent to a sample of employees holding management positions within pharmaceutical companies in South Africa. In this way, empirical data can be obtained regarding the actual strategies employed and the impact of competition thereon.

- **Design:** The design is in the form of a sample.
- **Research group:** The group included in the sample are all entities that are involved in the manufacture of patented drugs for human use. A sample of 24 (85,7% of the population of 28) was selected by way of convenience sampling.
- **Measurement:** A questionnaire was distributed by e-mail to candidates who were willing to participate in the survey.
- **Procedure:** A survey procedure is used in this study.

- **Data processing:** The data on the questionnaire was summarized on an Excel spreadsheet that was processed and analysed in a process of statistical consultation. The data was further processed using Excel spreadsheets in order to obtain graphical information. The processed data will be used to arrive at conclusions and make recommendations in line with the theoretical framework.

1.7. Summary of important terminology

The following are some of the important terms used in the text:

1.7.1 Competition

Competition can be described as overpowering other parties in conflict and promoting one's own concerns in order to get ahead (Wagner & Hollenbeck, 2002:326). It represents an active rivalry among entities in which the strongest players prosper (Park, 1998) and vie to win a larger share of the market (Collin, 2003:34).

1.7.2 Corpreneurship

Corpreneurship is a term coined by Harper (1992) and describes a type of growth strategy adopted by a firm which involves moving into areas where there are opportunities, regardless of where the firm has been before (Harper, 1992). This means creating corporate ventures to capitalize on emerging market opportunities and to develop new technologies (Harper, 1992).

1.7.3 Generic drugs

Generic drugs are drugs that contain the same active ingredient as a brand-name (patented) drug and that enter the market after the patent on the brand-name drug has expired (Congressional Budget Office, 1998). These drugs also generally cost substantially less than the original patented drug (Kirsche, 2004). According to Shim *et al.* (1998:137), a generic refers to a product that is not categorized according to its brand name.

1.7.4 Patented drugs

A patented drug relates to a new drug that carries intellectual property rights, which grant the holder of the patent a temporary, exclusive right of use of the drug (Moroccan Office for Industrial and Commercial Property, 2003). Ammer and Ammer (1977:339) define a patented drug as one that, through a secret

formulation or brand identification, cannot be duplicated by a competitor. A patent serves as a method of protecting the invention of the drug (Webber, 2003).

1.7.5 Product-market-strategy

This can be defined as positioning a business's products and markets in order to maximize the value of the capabilities that distinguish it from its competitors (Luke & Walston, 1998). It is also defined as a plan of future action (Collins, 2003:194) that determines how a business can make the best possible use of its resources in order to be successful (Ammer & Ammer, 1977:405).

1.7.6 Ratio analysis

According to Koen and Oberholster (1999:11), ratio analysis refers to the analysis of financial information of companies in order to draw conclusions on the performance of the companies. According to Shim *et al.* (1998:244), ratio analysis is an evaluation performed by users and preparers of financial statements, in order to assess the financial strength or weakness of the company. Ratio analysis is a method of comparing financial figures (Collin, 2003:166).

1.8 Scope and sequence of the study

Chapter 1: Background, purpose, scope and method of study

- In this chapter, the increasing challenges that pharmaceutical entities are encountering in the face of increased competition will be put forward. The highly competitive environment in which these companies operate has created a need for the companies to adapt their product-market strategies.
- The purpose, scope and method of study will also be discussed.

Chapter 2: Competition within the industry

- In this chapter, a detailed description of the various forms and sources of competition will be provided. Specific reference will be made to the five competitive forces, as defined by Porter.
- The competitiveness of the pharmaceutical industry will also be assessed in order to determine whether the level of competition in the industry warrants a change in strategy.

Chapter 3: Ansoff's matrix – product-market strategies

- In chapter three, explanations will be provided regarding various growth strategies available to an entity, with specific reference to the matrix developed by Ansoff.
- In this chapter, a critical evaluation of the matrix will be put forward and suggestions for a more appropriate expansion thereon (one that is applicable to the pharmaceutical industry) will be provided.

Chapter 4: Basic financial performance indicators

- In this chapter, various financial ratios that can be used to measure a company's performance will be defined.
- In chapter four, emphasis will also be placed on the fact that the ratios will not be calculated, but will be used during the empirical research to determine whether the level of competition may have had a negative impact on the financial performance of pharmaceutical entities.

Chapter 5: Results

- In this chapter, the methods used during the empirical research will be discussed. The purpose and results of the questions in the questionnaire will be discussed, after which conclusions will be reached regarding each question.

Chapter 6: Conclusion and recommendations

- Conclusions stemming from the results of the survey will be reached.
- Recommendations for further research will be made, based on the responses of the survey.

CHAPTER 2

COMPETITION WITHIN THE INDUSTRY

2.1 Introduction

A company's business strategy is developed with the main aim of improving its competitive position within an industry (Feurer & Chaharbaghi, 1994:49). Any business trying to survive in today's cutthroat world is affected by the general characteristics of present-day businesses, such as more competition and a higher information load (Meridian Healthcare, 2002). Production cycle and product life cycles are decreasing, and customers are becoming more demanding (Meridian Healthcare, 2002). An entity in the pharmaceutical industry is no exception. According to Lipson (2001), more and more products face patent expiration before 2005. Generics then immediately enter the market and it is estimated that up to \$3 billion in brand-name sales will be lost to generics each year until 2010. It is therefore of utmost importance for pharmaceutical companies to employ active strategies to counter the effect of the huge competitive force that is generic medicine.

In this chapter, various forms of competition will be described. These descriptions will be provided in order to meet specific objective number 1, page 5. By examining Michael Porter's "five forces" traditional model of competition, a theoretical background regarding the concept of competition will be presented. The following five competitive forces will be discussed:

- Rivalry among existing firms.
- The bargaining power of buyers.
- The bargaining power of suppliers.
- The threat of new entrants.
- The threat of substitute products.

After the above-mentioned model has been discussed, competitiveness within the pharmaceutical industry itself will be explored in the context of the "five forces" model. Published information regarding the recent state of the industry will be used to support the conjecture that the industry is rapidly changing and becoming increasingly susceptible to the impact of competition.

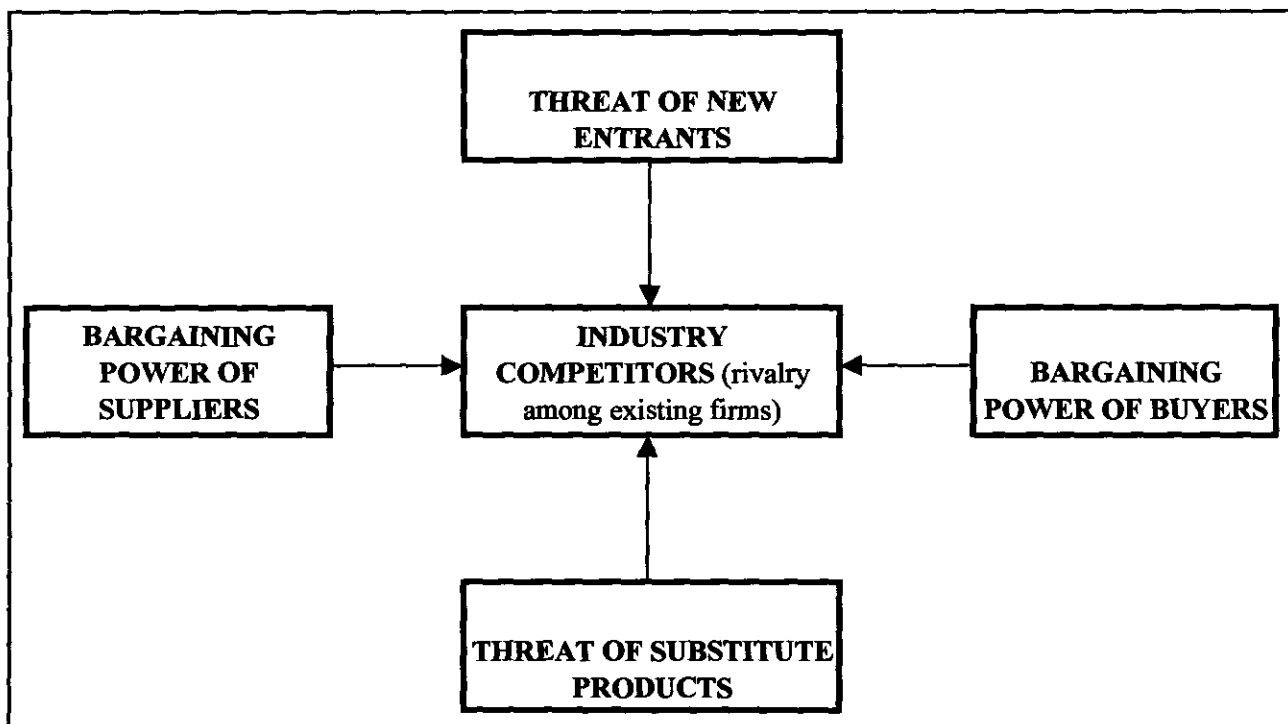
The chapter will conclude by illustrating the link between competition and strategy.

2.2 Competitive forces

Wilson (2004) states that Porter's model can be used to better understand competition within an industry. It provides entities with an opportunity to identify and assess strategies to adopt in order to develop a strategic and competitive advantage over other firms competing in the same environment.

According to Porter (1980:4), competition in an industry is determined by five competitive forces. These can be illustrated as follows:

Diagram 2.1: Porter's "five forces" model



(Porter, 1980:4, adapted)

These "five forces" can be seen as all the competitors within an industry, which serves to illustrate the fact that competition is not limited to existing players. All five sources of competition constantly work within an industry to drive down the rate of return on invested capital, thereby making it difficult for firms to continuously generate returns that are above average (Porter, 1980:5). The five competitive forces, and therefore competitors, will be explained in more detail below.

2.2.1 Rivalry among existing firms

The main cause of this type of competitor is the opportunity to improve their position within the industry (Porter, 1980:17). Characteristics of this force are, typically, things like price wars, advertising battles and expansion of product base. One of the largest adverse effects of this form of competition, specifically price competition, is a general decline in profitability across the whole industry, which is caused by price cuts continuously being matched by rivals, resulting in lower revenues (Porter, 1980:17). However, some aspects of this type of competition may well benefit the industry. Advertising of products could, for example, increase demand across the board.

Luke & Walston (1998) discuss a measure that can be used to determine the extent of rivalry among existing firms in an industry. This measure is called "market concentration". The market concentration within an industry can easily be calculated, using a method known as the "four-firm ratio". This ratio is calculated by adding up the market shares controlled by the market's top four leading firms. The ratio can be applied on a national, regional and local level. An industry characterized by a low market concentration is one in which there are a large number of firms with small market shares. The higher the market concentration, the higher the relative market share is that is held by each firm within the industry (Gwin, 2001). From this, it is clear that the lower the market concentration, the greater the level of competition, as there are a larger number of rivals within the industry.

2.2.2 Bargaining power of buyers

There is competition with buyers in an industry in the form of demands for lower prices, better quality products and more services (Porter, 1980:24). This can, as with existing rivals, bring down the profitability of the entire industry. The presence of any of the following factors may lead to an increased bargaining power of customers (Recklies, 2001):

- The concentration of buyers is high.
- The customers in the industry make large volumes of purchases.
- Within the supply chain, there are numerous suppliers, none of which dominates the market.
- The supply side of the supply chain is characterized by high fixed costs.
- A substitute product can replace the product in question with ease.
- There are relatively low costs involved in switching between products.
- Customers strive to achieve low margins on products.
- It is possible for the product to be produced by the customers themselves.

- The importance of the specific product to the customer is minor.
- The costs to produce or manufacture the product are well known to the customer.

2.2.3 Bargaining power of suppliers

The presence of a vertical supply chain in a production or manufacturing industry leads to a buyer-supplier relationship between the companies that use the raw materials and the companies that supply the raw materials (Anon., 1999a). The threat posed by the bargaining power of suppliers is the inverse to those posed by buyers (Luke & Walston, 1998). The following factors have been identified by Recklies (2001) as likely to increase the bargaining power of suppliers:

- The source of supply is not fragmented, in other words there is a high concentration of relatively few, but large, suppliers.
- The applicable raw material or resource is unique – there is no substitute for it.
- The customers to whom the suppliers sell the raw material are fragmented, in other words there is a large number of smaller companies with a low bargaining power.
- It is very costly to switch from one supplier to another.
- The possibility for forward integration with the next link in the supply chain (the buyer) is high.

2.2.4 Threat of new entrants

The threat of entry can adversely affect profitability in an industry in two ways (Sims & Smith, 2003:93):

- a) Through the impact of actual entry – if a new player enters the market, the risk exists that prices of existing products will be forced down, in view of the fact that the rival has brought in a lower-priced product. If the new entrant is successful, the market share of existing firms will also be reduced, causing them to produce at lower volumes and, therefore, diminishing their capability to fully utilize the benefits of economies of scale.
- b) By forcing firms to adopt defence strategies to prevent new entry – these defence strategies include dropping prices to such a level as to make it impossible (or at least undesirable) to compete in the market. Another effect could be the creation of high capital barriers, in other words by investing so much in new technology and research and development.

There are certain barriers that can be imposed by entities in an industry in an attempt to prevent additional rivals from entering the market (Anon., 1999a). These are known as barriers to entry. It is clear that

barriers to entry are unique industry characteristics that reduce the rate of entry of new firms (Anon., 1999a). The following main sources of barriers to entry are also identified:

- The government can create barriers. By means of regulation and interference, government is able to restrict competition within an industry.
- Another restriction on entry into an industry comes in the form of intellectual property rights. A patent can protect any knowledge, formulas or ideas that provide an entity with a competitive advantage.
- If the assets used by a firm in the production or manufacturing process are incredibly specific to the manufacturing process and industry, potential entrants are hesitant to spend large sums of money on assets that cannot be sold or converted into another asset if the entrance into the industry is unsuccessful.
- Barriers to entry can be enhanced if the current players within an industry enjoy economies of scale. Newer and smaller companies would be unwilling to enter an industry where the economies of mass production have been achieved by larger firms, as the production costs of the smaller firms will be too high.

While new entrants may well influence profitability negatively, they often bring with them substantial resources and innovation (Porter, 1980:7). This may serve to shake up the industry, forcing the existing companies to come up with new ideas and products in an attempt to maintain their market share.

2.2.5 Threat of substitute products

Substitute products are products that can perform the same function as an existing product (Porter, 1980:23). These products can be manufactured in another industry (Anon., 1999a). It is therefore imperative for a company that wishes to evaluate the threat of substitute products to accurately define their own industry, in order to identify threats that arise from other industries. The more exact and narrow the description of industry, the easier it will be to identify the indirect substitutes (threat of substitute products), as the competitive set defined within the industry will be competing with direct substitutes (existing products and firms) (Gwin, 2001).

2.3 Competitiveness in the pharmaceutical industry

The model developed by Porter in 1980 has been explained and described. However, to evaluate the competitiveness within an industry the specific information available that is unique to the competitive

environment of that industry must be evaluated. Each of the above “five forces” will therefore be evaluated in terms of the pharmaceutical industry in order to determine how competitive the industry is and which forces are active within it.

2.3.1 Rivalry among existing firms

In the United States market, the largest profits are to be made in the pharmaceutical market (Crawford, 2001:12). This emphasizes the fact that there are many players in the pharmaceutical industry, both globally and in South Africa. Companies are constantly vying for market share, and a firm needs to manage its resources in order to gain and sustain a competitive advantage over its rivals (Gradwell, 2003).

Patents prevent other companies that compete in the same industry from manufacturing exactly the same drug that is claimed on the patent (Congressional Budget Office, 1998). However, there is nothing to stop another firm from patenting a similar drug that serves the same purpose. These drugs are known as “me-too” drugs and are considered to be direct competition from an existing firm that offers a direct product substitution.

In order to determine exactly how competitive the pharmaceutical industry currently is, use will be made of the market concentration calculation. The market concentration will be calculated by adding the market shares held by the largest four companies in the pharmaceutical industry.

Lok (2004) compiled a research report that identifies the key players in the pharmaceutical industry in South Africa. According to the report (Lok, 2004), the pharmaceutical sector is a highly fragmented sector, with more than 200 players in the market. The report indicated the market share of the top nine companies in the pharmaceutical industry. These market shares can be used to calculate the market concentration ratio. Using the information published in the report, the market concentration ratio can be calculated as 24,5%. According to Gwin (2001), a concentration ratio of between 0% and 40% indicates a highly competitive industry. This simple measure of competitiveness therefore clearly indicates that the calculated concentration ratio falls within the above range; the pharmaceutical industry in South Africa can therefore be classified as highly competitive, with a large number of existing rivals.

2.3.2 Bargaining power of buyers

With more and more drugs coming off patent, generic alternatives are becoming increasingly available. These generic drugs are much cheaper and legislation has been passed to govern the dispensing of these drugs. The Medicines and Related Substance Control Act 90 of 1997 has been amended to enforce the

law that, regardless of whether a doctor has prescribed the more expensive and patented medicine, generic alternatives must be offered to a patient first (Ryan, 2003:15). This could lead to a large loss in sales for pharmaceutical companies (up to 75% within six months of the patent expiration) (Keeton, 2003:20). Consumers are therefore in a position to influence an entity's competitive advantage by choosing generic substitutes, which may decrease sales volume and, ultimately, a company's market share. Medical Aids in South Africa are also fuelling the fire by encouraging their members to make use of generic alternatives, where possible (Van Zyl & Landman, 2002:72).

Balto (2003) also emphasises the bargaining power of buyers, as pharmaceutical companies are faced with customers that are sophisticated and therefore have the power to bargain down prices. According to the Congressional Budget Office (1998), brand-name drugs can be sold to different customers at different prices. In this case, the customers are seen as the pharmacies and the doctors prescribing the relevant medication. The customers are able to favour one brand-name drug over another and if this is done for a large number of patients, the price of the drug can be systematically decreased.

2.3.3 Bargaining power of suppliers

Suppliers, in this sense, are seen as the suppliers of raw materials to the pharmaceutical companies who manufacture the drugs. In South Africa, there is a very strong multinational presence in the pharmaceutical industry (Lok, 2004). The local industry is dominated by multinationals. Most of the research and development, as well as innovation, therefore take place in other countries. Most South African multinationals import the drugs from their international affiliates and only a few active ingredients are actually manufactured here (Lok, 2004). Taking this into account, the bargaining power of suppliers is not considered a huge competitive threat within the South African industry, as the raw materials will be supplied to the international affiliate.

2.3.4 Threat of new entrants

The research report compiled by Lok (2004) identifies the following factors as the main barriers to entry in the pharmaceutical industry in South Africa that will limit the competition posed by the threat of new entrants:

- The main barrier at the moment is the huge amounts of capital required to finance research and development. It is estimated that, currently, this can be as high as \$800 million.
- In South Africa, all new drugs have to be registered with the Medicines Control Council. The time it takes to do this serves as a barrier to entry.

- Government has recently heavily regulated the pricing of drugs. New legislation passed in South Africa has the following far-reaching consequences, which also serve as barriers to entry:
 - Discounts and bonuses on medicines were prohibited from 2 May 2004.
 - From 2 June 2004, companies have to set single exit prices for drugs, based on their cost structures.
 - From 2 August 2004, the dispensing fee for pharmacists and doctors was limited.
 - Branded prescription medicines will no longer be permitted.
 - New medication prices will be charged on individual pills, and not per pack as was previously the case. The benefits of economies of scale could therefore be at risk.
 - All drug manufacturers now have to print the single exit price on the medicine pack. This will cause huge increases in the packaging costs.
- Patents protect brand-name drugs in terms of intellectual property rights. However, there are currently concerns regarding patent legislation in South Africa, as government has already forced companies who hold the patents to anti-HIV drugs to give the patents to the generics.
- Black economic empowerment is expected to increase within the pharmaceutical industry over the next few years. This will lower the barriers for black empowerment groups, facilitating ease of entry.

2.3.5 Threat of substitute products

Substitute products are products that can perform the same function as an existing product (Porter, 1980:23). In the pharmaceutical industry, this could be anything from generic versions of off-patent drugs to herbal remedies that purport to have the same healing capacity as patented drugs. Substitute products are often available to buyers at a lower price, which means that profitability and returns within the industry can be affected. Industry growth rates have been adversely affected by generic competition (Johnsen, 2003). In 2003, the generic drugs industry in South Africa grew by more than three times the patented medicines sector (Lok, 2004).

This threat is ongoing in the pharmaceutical industry. Not only are the generic firms constantly on standby for patent expiration and therefore the launch of cheaper substitutes, but pharmaceutical entities are also constantly spending large sums of money on research and development, which may result in new patented drugs aimed at the same market. A number of pharmaceutical companies have already started launching generic versions of their own off-patent drugs, in an attempt to pre-empt capable generics (Geroski, 1999).

2.4 Competition and strategy

Gwin (2001) defines strategy as:

“A strategy is a set of objectives, policies and plans that, taken together, define the scope of the enterprise and its approach to survival and success”.

Further definitions of strategy and product-market strategy can be found in paragraph 1.7.5, page 8.

When one looks at the competitive strategy of a pharmaceutical company, manufacturing quality is no longer a huge source of competitive advantage in the industry, seeing as the quality of a drug should be a given and can therefore no longer serve as a competitive differentiator (Miller, 2003).

Blackett (2001) identifies one of the main sources of strategic competitive advantage as branding techniques. These techniques involve making a distinct impression on one's customer by the development of a set of distinguishing product characteristics, which, combined with the right price and availability, will influence the customer's purchasing decisions. Building a brand, however, takes a large amount of time and investment in research and development. Any consumer will agree that loyalty to a brand takes years of faultless products and service. This is where the pharmaceutical industry differs from other consumer industries. Pharmaceutical products have a very limited life cycle, in view of the fact that patents expire, leaving the market open to generic entrants. Entities can no longer rely on product “blockbusters” that would give 10-12 years of massive profits (Hoare, 2003).

In order to maintain competitive advantage, an individual firm must adopt a strategy that will combat the competitive forces identified previously better than the other firms in the industry (Sims & Smith, 2003:92). The environments that are apparent within each industry are constantly changing, and organisations that compete in the global economy need to respond to the various forces by creating the capabilities to implement strategic change (Modarres, 2003). Each firm within an industry has to choose its own positioning with which to compete (Gwin, 2001). Positioning can be divided into two areas (Gwin, 2001):

- **Strategic positioning** – strategic positioning refers to the market boundaries applicable to an entity's strategy. These boundaries relate to the number of direct competitors within a specific market (whether new or existing). Firms can adapt their strategies to reduce the number of competitors in the industry by merging with other firms, by increasing marketing and advertising in order to increase market share or by producing new products that competitors cannot copy.

- **Product positioning** – a firm should be able to offer a product that satisfies more consumer needs than competitors' products. If the firm intends to offer the product in a new market, there needs to be effective communication regarding the benefits of the product relative to others.

2.5 Summary

In chapter two, Porter's "five forces" model was discussed. This model identifies five main competitive factors in an industry and is divided into rivalry among existing firms, the bargaining power of buyers, the bargaining power of suppliers, the threat of new entrants, and the threat of substitute products. It was found that the pharmaceutical industry is no exception and is also subject to the five competitive forces, although some to a lesser degree. It was further found that the level of competition in the industry is high, with a concentration ratio of only 24,5%. The barriers to entry in the current industry in South Africa are also high, with government intervention providing a new barrier. It was found that it is necessary for individual firms to adopt a strategy that will battle the previously identified competitive forces.

In the next chapter, the various strategic growth options available to an entity will be examined in detail, with reference to the following four positioning quadrants:

- Existing markets.
- Existing products.
- New markets.
- New products.

CHAPTER 3

ANSOFF'S MATRIX – PRODUCT-MARKET STRATEGIES

3.1 Introduction

In chapter two, use was made of Porter's "five forces" model to illustrate the various sources of competition within an industry. The five competitive forces were discussed in the context of the pharmaceutical industry and were found to be prevalent. It was concluded that, in order to be competitive, an entity needs to find the correct mix of strategic and product positioning.

The pharmaceutical industry is currently faced with a large number of challenges, which have necessitated that considerable changes to strategy take place within the large pharmaceutical companies (Koppal, 2003). Over the past few years, strategic changes that have taken place include the formation of alliances in the form of joint ventures, reduction in product development times by outsourcing production processes, and partnering up with smaller biotech and specialty entities in an effort to reduce the expenditure on research and development (Agres, 2004). In addition to these changes, pharmaceutical companies are also beginning to change their approach by focusing less on "blockbuster drugs" (i.e. drugs that are responsible for major portions of the company's revenue), due to the costs involved (Agres, 2004).

Over the next few years, a substantial amount of revenue will be lost when branded drugs come off patent (Koppal, 2003). According to Koppal (2003), pharmaceutical companies are starting to implement a number of diverse strategies to counter this challenge. Among the changes identified are cautious use of product life cycle management and strategies implemented to impede the entry of generic competition, for example label expansions on existing products. The pharmaceutical industry is distinctive in that the demand for their products (drugs) will never diminish (Koppal, 2003). However, large companies in the industry find it increasingly tricky to adopt a successful expansion strategy (Anon., 2004a). Recent studies have identified several factors that are responsible for the difficulty experienced, including generic competition and an uncertain regulatory environment (Anon., 2004a). In order to counter this barrier to growth, it is recommended (Anon., 2004a) that pharmaceutical companies adopt their strategies to include areas such as biotechnology (new technology) and to market more innovative and new products.

In chapter three, a literature study will be done on various growth strategies available to an entity. Firstly, the matrix developed by Igor Ansoff in 1965 will be explored in order to obtain an understanding of the possible applications thereof. Each block of the matrix will be discussed and an attempt will be made to

identify possible applications of the strategy within the pharmaceutical industry. This will be done in order to achieve specific objective number 2, page 5.

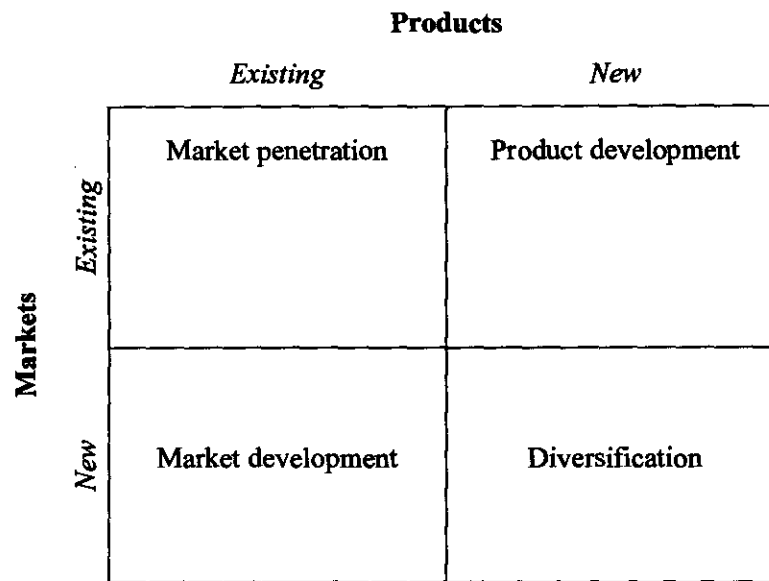
The matrix will then be critically evaluated in the context of changing business environments. A number of proposed expansions to the model will be mentioned, after which the most applicable expansion model will be selected and discussed in detail. In doing this, specific objective number 3, page 5 will be met. The most appropriate expansion will be used during the empirical research as a basis for questions regarding the product-market strategies of entities in the pharmaceutical industry.

3.2 Ansoff's matrix

Igor Ansoff was one of the traditional founders of strategic and corporate planning, and his works emphasised the significance of human and financial resources as well as the importance of growth and diversification in the strategy process (Äijö, 2001). His early approach to strategy is still greatly utilised in the business world, only in a slightly adjusted manner (Äijö, 2001). The expansive utilization of his matrix for strategy determination is attributed to the fact that it is so simple to understand and applies to any industry (Äijö, 2001). Further evidence that the matrix is still appropriate and relevant is evident in research conducted in 1998, where a study was done on the preferred growth strategies adopted by various entities in the food producing industry (Watts *et al.*, 1998). This indicates that the matrix is still being applied successfully in research more than thirty years after its development. The study supports the view that the matrix applies to all industries and will therefore use it to form the basis of the research conducted in the pharmaceutical industry.

Ansoff (1968:99) identifies four major strategic choices open to an entity that wishes to achieve and maintain its long-term objectives. These options can be illustrated in the form of a matrix, as adapted by Sims and Smith (2003:266):

Diagram 3.1: Ansoff's matrix



(Sims & Smith, 2003:266, adapted)

3.2.1 Market penetration strategy

This selection of product-market strategy denotes a growth in sales, and therefore market share, in the entity's current line of business (Sims & Smith, 2003:266). No new products are introduced and the entity relies on the loyalty of its current market in order to achieve a higher level of sales. This choice of strategy aims to achieve four main objectives (Anon, 2004b):

- a. To increase or sustain the entity's market share relating to existing products. This is usually achieved by implementing competitive pricing strategies and by an increased investment in advertising and sales promotions.
- b. To dominate markets that are experiencing high growth.
- c. To influence a mature market by reducing the extent of competitiveness within it. This would require the implementation of particularly aggressive pricing and sales strategies, in order to make the market unappealing to competitors.
- d. To increase current customer loyalty in order to ensure an increased demand for the company's product.

In the pharmaceutical industry, the best way to achieve market penetration would probably be to increase advertising of the entity's brands and products. In view of the fact that most of an entity's products are

patent-protected drugs, reductions in prices and refinements to the products would, in all probability, not be viable options.

3.2.2 Product development strategy

In short, this strategy is about marketing products that are not currently within the company's product range to existing consumer segments (Anon., 2000). In order to offer new products, an entity should perform extensive market research (to anticipate the market's needs) and invest rather heavily in research and development (Woodgreen School, 2003). As an alternative to doing all the research itself, this strategy also opens up the possibility for a company to acquire another company with products that are appropriate for the acquirer's market (Chapman, 2001). Chapman (2001) also states that, if the company choosing this particular strategy option already has a strong market presence in the form of a relatively large market share, there is the possibility that employing this strategy could actually decrease the company's returns. It may then be a preferred choice to seek to enter new markets.

This strategy may well be a strategy of choice for a large number of pharmaceutical companies. Pharmaceutical companies are inclined to spend large sums of money on research and development, due to the nature of the products that they develop. There appears to be a constant battle to develop new and better drugs. The literature discussed shows that there are opportunities for two entities to enter into agreements whereby products are jointly developed and marketed. This sort of agreement may limit an entity's investment in new resources, since each company is likely to make use of the strongest resources already available to them.

3.2.3 Market development strategies

The main characteristic of this strategy is the fact that the entity attempts to enter new markets by selling existing products (Sims and Smith, 2003:267). This strategy can be the greatest success if the company that adopts the market development strategy has, as one of its core competencies, a specific product rather than a specific market segment (Anon., 1999b). Examples of this strategy, as identified by Sims and Smith (2003:267), include:

- a. targeting different customer segments;
- b. expanding to new areas of the country;
- c. expanding internationally to foreign markets.

Market development strategies are potentially applicable to pharmaceutical entities that have patented

products that can't be adapted. Growth can therefore be achieved by selling products that have already been researched and patented to customers outside of the normal target market areas.

3.2.4 Diversification strategies

This strategy entails entering new markets with new products. The entity becomes involved in an entirely new industry, or even in a different stage in the value chain of its present industry (Sims & Smith, 2003:267). There are several forms of diversification, as referenced by Sims and Smith (2003:267):

a. Related diversification

A relationship exists between an entity's existing business and the new product/market. This may take the form of concentric diversification, which means that there is a technological similarity between industries, resulting in an advantage for the firm that already has the know-how, and vertical integration, which means that the entity moves along the value system of its existing industry towards its customers, or towards its suppliers. Expansion of activities towards its buyers is known as forward integration, whereas expansion towards its suppliers is referred to as backward integration (Anon., 2002b).

b. Unrelated diversification

Another term for this is conglomerate growth, in view of the fact that the result of this form of diversification is a collection of businesses that are completely unrelated. The reasoning behind this form of strategy would probably be to reduce the risk exposure of the entity by spreading it across a number of industries.

Diversification is the most risky strategy (Anon., 2000). Entities are entering areas in which they have no former experience or track record and the areas of diversification may well be outside the core competencies of the firm (Anon., 1999b). Ansoff (1968:113) identifies a number of underlying reasons why entities diversify:

- a. The entity's objectives can no longer be met by product-market strategies that merely encompass expansion.
- b. Even if expansion opportunities are available that allow an entity to meet its objectives, diversification may take place if an entity has liquid cash resources available that are in excess to what is needed for expansion of products or markets.
- c. If diversification opportunities offer greater profitability than expansion opportunities, an entity is

likely to adopt the former strategy.

- d. A further reason for diversification (though not necessarily the most informed one) is if an entity does not have enough information available to make a conclusive comparison between expansion and diversification strategies. However, entities that diversify for this reason may find that, in the long run, it is less expensive to obtain all the information on diversification prior to making the decision.

3.3 Evaluation and expansion of Ansoff's matrix

Over the years, a number of expansions of Ansoff's original matrix have evolved. In this chapter, three different views over the last twelve years on the limitations of Ansoff's matrix will be discussed, as well as the recommendations that have been made for the expansion thereof. Each of the three expanded matrices will be evaluated for appropriateness in terms of the pharmaceutical industry and a conclusion will be reached regarding the best matrix to use during the empirical research and data collection. The three expansion matrices will be discussed in chronological order.

3.3.1 Harper (1992) – Moving toward “corpreneurship”

Harper (1992) states that the four growth strategies identified by Ansoff do not take into account all the types of growth strategies that are necessary to survive in the twenty-first century. Harper (1992) identifies a number of shortfalls of the basic 2X2 matrix and has thus expanded the matrix into a 3X3 matrix, so as to reflect the nature of entrepreneurship:

3.3.1.1 Limitations of the market penetration strategy

This strategy, whereby entities get by with minimal product modification or technological change, will probably only be successful in a growing market. As the market matures, there is likely to be intense competition, which may ultimately result in the market drying up. As previously stated, the pharmaceutical industry is characterized by intense competition, with limited prospects for growth (Anon., 2004a). This strategy carries the least risk, as management of the firm is only dealing with what they already know. However, Harper (1992) identifies four reasons why this strategy may be a high-risk strategy over a long period of time:

- a. There is likely to be intense competition.
- b. Management of the entity spends no time identifying emerging opportunities.
- c. If consumer needs shift, the market will probably dry up.

- d. The risk of the entity's product becoming technologically obsolete is great, since today's fast-paced technological advances occur within very short spaces of time.

This basis for expanding the matrix appears to be applicable to the pharmaceutical industry, due to the risk brought about by increased competition (refer to paragraph 2.3.1, page 15), as well as the risk associated with patent expiry (as discussed in 2.3.5, page 17).

3.3.1.2 Limitations of the market development strategy

This strategy has somewhat more merit than market penetration, as the entity is at least attempting to expand into new markets. However, the entity is still exposed to the risks of technological obsolescence and decreased customer demand identified in 3.3.1.1, page 25.

Once again, this appears to be a valid reason for expansion in the context of the pharmaceutical industry, due to the competitiveness and technological obsolescence.

3.3.1.3 Limitations of the product development strategy

This strategy reduces the entity's exposure to the risk of technological obsolescence. It encourages entities to hire new people with "fresh" ideas and to continually try to improve their product base. However, by assuming that a product will be successful merely because management "knows" the customers, the entity is blocking out the potential profits that new markets, and especially emerging markets, may bring to the entity.

As discussed in chapter two, pharmaceutical companies spend large sums of money on research and development in order to produce new products.

3.3.1.4 Limitations of the diversification strategy

This strategy, over the short-term, is the strategy that exposes the entity to the most risk. A large amount of strain is placed on cash flow and profitability, since the entry into new markets and developing new products requires large capital (and human) investment. Management may not always have the expertise or the time to research the new areas, especially since diversification also means continuing the entity's present product-market strategy. The pharmaceutical industry is faced with the serious problem of the scarcity of new products and patent expiration (Anon., 2004c).

3.3.1.5 Reasons for expansion

Taking into account the above risks and limitations, Ansoff's matrix should be updated to take into account continually emerging local and international markets, the changing consumer needs, as well as the rate of technological change (Harper, 1992).

Harper expands Ansoff's matrix into a 3X3 matrix that can be illustrated as follows:

Diagram 3.2: Harper's expanded matrix

		Products		
		<i>Existing</i>	<i>New</i>	<i>Technologically superior</i>
Markets	<i>Existing</i>	Market penetration	Product development	Product innovation
	<i>New</i>	Market development	Diversification	Product invention
	<i>New/emerging</i>	Market Transfer	Market creation	Pure corpreneurship

 *Ansoff's original matrix*

(Harper, 1992, adapted)

The proposed expansions (Harper, 1992) will be evaluated for relevance in the pharmaceutical industry.

3.3.1.6 Product innovation strategy

This growth strategy remains in the entity's current target market, but it extends beyond the traditional product development strategy in that the entity develops new technology in order to deliver a product that

is far superior to any other. The basic product is one that already exists, but the entity that wishes to outperform the rest makes use of state-of-the-art technology in order to create a new generation of the product.

In the pharmaceutical industry, it could take up to \$1 billion and 12 years to bring one new medicine on the market (Rapp, 2004). For this reason, it is necessary for pharmaceutical entities to use state-of-the-art pharmaceutical science and technology to improve the efficiency of the manufacturing process – which may decrease the time taken to produce a new product (Rapp, 2004).

3.3.1.7 Product invention

By following the product invention growth strategy, an entity introduces a technologically superior product into a new market. The risk involved is therefore twofold: first, the risk relating to the new product, and second, the risk relating to entry into a market of which management has little or no experience. If the entity can offer the new market a product that meets all of the consumers' needs, it can reap the rewards and attain a large market share.

In chapter two, the level of competition in the industry was discussed and it was found that the market in the pharmaceutical industry is particularly fragmented, with a large number of competitors. By using superior technology to produce new products, the possibility arises for companies to offer their products to new markets faster than the competitors. This strategy therefore also appears to be applicable in the pharmaceutical industry.

3.3.1.8 Market transfer

This product-market strategy takes the entity's existing products into a completely new and emerging market that no other firm has ever serviced before. The risk associated with this strategy is much higher than that of the traditional market development strategy, in that the market that is being entered is one for which there is very little data available that can be used to research the consumer needs. This strategy is particularly effective in emerging markets and Third World countries that continually aim for a higher standard of living. Another benefit of this approach is that there is often a minimal initial capital outlay.

For the purposes of this study, the researcher is of the opinion that the term "emerging markets" could well be used in the context of the industry being studied. The development of AIDS drugs opens up the possibility of offering these drugs to Third World and underdeveloped countries where no other firm has yet had the opportunity to enter.

3.3.1.9 Market creation

Entities that choose this growth strategy offer new products (not necessarily the technologically superior products in the product innovation and invention strategies) to new and emerging markets. The major aim here is to identify the emerging market with a particular need and to offer this market a product that already exists in the industry, but one that is new to the entity itself. One method of doing this may be to enter into joint venture agreements with other firms in the industry, or to acquire licensing rights to an existing product.

In 3.1 above, reference was made to the changes in strategies in the pharmaceutical industry, including joint ventures and partnership alliances. The possibility of a pharmaceutical company adopting a strategy of market creation therefore appears to exist.

3.3.1.10 Pure “corpreneurship”

This strategy is a combination of market creation and product invention, in that the entity commits itself to entering new and emerging markets by offering a technologically superior product that did not previously exist for that or any other firm. “Corpreneurship” is therefore a completely opportunity-driven strategy, which anticipates emerging market needs in time to develop innovative product solutions for them.

By combining the appropriateness of superior technological processes and the available opportunities in emerging countries, it is understood and accepted by the researcher that this strategy option would also be appropriate in the pharmaceutical industry.

3.3.2 Buskirk and Popper (1998) – Strategies for high-tech firms

Buskirk and Popper (1998) expanded Ansoff’s matrix to make allowance for so-called “high-technology products”. These products are based on new technology and are seen as innovative solutions to the problems of the markets (Buskirk & Popper, 1998). Buskirk and Popper (1998) therefore added one additional dimension to Ansoff’s matrix, in order to take into account the advancement of technology over the past few decades:

Diagram 3.3: Buskirk & Poppers' expanded matrix

		Products		
		<i>Existing</i>	<i>New</i>	<i>New technology</i>
Markets	<i>Existing</i>	Market penetration	Product development	Technological product substitution
	<i>New</i>	Market development	Diversification	High technology

 *Ansoff's original matrix*

(Buskirk and Popper, 1998, adapted)

The researcher's understanding of this expansion is that the technological focus relates to the technology of the product itself (for example, software) and not the technology related to the manufacture of the product. In the pharmaceutical industry, the product that is being offered is not necessarily in itself a high-tech product. Buskirk and Popper (1998) refer to "high-tech firms" that would operate in the expanded two cells. In order for the new technology strategies to succeed, the customers within a market should be given training and technological expertise in order to use the product (Buskirk & Popper, 1998). This view reiterates the researcher's opinion regarding the expansion. The appropriateness for the pharmaceutical industry is therefore rejected.

3.3.3 Andreasen and Kotler (2003) – The matrix for non-profit organisations

Andreasen and Kotler (2003:81) used Ansoff's matrix as a basis for developing a 3X3 matrix applicable to non-profit organisations. By combining Ansoff's matrix with the above five expanded cells, the following matrix is derived:

Diagram 3.4: Andreassen and Kotler's expanded matrix

		Products		
		<i>Existing</i>	<i>Modified</i>	<i>New</i>
Markets	<i>Existing</i>	Market penetration	Product modification	Product development
	<i>Geographical</i>	Geographical expansion	Modification for dispersed markets	Geographical innovation
	<i>New</i>	Market development	Modification for new markets	Diversification

 *Ansoff's original matrix*

(Andreassen and Kotler, 2003:81, adapted)

The original cells of the matrix that stem directly from Ansoff's matrix will not be discussed here, as they were discussed in detail under 3.2. Only the five expanded cells will be evaluated.

3.3.3.1 Geographical expansion

This cell of the matrix relates to an entity's expansion of the sale of existing products or services into a new geographical area, rather than a completely new market (Andreassen & Kotler, 2003:80). In a pharmaceutical industry this strategy option may not be particularly appropriate, in view of the fact that a large number of pharmaceutical companies in South Africa are already the result of international geographic expansion, as most of the pharmaceutical companies in our country are multinationals (Lok, 2004). The decision to expand into other geographical areas has therefore already been made by the international holding companies.

3.3.3.2 Product modification

This strategy option brings a new dimension to the original matrix, i.e. modification. Here, existing products are only slightly modified and offered to existing markets (Andreasen & Kotler, 2003:81). If this option were considered in the context of the pharmaceutical industry, it would appear to be a strategy that the entities may consider – in the form of slight modifications to existing patented drugs and taking out a new patent on the “improved” product.

3.3.3.3 Modification for dispersed markets

Andreasen and Kotler (2003:82) bring in this option in order to link the modification of products to an extended geographical location. In 3.3.2.2 it was found that the modification of existing products might apply to pharmaceutical entities, however, in 3.3.2.1 geographical expansion in the pharmaceutical industry may not apply. This strategic option is therefore not considered to be the most appropriate for a pharmaceutical company.

3.3.3.4 Modification for new markets

This strategy option refers to the offering of modified products or services to new markets (Andreasen & Kotler, 2003:82). In 3.2.3 it was found that it is possible for a pharmaceutical entity to expand into new markets, by selling existing products. In 3.3.2.2, the potential to modify an existing product was evaluated and found to be applicable to pharmaceutical entities. This strategic option therefore appears to be another possible choice for the pharmaceutical industry.

3.3.3.5 Geographical innovation

This cell of the matrix combines geographical expansion with the offering of new products (Andreasen & Kotler, 2003:82). Once again, due to the geographical element of this matrix, it is considered unlikely that this is an option that will be widely implemented by pharmaceutical companies in South Africa.

3.3.4 The selection of the matrix

All three expansions of Ansoff’s matrix are supported as being valid expansions. However, it appears that not all of them can be applied equally successfully when determining and evaluating a strategy in the pharmaceutical industry. Andreasen and Kotler’s matrix would be appropriate if the study were being done on non-profit organisations, or organisations that had as a major objective geographical expansion,

while Buskirk and Popper's matrix would appear to be most appropriate if the product being offered to the market was itself a technologically superior product. Harper's thought processes are therefore accepted as the most appropriate for this study. The limitations and need for expansion were clearly defined, and the additional five cells in the matrix all appear to be potential strategies in the pharmaceutical industry. The empirical study will therefore include Harper's 3X3 matrix as the foundation for information collected on an entity's product-market strategy.

3.4 Summary

In this chapter, various strategic options available to an entity wishing to obtain and maintain an advantage in today's competitive environment were evaluated. Ansoff's matrix was initially discussed and evaluated. It was then shown that, even though the matrix was developed years ago, it could, with a small amount of adaptation, be utilised and applied by an entity in the pharmaceutical industry. Three variations on Ansoff's original matrix were discussed and it was concluded that the 3X3 matrix developed by Harper in 1992 is, though the oldest, the matrix that is most appropriate for the pharmaceutical industry, as well as this study.

In the next chapter, a basic understanding of financial performance indicators will be obtained. The concept of ratio analysis will briefly be explained, after which a broad understanding of a few ratios will be obtained.

CHAPTER 4

BASIC FINANCIAL PERFORMANCE INDICATORS

4.1 Introduction

In the previous chapters, the concepts of competition and product-market strategy were discussed in detail. The previous two chapters endeavoured to link competition and strategy, in order to illustrate that, in the pharmaceutical industry, the high level of competition might very well necessitate a shift in strategic approach. Various strategic growth options were discussed and a 3X3 matrix developed by Harper (1992) was accepted as the most appropriate method of categorizing a pharmaceutical entity's strategy.

In this chapter, a number of basic performance indicators will briefly be discussed and defined. The purpose of including financial performance indicators in the research is not to enable the researcher to calculate them for specified companies, but rather to attempt to evaluate whether competition has had the anticipated adverse effect on the financial performance of entities in the pharmaceutical industry over the last five years. The discussion of these financial performance indicators will achieve specific objective number 4, page 5. It is necessary to define the ratios that will be used in the empirical research, in view of the fact that the calculation thereof falls beyond the scope of this research.

4.2 Ratio analysis

Ratio analysis is an aid to understanding an organisation's performance and financial position, both past and present (Tyran, 1986:26). According to Koen and Oberholster (1999:11), there are three categories of ratios that can be analysed in order to draw conclusions on the performance of a company:

- a) Profitability ratios - these include to what extent management has been successful in earning a good return on capital invested.
- b) Risk ratios - this indicates the sensitive components of an enterprise.
- c) Growth - the analysis of this category provides information on the intensity of activities over more than one accounting period.

In this study, ratio analysis will not be applied to calculate financial ratios, but will be used to determine how the financial performance of entities in the pharmaceutical industry has changed over the past five years. It is necessary to consider the trend or movement in ratios, to ensure that the financial performance

of the entity being analysed is seen as dynamic, rather than purely the performance at a specific point in time (Tyran, 1986:151). In order to further understand the concept of ratio analysis, it is necessary to have a basic understanding of how to calculate and interpret profitability, risk and growth ratios.

4.3 Profitability

According to Koen and Oberholster (1999:62), this is one of the most important factors to be considered during the analysis and interpretation of financial statements. These ratios are further divided into two categories:

1. Profitability ratios to determine the earnings potential of providers of capital (shareholders and lenders), and
2. Profitability ratios to indicate the return on assets utilized in the enterprise.

In order to evaluate the trend in profitability in pharmaceutical companies over the past five years, it is first necessary to define the ratios that will be used, as well as to briefly describe what they mean.

4.3.1 Return on total shareholders' interest after tax

This is the ratio of net profit after tax to total shareholders' interest (Correia *et al.*, 2003:5-17). This is calculated by dividing the net profit after tax by total shareholders' interest. This ratio is an indication of how well management is doing with the money that they have (Price, 2002). In general terms, the higher the return on shareholders' interest, the better the company's profitability (Price, 2002). According to McClure (2003a), a firm that has higher return on shareholders' interest is likely to have a competitive advantage. It is a useful ratio to determine the financial success of an entity (McClure, 2003a).

4.3.2 Return on total assets

This is calculated by dividing the profit before tax and finance costs by total assets (McClure, 2004a). Finance costs are added back because they do not form part of operating expenses and companies with different financing leverage would not be comparable (Correia *et al.*, 2003:5-17). This ratio provides information regarding how much earnings is created for each unit of assets, or, more simply put, how much value the company is creating for its shareholders (Maranjian, 2002). A decline in return on assets may well indicate future profitability problems (McClure, 2004a).

For the purpose of this study, no analysis of profitability relative to research and development expenditure

will be evaluated. While a large amount of money is spent on research and development (as has been discussed previously), research in South Africa has shown that a large number of the players in the pharmaceutical industry are multinational companies (Lok, 2004). Capitalisation of research and development expenditure would, in all probability, not take place on the South African company's balance sheet. This premise will further be demonstrated by means of the results of the empirical research in chapter 5.

4.3.3 Gross profit margin

The gross profit margin of an entity is calculated by divided gross profit (which is sales less cost of sales), by the turnover (Lesonsky, 2000). Gross profit margin, rather than gross profit, will be used, as an increase in gross profit may not necessarily indicate an increase in gross profit margin (Lesonsky, 2000). The higher a company's gross profit margin, the more money is left for an entity to spend on other business operations, such as research and development (McClure, 2004b). A decrease in gross profit margin over time may well indicate future profitability problems (McClure, 2004b).

4.4 Risk

This concept refers to the sensitive financial components within an enterprise (Koen & Oberholster, 1999:49).

Financial strength refers to an entity's ability to honour obligations and obtain funds needed (Koen & Oberholster, 1999:50). Analysis of financial strength includes analysis of solvability and of liquidity. Solvability refers to the entity's ability to repay its non-current liabilities, while liquidity refers to ability to repay short-term debts (Correia *et al.*, 2003:5-11). The movement over five years in four main solvency and liquidity ratios will be evaluated to determine the solvency and liquidity of the entities:

4.4.1 Solvency ratio

This ratio summarizes the ability to repay long-term commitments, and is calculated by dividing the total assets of the company by the total liabilities (Koen & Oberholster, 1999:51). An increase in this ratio indicates that an entity has improved its ability to repay its long-term obligations, and is therefore an indication of a sounder financial position.

4.4.2 Debt/Equity ratio

The debt/equity ratio is an important indicator of an entity's leverage factor and is calculated by dividing total liabilities by total owners' equity (Maltzman, 2004). The higher the ratio, the greater the risk, since this means that the business is largely being financed by debt (McClure, 2003b). A decrease in this ratio is generally an indication that the financial stability of an entity is improving (Anon., 2004d).

4.4.3 Current ratio

The current ratio can be calculated by dividing the current assets by the current liabilities (Anon., 1996). It is the main measure of liquidity and indicates the ability of the business to meet its current debt obligations (Anon., 2004e). A decline in the current ratio is an indication of a company's declining ability to generate cash (Anon., 1995).

4.4.4 Inventory turnover

The inventory turnover is a very good method of evaluating the effectiveness of a company's working capital management and is calculated by dividing the cost of goods sold by the average inventory (McClure, 2003c). It measures the number of times the inventory has been sold over a twelve-month period (Schreibfeder, 2004). An increase in this turnover indicates that working capital is not being tied up in excess inventory levels, and is generally very good for business (McClure, 2003c).

4.5 Growth

Growth in an entity is an indication of the intensity of operations over a number of years (Koen & Oberholster, 1999:75). Growth can be calculated for any financial statement figure by dividing the difference between the value in the current year and the value in the previous year by the value in the previous year (Koen & Oberholster, 1999:75). The purpose of this study is not to determine the growth rate in the pharmaceutical industry, but rather to determine whether entities have experienced any growth in the following three areas over the past five years:

- 4.5.1 Revenue – growth in revenue indicates that an entity is experiencing increased sales levels.
- 4.4.2 Net profit – growth in net profit indicates that an entity is able to generate more income than expenses over time.
- 4.4.3 Net asset value – net asset value is defined as total assets minus total liabilities. An increase in the net asset value over time indicates an increase in the net worth of the company as a whole.

4.6 Cash flow

Cash flow information has become increasingly important when analysing the performance of an entity. Users of financial statements are becoming more and more concerned about the cash resources of an entity, as well as how the resources have been used (Koen & Oberholster, 1999:20). Sufficiency ratios refer to the ability of an entity to meet its cash obligations, and are therefore also a measure of risk. Efficiency ratios refer to the extent to which cash is generated over time and relative to other entities (Koen & Oberholster, 1999:22). The movement over five years of the following two cash flow ratios will be evaluated:

4.6.1 Cash flow to sales

Calculated by dividing cash generated by operations by turnover, and indicates the percentage of each rand's worth of sales that has been realized in cash flow from ordinary activities (Koen & Oberholster, 1999:22).

4.6.2 Cash return on total assets

This is a measure of the cash return on the assets utilized. It is calculated by dividing cash available from operating activities (before interest and tax) by total assets (Koen & Oberholster, 1999:22).

4.7 Summary

In this chapter, a basic understanding of the concept of ratio analysis was obtained. After this, a number of ratios were defined and explained so as to ensure that they are understood during the performance of the empirical research. The ratios were explained in terms of the following four main categories:

- Profitability.
- Risk.
- Growth.
- Cash flow.

The purpose of chapter four was not to provide a detailed explanation and understanding of financial performance. Certain concepts were briefly discussed, in view of the fact that a basic knowledge of the ratios is necessary in order to understand the results of the empirical research.

In the next chapter, the methodology and results of the empirical research will be discussed. All of the literature studied in the previous chapters will be used as a basis to formulate the questionnaire that will be used in the empirical research.

CHAPTER 5

RESULTS

5.1 Introduction

In previous chapters, a theoretical understanding of key concepts was obtained, namely competitive forces, product-market strategies, Ansoff's matrix and performance indicators. In order to test the hypothesis as proposed in 1.3, page 4, empirical research was carried out by means of questionnaires. The questionnaire was designed in such a manner as to achieve certain of the specific objectives of the study, as set out in 1.4, pages 4-5.

The first objective to be achieved by the questionnaire relates to specific objective number 5, as stated in 1.4, page 5. The empirical research aims to determine how entities in the pharmaceutical industry rate the level of competition, as well as the change in their view over the past five years. The competitive forces will also be identified.

The second objective to be achieved by the questionnaire relates to specific objective number 6, as stated in 1.4, page 5. The empirical research aims to determine how importance of the impact of competition has changed over the past five years. It also aims to place the entities that responded to the questionnaires in specific cells of the expanded Ansoff's matrix, as illustrated on page 27, both five years ago and currently.

The final objective to be achieved relates to specific objective number 7, as stated in 1.4, page 5. The movement in basic financial performance indicators will be used to determine whether the change in competition may have resulted in a decline in the financial performance of the entities over the past five years.

Firstly, the methods of data collection will be discussed, after which the results obtained from the questionnaire will be evaluated.

5.2 Methods of research

5.2.1 The purpose of the study

The first step with the empirical research was to determine what the main purpose of the study would be.

Neuman and Kreuger (2003:21-23) identify three main purposes to a study:

- Exploratory – exploratory research relates to research that attempts to formulate questions for further research on a subject that has received little or no attention from previous researchers.
- Descriptive – descriptive research is research that starts off with well-defined subjects and then conducts research to accurately describe them. It often attempts to give a numerical picture of a certain subject.
- Explanatory – explanatory research is carried out to answer the question “why?” It is usually carried out after exploratory and descriptive research and identifies the reason why a particular event or relationship has occurred.

This study started off by describing previously well-defined subjects, namely competition in the pharmaceutical industry, product-market strategies and financial performance indicators. All of the subjects researched had received attention from previous researchers. Exploration was therefore eliminated as the purpose of the study. Explanatory research was also eliminated, in view of the fact that the purpose of the study is to determine the impact of competition on the strategies of pharmaceutical entities, rather than the reason for any impact. It was thus concluded that the purpose of the study is descriptive.

5.2.2 Data collection techniques

Once the purpose of the study had been defined, various data collection techniques were evaluated to determine which would be the most appropriate for the descriptive research to be carried out. According to Neuman and Kreuger (2003:34), data collection techniques can be grouped into two categories: quantitative and qualitative. Quantitative data collection techniques mean collecting data in the form of numbers, while qualitative data collection techniques take the form of words or pictures.

It was decided that the results of the research would take the form of numbers, tables and graphs and therefore quantitative data collection was selected as the method of data collection. Once this had been established, it became necessary to determine exactly how the data would be collected.

5.2.2.1 Quantitative data

According to Neuman and Kreuger (2003:34-37), quantitative data collection techniques can further be divided into four subcategories:

- Experiments – experimental research can be conducted in real life or in laboratories. Its use is usually limited to subjects for which the researcher is able to control the situation. This method of data collection is usually most effective for explanatory research.
- Surveys – survey research takes the form of a written questionnaire that the research subjects are asked to complete and return to the researcher. The researcher then records the answers and summarizes the results in the form of graphs or tables, in order to make deductions. Use is often made of a sample or smaller group than an entire population, after which the results are generalized to a larger group. This type of data collection is most effective for descriptive or explanatory research.
- Content analysis – this data collection technique takes the form of analysing a body of material and recording specific aspects thereof. The researcher then records what was found in the material. This type of data collection can be used for exploratory and explanatory research, but is usually used in descriptive research.
- Existing statistics – when using this type of data collection technique, the researcher obtains previously collected information (often in the form of previously conducted surveys) and then combines the information in a different manner, in order to address a different research question. This type of research can, again, be used in exploratory or explanatory research, but is most often used in descriptive research.

Experimental research was immediately discarded as a data collection technique, in view of the fact that explanatory research is not being conducted. Content analysis and existing statistics were considered briefly, but were eliminated as options seeing as the information necessary to conduct this type of research would not necessarily be readily available. It was therefore concluded that surveys would be the most effective data collection technique of this study.

5.2.3 Designing the questionnaire

As soon as it was established that surveys would be the selected method of data collection, the questionnaire was designed. According to McBurney (2001, 237-242), there are four steps in designing the questionnaire:

5.2.3.1 Determine the purpose of the questionnaire

The purpose of the questionnaire was determined by referring to the specific objectives to be met by the empirical research. These objectives (specific objectives 5, 6 and 7, page 5) can be set out as follows:

1. To determine how entities in the pharmaceutical industry rate the level of competition, as well as the

change in their view over the past five years. The competitive forces will also be identified. This information will be obtained by means of empirical research.

2. To identify the most common strategies adopted by entities in the pharmaceutical industry, with reference to the product-market strategies incorporated into the 3X3 matrix derived from Ansoff's matrix. Use will be made of the results of the empirical research, in order to identify these strategies.
3. To evaluate whether competition has had a negative impact on the financial performance of the industry players. This will be done by means of an evaluation of the movement in basic financial ratios over the past five years and these movements will be obtained through empirical research.

In order to achieve these objectives, the questionnaire was divided into three main sections:

- Part A – competitive environment. In this section of the questionnaire, the respondents were asked general questions regarding the competitive environment of the pharmaceutical industry, both currently and five years ago. The reason for the two different time frames was to determine whether the impact of the competitive environment has changed over the past five years, in order to draw a conclusion relating to the level of competition in the industry.
- Part B – product-market strategy. This section of the questionnaire was designed to determine what role competition plays in the strategy of a pharmaceutical company, as well as to determine what product-market strategy has been adopted by the entities. The questions here were also structured to provide answers regarding the current situation and the situation five years ago, in order to conclude whether competition has played a role in causing pharmaceutical entities to change their strategies.
- Part C – ratio analysis. This part of the questionnaire relates to the movement in basic financial performance indicators of the pharmaceutical entities over the past five years. The results of this part of the survey will be used to determine whether competition has had an unfavourable influence on the financial performance of the respondents. Due to the high level of confidentiality experienced in the industry as stated by Lok (2004), the financial results of the entities were not obtained.

5.2.3.2 Determine the types of questions

According to McBurney (2001:238), survey questions can be either open-ended or closed-ended. An open-ended question allows respondents to answer a question in their own words, while a closed-ended question limits the respondents to specific alternatives that have been designed in advance. Due to the difficulty that can be encountered in coding and analysing the results of open-ended questions (McBurney, 2001:238), it was decided to make use of closed-ended questions, in the form of questions

that provide multiple solutions and require the respondents to select the alternative that best applies to them. Only one open-ended question was included (question 5, appendix 3, page 80), where the respondents could provide another answer if the choices given were not sufficient. The closed-ended questions covered possibilities identified during the literature review.

5.2.3.3 Compile the questionnaire

Once the purpose of the questionnaire and the types of questions were decided on, the next step in the process was to compile the questionnaire. The pharmaceutical industry in South Africa is well known for its confidentiality (Lok, 2004). For this reason, it was necessary to design questions that were not too probing, that would yield a satisfactory response rate. The questionnaire was therefore compiled in such a way as to encourage the respondents to complete them. The main factors that were considered were the following:

- Length – in view of the fact that the questionnaires would be sent to persons in the pharmaceutical industry that hold fairly senior financial positions, the length of the questionnaire was a huge consideration. According to Neuman and Kreuger (2003:276), a short questionnaire is usually three to four pages long and is appropriate for the general population. Generally, the longer the questionnaire, the lower the response rate. Bearing this in mind, the researcher was of the opinion that the questionnaire should be as short as possible, to encourage the participants to respond. A number of questions were formulated, with irrelevant or intrusive questions being eliminated. Finally, the number of questions was limited to 20 multiple-choice questions, with the total length of the questionnaire being only five pages long.
- Types of questions – the questions asked were re-designed numerous times, in order to ensure that the respondents would not feel that they were being asked to divulge sensitive information. Confidentiality was guaranteed and no financial information was required. Respondents were merely asked to indicate the movement in basic financial performance indicators. As the questionnaire would be sent to persons that hold fairly senior financial positions it was assumed that they would have sufficient knowledge to answer and interpret these questions with ease.

The questionnaire was finally developed and ready to be sent out. The complete questionnaire can be found in appendix 3, pages 79-83.

Before the questionnaire was sent to the sample, a pilot run was done to evaluate the validity of the questionnaire. While the target industry of the study is the pharmaceutical industry, it was decided not to send the questionnaires to pharmaceutical companies, as this would further decrease the population from

which the sample was selected (refer to 5.2.4). The decision was therefore made to distribute five adapted questionnaires to financial managers of various Medical Schemes in South Africa. This decision was based on the fact that, although different, the Medical Scheme and pharmaceutical industry are related in that they are both characterized by high levels of competition, as well as increased government interference (Council for Medical Schemes, 2003). Five financial managers that are personally known to the researcher were contacted telephonically and the questionnaire sent via electronic mail. The responses were received back within a week and the results were put into Excel for analysis.

The data was analysed using Excel spreadsheet formulae, and graphs were prepared to evaluate whether the results of the questionnaire provided valid answers to the questions. The results of the pilot study proved satisfactory, in that the answers could be accurately mapped on graphs and deductions could be made from the results. These results will not be included in the study, as this could create an inaccurate perception of the results of the research.

5.2.3.4 Determine how the data will be analysed

It was decided, after consultation with the Statistical Consultation Service at the North-West University, that a number would represent each option that the respondents could select. The results would then be summarized in electronic spreadsheets and analysed by means of Excel and other formulae. The results will be summarized and presented in tabular and graphical format.

5.2.4 Defining the population

Once the questionnaire was developed and ready, the next step in the research was to determine to whom the surveys would be sent to complete. The target population was first broadly defined as “all pharmaceutical companies in South Africa”. This information proved to be particularly difficult to come by and therefore a more structured process of elimination was followed.

In South Africa, companies are classified in industries according to SIC codes (Lok, 2004). Pharmaceutical companies all fall under one “SIC” code, 33530, which include the manufacture of the following (Lok, 2004):

- Pharmaceutical products for human or veterinary use.
- Surgical dressings, medicated wadding and other surgical supplies.
- Cement used in dentistry.
- Chemical substances used in the manufacture of pharmaceuticals.

According to Lok (2004), there are more than 200 entities that fall within the above industry code. A list of all the companies that were classified under the SIC code 33530 was therefore obtained from research conducted by Lok (2004). As is evident from the above industry classification, a large number of entities in the initial population would have to be eliminated. It was decided to eliminate the following:

- Entities that manufacture products for veterinary use.
- Entities that manufacture or sell surgical and medicinal supplies (bandages, etc).
- Dentistry cement.
- Entities that are registered solely as manufacturers of generic drugs (this elimination was decided on at the beginning of all research and was accordingly included in this elimination process).

It was then that the process of elimination began. Internet searches were conducted on all of the entities that fall into the industry category, in order to determine what their main line of business is. A large number of the companies were easily located and eliminated, while others were more difficult to find. Eventually, the population had been whittled down to 41 entities – 28 of which were definitely included in the scope of the study, and 13 entities for which no information could be found.

To address the remaining 13, reference was again made to the research paper published by Lok (2004), in which estimated market shares of the top nine pharmaceutical companies were published. The reason for the word “estimated” is that the majority of the companies in the industry are private (unlisted) companies, with the information not being readily available (Lok, 2004). According to Lok (2004), no single company in the entire industry holds more than 10% market share.

The top nine companies in the industry (the industry being the original industry, before the process of elimination began) hold a total of 41% market share (Lok, 2004). All of the top nine companies were included in the 28 companies that were obtained from the Internet searches. The entity with the lowest published market share had a share of less than 2%. It was therefore clear that all the entities with less market share than this were really very small. It was therefore decided to exclude the 13 unknown entities from the population, as they would not have a material effect on the results. The additional rationale behind this was that if a worldwide Internet search for information on the companies yielded no results, it is more likely than not that the entities are industry players that are too small to be representative of the population.

After this process, the researcher was left with the population from which the sample could be selected.

5.2.5 Designing the sample

McBurney (2001:246-247) identifies and discusses four main types of samples:

- Haphazard samples – the selection method used here is a form of “hit-or-miss”. The researcher has control over whom to sample, but the sample is selected in a haphazard manner.
- Purposive samples – these are samples that are selected based on a specific characteristic.
- Convenience samples – this is a sample that is chosen in a non-random manner, merely for practical reasons.
- Probability samples – this is obtained when the researcher knows the probability that a given individual will appear in the sample.

For this study, use will be made of a convenience sample. The practical reason for this stems from the fact that, ideally, the researcher would have wanted to send questionnaires to the entire population. However, it was decided to first contact the relevant subjects telephonically to determine how many would be willing to participate in the study. The sample is therefore defined as all those entities in the population of twenty-eight that indicated that they were prepared to complete the questionnaire.

5.2.6 Conducting the survey

This study made use of two main techniques – initial telephonic contact to determine the sample and electronic mail transmission of the questionnaire.

5.2.6.1 Initial telephonic contact

After consultation with the Statistical Consultation Services of the North-West University, it was decided that initial telephonic contact with the appropriate person might increase the response rate and time of the survey. During the process of defining the population by means of Internet searches (see 5.2.4), the telephone numbers of all twenty-eight entities were obtained. The companies were contacted telephonically, and personal contact was made with those individuals holding the position of financial manager in the entity. The names of all individuals were recorded for future reference, and to ensure that questionnaires were sent to specific people.

During the initial telephonic conversations, the financial managers of the entities were asked whether they would be willing to participate in the survey. Most of the managers indicated unwillingness at the beginning, but after they had been guaranteed confidentiality, the majority agreed that the questionnaires

could be sent to them via electronic mail. Of the twenty-eight companies contacted, only four refused to participate, citing confidentiality as the main reason. The sample size was therefore finally set at twenty four (85,7% of the population). During the telephone conversations, the financial managers were asked for their e-mail addresses, which were also recorded for future correspondence.

5.2.6.2 Electronic mailing of the questionnaires

After initial contact was made with the financial managers, individual e-mails were sent to each person contacted. The mails were addressed to the specific person, and only one mail at a time was sent. This was done to ensure confidentiality of the participants and to attempt to increase the response rate by means of personal interaction. Three items were attached to the mails:

- A document from the North-West University, citing support for the research and requesting co-operation.
- A guarantee of confidentiality of the information, signed by the researcher.
- The questionnaire itself.

A cut-off date for responses was set at five weeks after initial contact was made.

5.2.6.3 Response rate

Pharmaceutical companies are, in general, found to be non-transparent and unwilling to discuss issues facing the industry (Lok, 2004). The main reason for this high level of confidentiality could possibly be the extremely intense competition against industry players (Lok, 2004). For these reasons, a high response rate was not expected. Rather, the researcher attempted to determine what would be an acceptable response rate that would provide results that are representative of the population.

A total of twenty-four questionnaires were sent out. As discussed in 5.2.4 above, it was ensured that the top nine pharmaceutical companies (with reference to market share) were included in the population. After the initial telephonic contact, only one of the top nine entities was not willing to participate in the survey. The sample therefore included eight of the top pharmaceutical companies in South Africa, accounting for 36% of the total market share in South Africa. The response rate would have been unacceptable if the majority of the top eight entities did not respond. Even though the total market share held by the top eight entities is very small, the company with the highest market share holds only 7,5% and the company with the smallest market share of the eight companies' holds 1,8% (Lok, 2004). It is therefore the researcher's opinion that, provided the majority of the largest entities respond, the results of

the survey can be representative of the entire population.

The response rate of the survey proved, in the end, to be more satisfactory than expected. Eleven of the twenty-four companies responded (a response rate of 46%). However, of the eleven that responded, six of the entities were among the top eight in South Africa, accounting for a total of 29,8% of the market share in South Africa. This amounts to 83% of the market share of the top eight companies, when expressed as a percentage of the 36% market share mentioned above. Correspondence with the Statistical Consultation Services of the North-West University confirmed that, in view of the fact that the companies in the industry all have very small market shares, the response rate obtained could be used to draw valid conclusions about the population.

5.2.7 Analysis of the results

The results of the survey will be discussed and evaluated in order to achieve the specific objectives of the empirical research, as set out in paragraph 1.4, pages 4-5, further defined in paragraph 5.2.3.1, pages 42-43. The objectives can be summarized as follows: to determine the level of competition in the pharmaceutical industry in South Africa and to evaluate whether competition plays a role in the strategy determination of a pharmaceutical company. The analysis of the results also aims to determine whether the financial performance of the pharmaceutical industry has been adversely affected by competition.

The questions that were included in the questionnaire will be discussed in point form in the rest of the chapter. This will be done using a three-step process for each question:

- Introduction – this will define the specific objective of the question asked.
- Results – this will summarize the results of the survey in tabular and/or graphical format.
- Conclusion – a conclusion will be reached regarding what can be deduced from the results. Each conclusion will relate only to the results of the specific question.

For the purpose of clarity, it may be necessary to group the results of two or more questions together.

5.3 Competitive environment

The questions in the survey that relate to the competitive environment were included in order to achieve specific objective number 5 (page 5), namely:

To determine how entities in the pharmaceutical industry rate the level of competition, as well as the

change in their views over the past five years. The competitive forces will also be identified.

5.3.1 Multinational or local

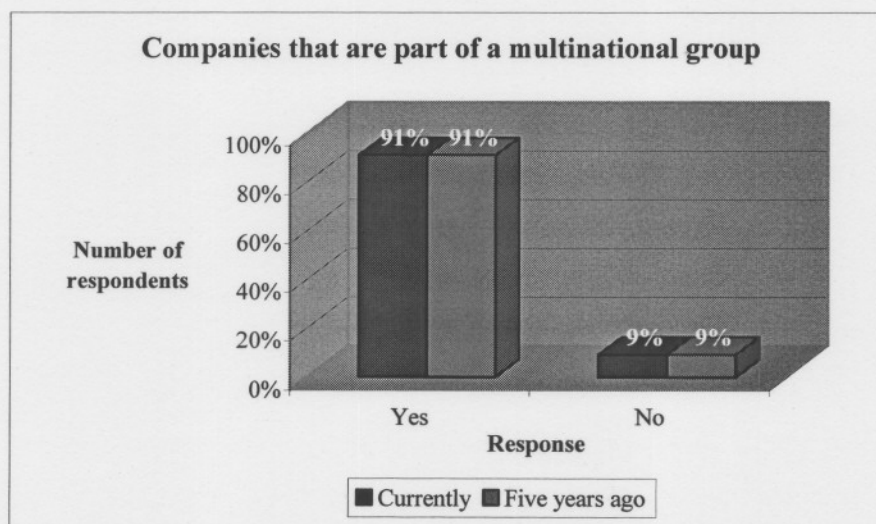
5.3.1.1 Introduction

The purpose of questions 1 and 3 of the survey (appendix 3, page 79) is to corroborate research that indicates that the majority of the players in the pharmaceutical industry in South Africa are multinationals (Lok, 2004). The presence of multinationals in South Africa means that there is already a global presence, in the form of the international firms, and the growth into global markets may not be possible. This question also sets out to justify the rejection of the expanded matrix discussed in paragraph 3.2.2, as designed by Andreasen and Kotler (2003:81), in view of the fact that pharmaceutical companies are already global players and geographical expansion is not considered to be a strategy of choice.

5.3.1.2 Results

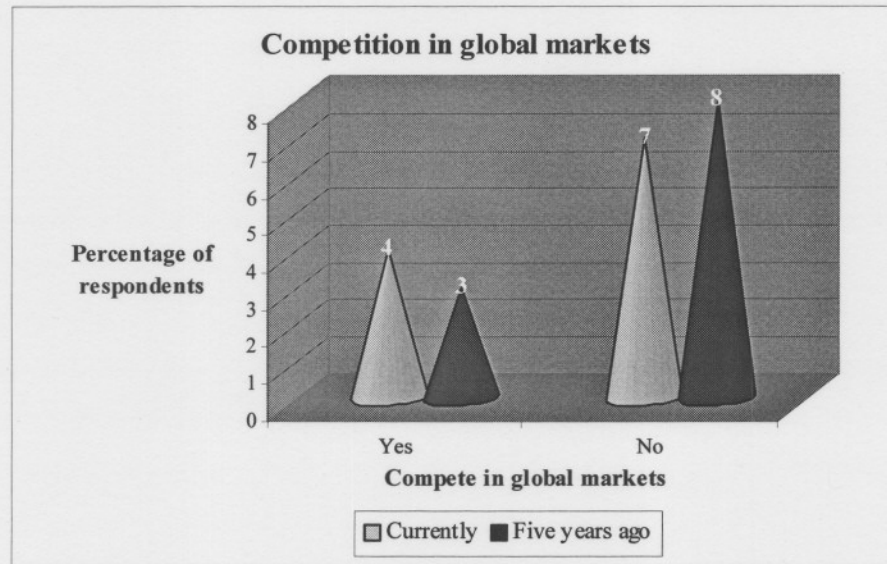
As can be seen from graph 5.1 below, 10 out of the 11 respondents (91%) indicated that they are part of multinational companies, while only 1 (9%) indicated that it was not. The results are the same for the current situation and for the situation as it was five years ago.

Graph 5.1: Percentage of pharmaceutical companies that are part of a multinational group



Graph 5.2 below indicates the number of players in the South African market that compete globally (i.e. the South African company itself and not its international affiliates).

Graph 5.2: Number of South African companies that compete in global markets



Of the 11 respondents, only 4 indicated that they currently compete in global markets. This number has only increased by 1 (from 3) over the past five years.

5.3.1.3 Conclusion

Using graph 5.1, page 50, it is evident that the large majority of pharmaceutical companies in South Africa are part of multinational pharmaceutical groups. This therefore substantiates further the decision made in paragraph 3.2.2 not to use Andreasen and Kotler's matrix, as most of the industry players are international companies that are already geographically dispersed.

Graph 5.2 above corroborates the results obtained from graph 5.1. Since most of the companies in South Africa are part of a multinational group, the link between the two questions can be seen. The multinational companies have already geographically expanded into South Africa (global competition) and it is therefore not necessary for the South African companies to focus large amounts of effort on international markets.

5.3.2 Origin of research and development expenditure

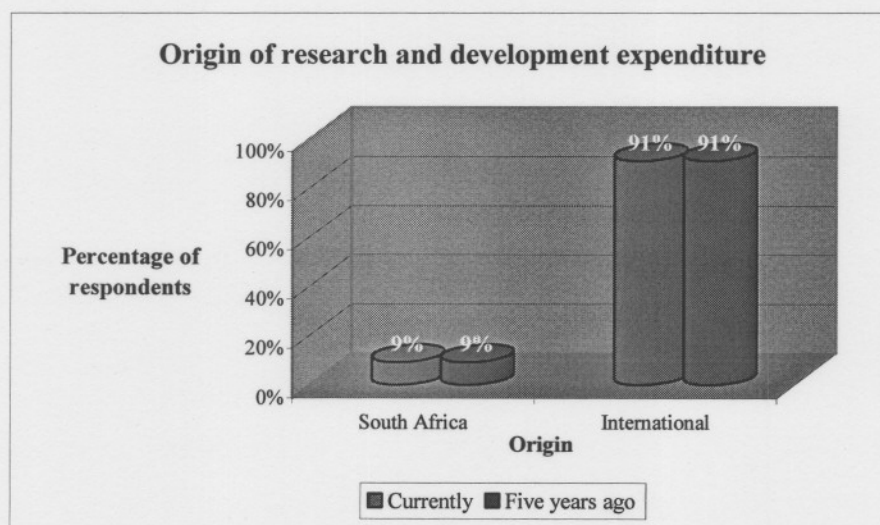
5.3.2.1 Introduction

Question 2 of the survey (appendix 3, page 79) set out to determine where the majority of a pharmaceutical company's research and development expenditure is incurred. The objective of this question links directly to the discussion of profitability of entities in paragraph 4.3.2, page 35-36. In that paragraph, it was assumed that, since most of the pharmaceutical entities in South Africa are multinationals (which was proven in 5.3.1 above), most of the research and development expenditure is likely to take place internationally and therefore any financial ratio analysis that uses research and development expenditure as a basis would not be a reliable indication of the results of a South African pharmaceutical company.

5.3.2.2 Results

By summarizing the results of this question into the form of a graph, it is evident that 91% of the respondents (10 out of the 11) indicated that the majority of the research and development expenditure takes place internationally, as opposed to locally. The response rate is the same for the current situation and for the situation as it was five years ago. The only respondent that indicated that research and development expenditure is carried on in South Africa, is the one that answered in question 1 that it is not part of a multinational company (refer to 5.3.1 above).

Graph 5.3: The origin of research and development expenditure



5.3.2.3 Conclusion

Based on the results summarized in graph 5.3, it can be seen that most of the research and development expenditure of pharmaceutical companies takes place internationally. This result therefore supports the decision of the researcher not to include financial ratios that evaluated the results of a company with reference to research and development expenditure, when deciding on which financial performance indicators to include in the questionnaire.

5.3.3 The level of competition in the industry

5.3.3.1 Introduction

In question 4 (appendix 3, page 79), respondents were asked to rate the level of competition in the industry as they perceived it five years ago, as well as how they perceive it currently. The ratings went from “low” to “very high”. The purpose of this question was to determine whether the responses from the pharmaceutical companies corroborate published literature that cites a high level of competition in the industry, and as to whether it has changed over the past five years.

5.3.3.2 Results

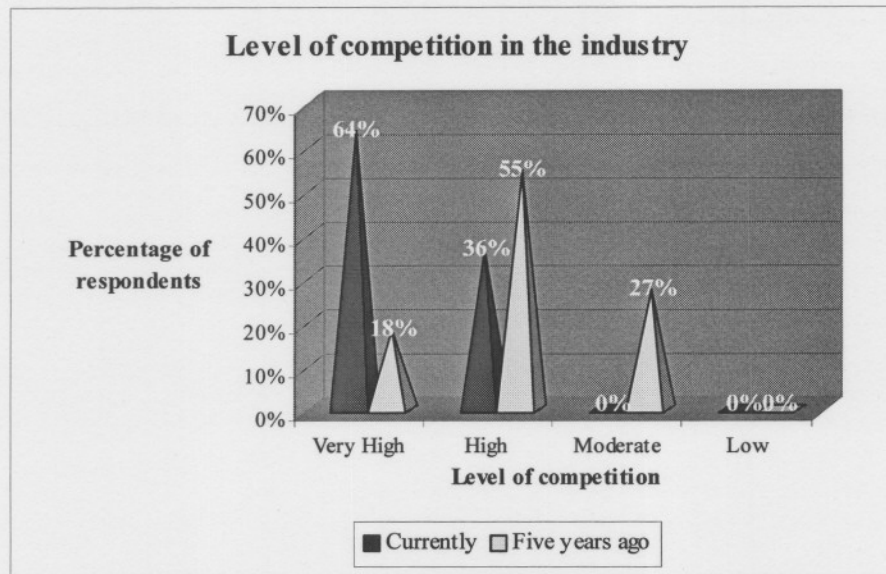
The results of the question are illustrated in the following table:

Table 5.1: Level of competition in the pharmaceutical industry

Level of competition	Currently	Five years ago	Movement
Very High	7	2	45%
High	4	6	-18%
Moderate	0	3	-27%
Low	0	0	0%
	11	11	0%

It can be seen that the number of respondents who consider the level of competition to currently be very high, has increased by 45% from five years ago. The results can further be illustrated by means of a graph:

Graph 5.4: The level of competition in the pharmaceutical industry



Not one of the respondents considers competition to be at a low level, and the majority of the respondents classify the level of competition as either “very high” (increased from 18% five years ago to 64%) or as “high” (decreased from 55% five years ago to 36%).

5.3.3.3 Conclusion

From the results obtained, it can be deduced that the level of competition in the pharmaceutical industry has increased. All of the respondents consider competition to currently be at very high or high levels, while five years ago 27% of the respondents still considered the level to be moderate. There is therefore a clear link between the literature reviewed that considered the pharmaceutical industry to be highly competitive, and the results of the empirical research.

5.3.4 Competitive forces

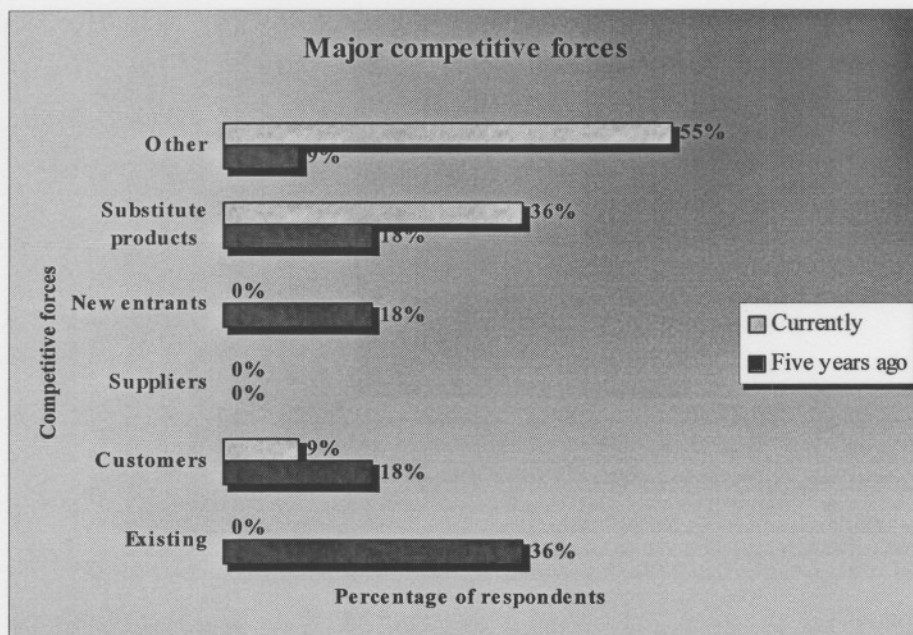
5.3.4.1 Introduction

In chapter two, it was concluded that the “five forces” model of competition developed by Porter could, theoretically, be applied to the pharmaceutical industry. In question 5 of the survey (appendix 3, page 80), the respondents were requested to indicate which of the “five forces” they considered to be the largest competitive influence. This question was also the only open-ended question in the survey, in that the respondents were given a sixth option, “other”, in which they were requested to specify any other

competitive force they considered to be central in the pharmaceutical industry. This aim of this question was to determine which, if any, of the “five forces” of competition identified in chapter two were perceived to be prevalent in the industry. The open-ended option was provided to determine whether there are any other forces that are not considered by Porter’s model.

5.3.4.2 Results

Graph 5.5: The major competitive forces in the pharmaceutical industry



From graph 5.5, it can be seen that 36% of the respondents (4 out of the 11) considered existing competitors, or rivalry among existing firms, to be the largest competitive influence. 18% of the respondents considered the bargaining power of customers, the threat of new entrants and the threat of substitute products to be the largest competitive force five years ago. When one looks at the competitive forces that the respondents considered being the most important currently, it is clear that the main threat has shifted from existing firms to substitute products and “other”. For both time frames, none of the firms considered the bargaining power of suppliers to be a major competitive threat, which substantiates the assumptions as stated in paragraph 2.3.3 (page 16), that the bargaining power of suppliers is not expected to be a huge source of competition. When looking at the results of the open-ended question, the respondents identified only two additional sources of competition:

Table 5.2: Other competitive forces identified

	Number	Percent	Percent of total respondents
Government legislation	5	83%	45%
Managed health care	1	17%	9%
	6	100%	55%

83% of the respondents who answered “other” (45% of the total population) consider government legislation to be the largest competitive force in the industry at the moment, while one respondent indicated managed health care as the main source of competition.

5.3.4.3 Conclusion

It can be deduced from graph 5.5 that the “five forces” of competition, identified by Michael Porter, are applicable in the pharmaceutical industry. There has been a change over the past five years as to which force is the strongest. Currently it appears that government legislation is a competitive force that is having the largest impact on the industry. Government interference and regulation act as a barrier to entry (refer to paragraph 2.3.4, pages 16-17), which combats the threat of new entrants. It can therefore be deduced that, even though the regulatory environment is not specifically included in Porter’s “five forces” model, it does play a role as a barrier to entry.

5.4 Product-market strategies

The questions relating to the product-market strategies of the respondents were included in the survey in order to achieve specific objective number 6 set out in chapter one (page 5), namely:

To identify the most common strategies adopted by entities in the pharmaceutical industry, with reference to the product-market strategies incorporated into the 3X3 matrix derived from Ansoff’s matrix.

5.4.1 The impact of competition on strategic planning

5.4.1.1. Introduction

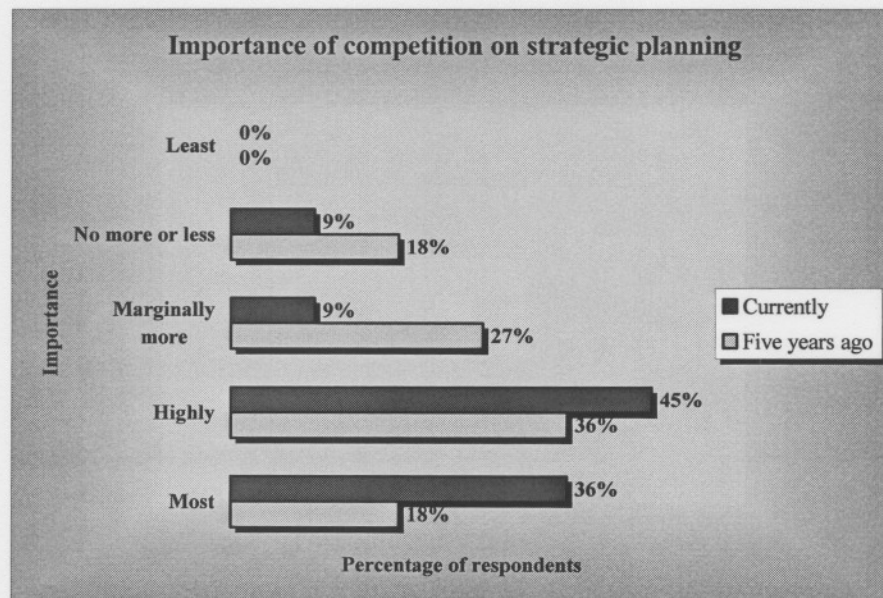
Question 6 of the questionnaire (appendix 3, page 80) was asked specifically to determine whether companies in the pharmaceutical industry consider competition to play a role in the strategic planning of

the company, and therefore in the strategy option. Respondents were asked to rank the importance of competition in strategic planning from “least important” to “most important”. The results of this question go a long way in supporting the validity of this study, since the hypothesis of the study is based on the assumption that the impact of competition plays a large role in the strategy-formulation process.

5.4.1.2 Results

From graph 5.6 below, it can be seen that none of the respondents selected “least important” as an option, neither five years ago, nor currently. The proportion of respondents who consider competition to be the most important factor in strategic planning five years ago, moved from 18% five years ago to 36% currently. 36% of the respondents stated that, five years ago, competition was highly important in strategic planning. This percentage increased to 45% of the respondents who feel that competition is currently highly important.

Graph 5.6: The importance of competition in strategic planning



5.4.1.3 Conclusion

It can be deduced from the above results that competition is, indeed, a very important factor that entities consider when determining the best strategy for the company. The majority of the respondents feel that it is either the most important factor or highly important. The results of this question support the hypothesis that competition does have an impact on the strategies of a company in the pharmaceutical industry.

5.4.2 Choice of product-market strategies

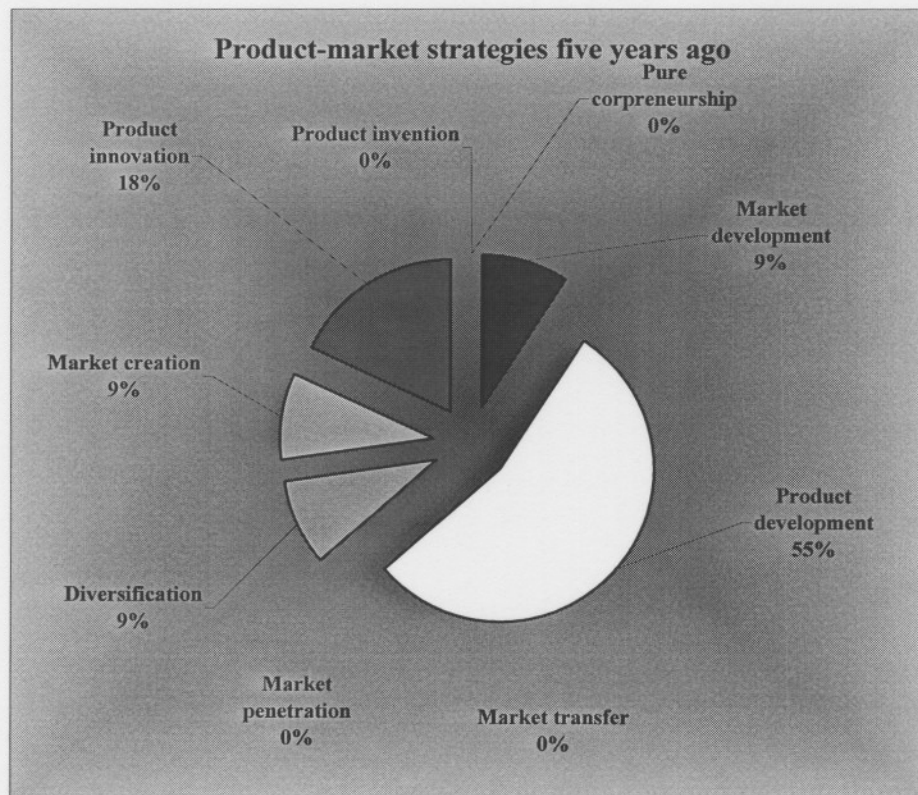
5.4.2.1 Introduction

In chapter 3, it was decided to use a 3X3 matrix expanded by Harper in 1992 to classify the various product-market strategies of entities in the pharmaceutical industry. The objective of questions 7 and 8 of the questionnaire (appendix 3, page 80-81) was to determine what strategies pharmaceutical companies adopted five years ago, and which strategies are currently in use.

5.4.2.2 Results

The results of question 7 and 8 were combined in order to obtain the strategic option that was chosen by the respondents. The respondents indicated that, five years ago, the choices of product-market strategies were as follows:

Graph 5.7: Product-market strategies five years ago



55% (6 out of the 11 respondents) indicated that, five years ago, the strategy of choice was to sell new products in existing markets (product development). Product innovation, i.e. selling technologically superior products in existing markets, appears to have been the second most popular strategy five years ago, with 18% of the respondents choosing this option. Market development, diversification and market creation were each the strategy of choice for 9% of the respondents, while none of the respondents selected market penetration, product invention, market transfer or pure entrepreneurship.

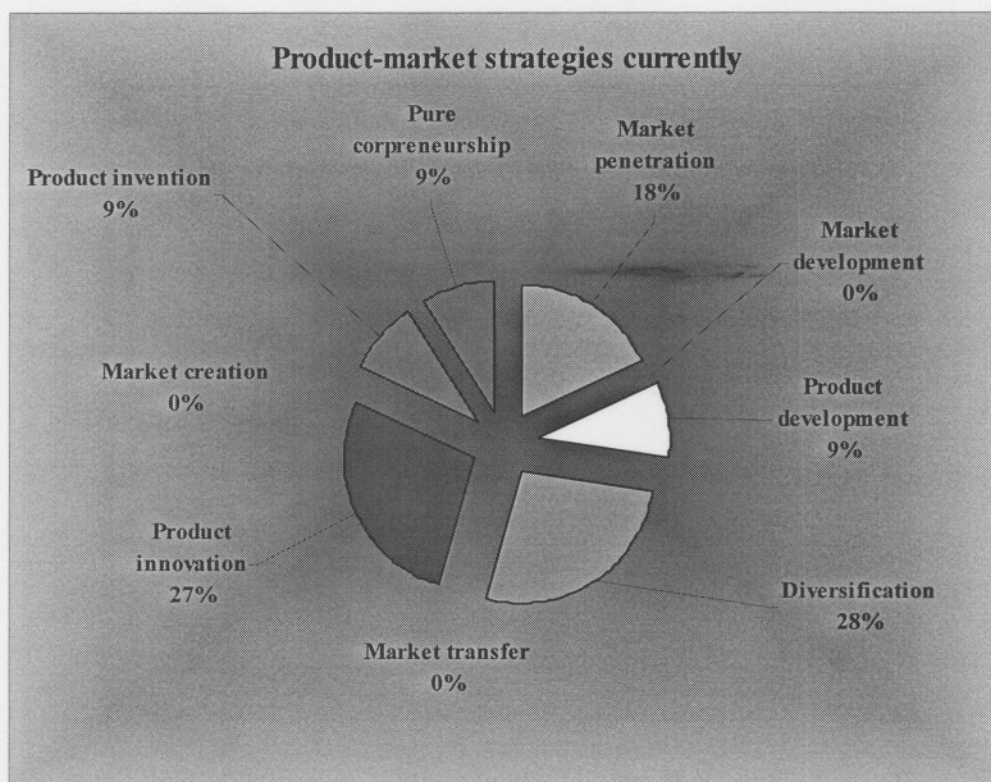
Table 5.3 indicates, per company, which strategy was in place five years ago, compared to the strategy that is currently implemented. For the sake of confidentiality, the companies are labelled as companies "A" to "K", determined in the order in which the responses were returned.

Table 5.3: Shift in product-market strategies

	5 years ago	Currently	Change?
Company A	Diversification	Diversification	No
Company B	Market development	Diversification	Yes
Company C	Product development	Product innovation	Yes
Company D	Product development	Product invention	Yes
Company E	Product development	Market penetration	Yes
Company F	Product innovation	Product development	Yes
Company G	Market creation	Market penetration	Yes
Company H	Product development	Diversification	Yes
Company I	Product development	Pure entrepreneurship	Yes
Company J	Product development	Product innovation	Yes
Company K	Product innovation	Product innovation	No

From table 5.3 it can be seen that only 2 (companies A and K) out of the 11 respondents (18%) have **not** experienced a change in strategy over the past five years. There is also not a clear majority for any one of the product-market strategy choices. This can further be illustrated by graph 5.8:

Graph 5.8: Current product-market strategies



While diversification (28%) and product innovation (27%) were each selected by 3 of the respondents, there is not a large concentration in any of the cells as there was five years ago.

5.4.2.3 Conclusion

The results of the questionnaire indicate that there has been a vast change in the product-market strategies adopted by entities in the pharmaceutical industry over the past five years. Five years ago, there was a clear distinction between the strategy of choice (product development) and the other options. Over the past five years, 82% of the respondents have changed their product-market strategies, with no single strategy winning a clear majority. It can therefore be concluded that the strategies of entities have changed significantly, but no conclusion can be reached regarding a favoured strategy.

5.5 Ratio analysis

The survey included basic questions regarding the movement in financial performance indicators over the past five years, in order to achieve specific objective number 7, set out on page 5, namely:

- To evaluate whether competition has had a negative impact on the financial performance of the industry players.

For the purpose of analysing the results of this part of the questionnaire, the responses to the questions will be evaluated according to the categories of financial ratios to which the questions related, i.e. profitability, risk, growth and cash flow.

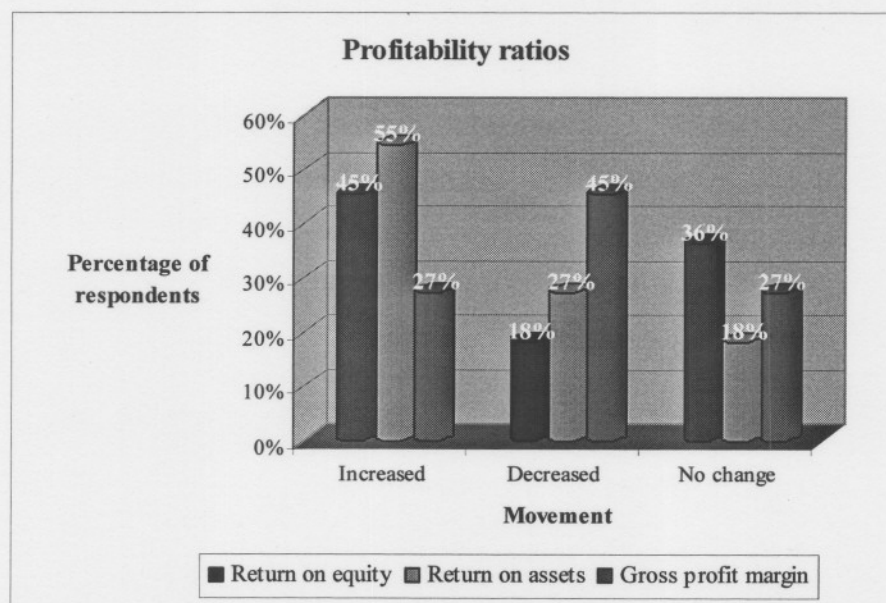
5.5.1 Profitability

5.5.1.1 Introduction

Questions 9, 10 and 11 of the questionnaire (appendix 3, page 81) were asked in order to determine whether profitability in the industry has increased, decreased or stayed the same over the past five years. Respondents were not asked to supply financial information, but were provided with a definition of the ratio and then asked to indicate the movement in said ratio over the past five years.

5.5.1.2 Results

Graph 5.9: Profitability in the industry



Graph 5.9 above shows that 45% of the respondents indicated an increase in return on equity over the past

five years, while 36% indicated that there had been no change and only 18% responding that their return on equity decreased. 55% of the respondents experienced an increase in return on assets, with 27% experiencing a decrease and 18% indicating that their return on assets did not change over the past five years. 45% of the participants responded that their gross profit margin has decreased over the past five years, with 27% of the respondents indicating an increase, as well as no change.

5.5.1.3 Conclusion

The majority of the respondents displayed an increase or unchanged return on equity, which is an indication that the profitability of the companies either increased or stayed the same. When looking at return on assets, the majority of the respondents indicated an increase in profitability. The only ratio that shows a clear decline in profitability is the gross margin, with 45% of the respondents experiencing this decrease. It therefore appears that, overall, the profitability of the companies that responded has increased over the past five years. This indicates that entities are showing an improved ability to generate returns on the assets employed as well as the shareholders' investments, while under pressure to settle for smaller gross profit margins.

5.5.2 Risk

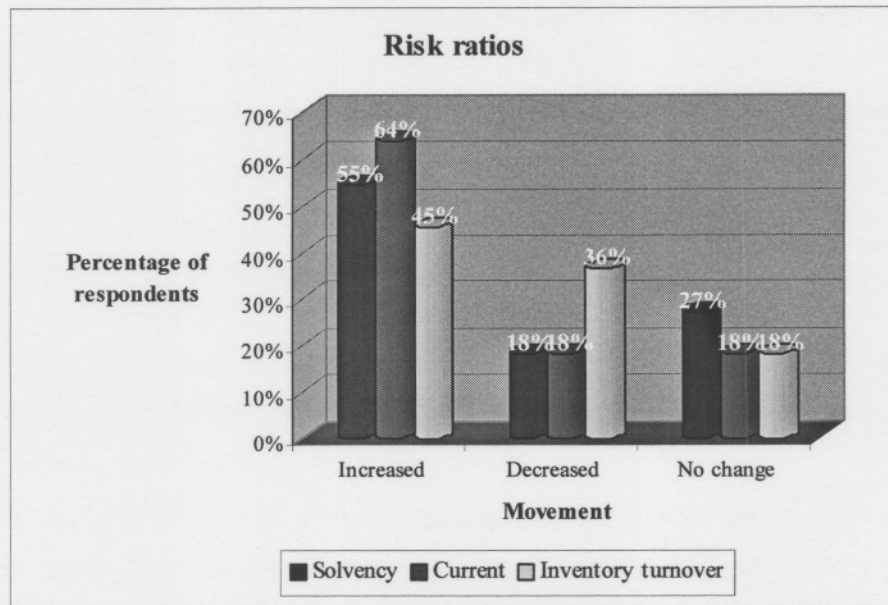
5.5.2.1 Introduction

The objective of questions 12, 13, 14 and 15 of the questionnaire (appendix 3, page 82) was to determine how the financial strength (solvability and liquidity) of the industry has progressed over the past five years. An increase in solvency, current and inventory turnover ratios would indicate improved financial strength, while a decrease in the debt/equity ratio would indicate the same.

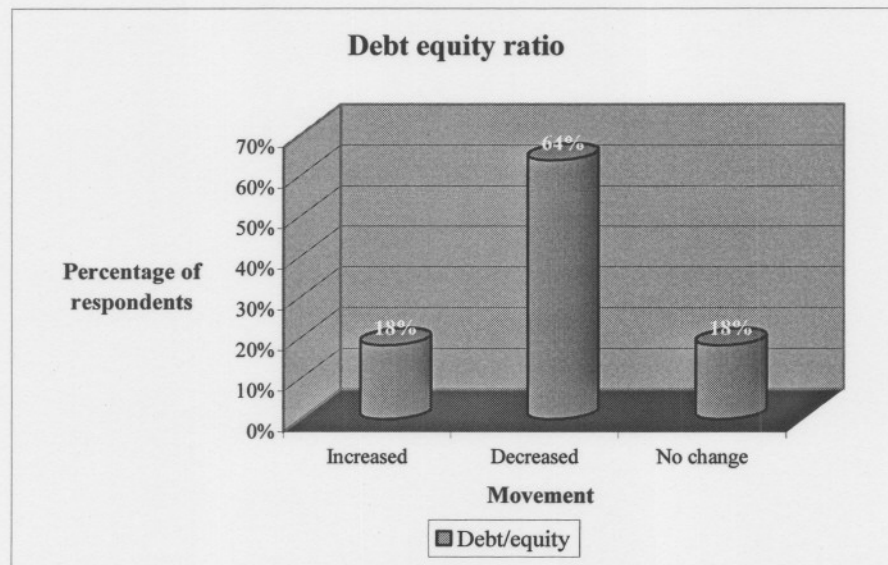
5.5.2.2 Results

The change in financial strength of the entity's that responded can be illustrated in graphs 5.10 (solvability, current ratio and inventory turnover) and 5.11 (debt/equity) below:

Graph 5.10: Solvency and liquidity in the pharmaceutical industry



Graph 5.11: Debt/equity ratio in the pharmaceutical industry



The majority of the respondents indicated an improved solvency (55%) and liquidity or current ratio (64%) position over the past five years. 64% of the respondents indicated a decrease in the debt/equity ratio, while 45% indicated that their inventory turnover increased.

5.5.2.3 Conclusion

Overall, the financial stability and strength of the pharmaceutical industry, as embodied in the results of the survey, appear to have improved. The entities are improving their ability to repay short-term and long-term debt, and the general decrease in the ratio of debt to equity indicates that the entities are becoming less reliant on liabilities in order to finance the operations.

5.5.3 Growth

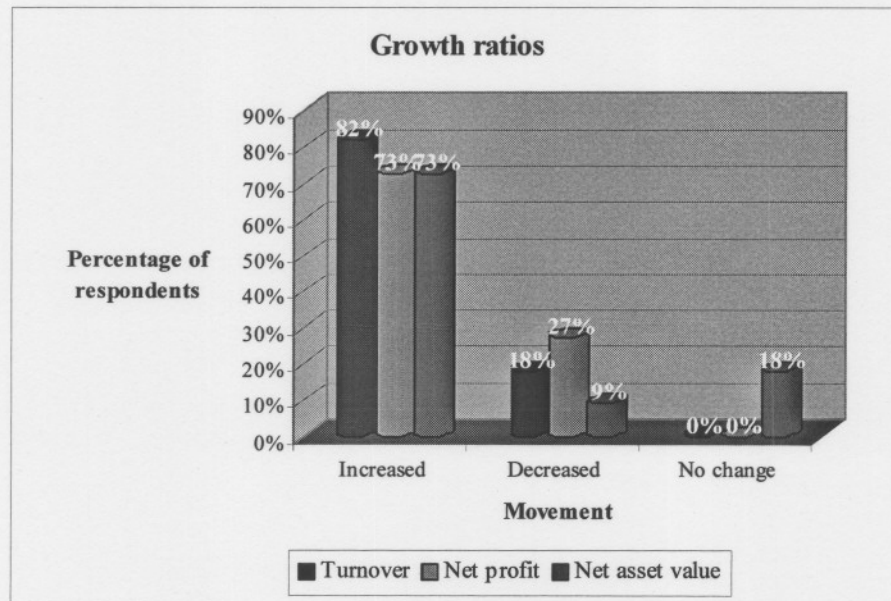
5.5.3.1 Introduction

The objective of questions 16, 17 and 18 of the questionnaire (appendix 3, page 82-83) was to determine whether entities in the pharmaceutical industry have experienced growth in revenue, net profit and net asset value, in the competitive environment in which they operate.

5.5.3.2 Results

From graph 5.12 below, it can be seen that the majority of the companies experienced an increase in revenue, net profit and net asset value over the past five years. 18% of the respondents experienced a negative growth (decrease) in revenue, 27% of the respondents experienced a decline in net profit, and only 9% of the respondents indicated that their net asset value has decreased.

Graph 5.12: Growth in the industry



5.5.3.3 Conclusion

The results of the questionnaire clearly indicate that, despite the high level of competition in the industry, most of the entities are experiencing growth. The limitation of these results is that the extent of growth is not indicated, which means that, even though growth is being experienced, it is not possible to determine at what rate the indicators are growing.

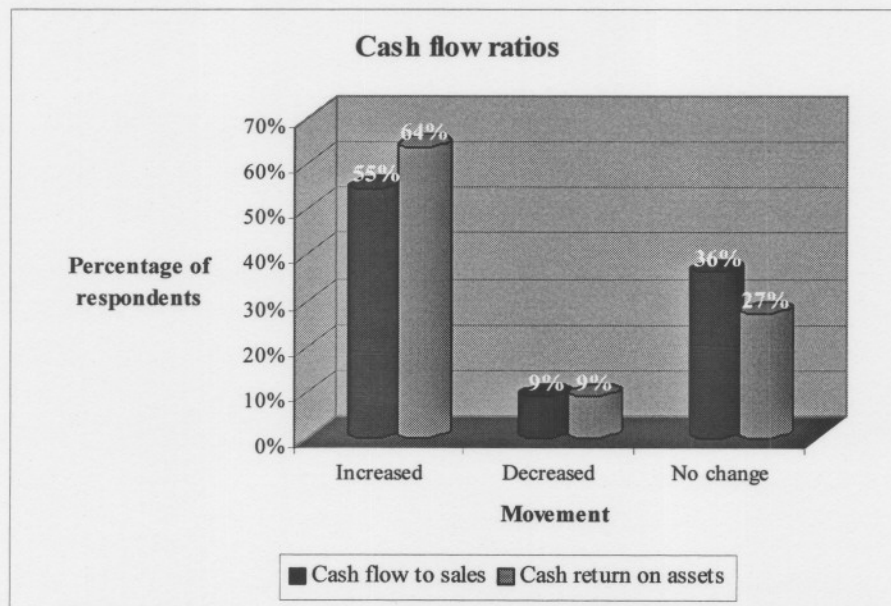
5.5.4 Cash flow

5.5.4.1 Introduction

Due to the increased importance that is being attached to the cash resources of entities (see paragraph 4.6, page 38), two cash flow ratios were included in the questionnaire. The objective of questions 19 and 20 (appendix 3, page 83) was to determine whether or not the companies that responded have shown an improved cash return on sales and assets or whether any increase in return is merely non cash flow.

5.5.4.2 Results

Graph 5.13: Cash return in the industry



Graph 5.12 above indicates that 55% of the companies have shown an increased ratio of cash generated

from operations to sales, while 64% of the companies have shown an increase in cash return on total assets.

5.5.4.3 Conclusion

Over the past few years, the majority of the companies have experienced an increase in cash return on both sales and assets. This indicates that the companies are not only generating paper profits, but are also managing to obtain an increased level of cash return. Increased levels of cash means that the companies are in stronger liquidity positions, and the ability to pay cash returns to their shareholders in the form of dividends has grown stronger. This also correlates with the finding in 5.5.2.3.

5.6 Relation between financial performance and strategy

Various attempts were made during the analysis of the results to find a correlation between the change in financial performance of the entities (over the past five years) and the change in the product-market strategies. Mainly in view of the fact that the choices of strategies appear to be scattered across the matrix, it would not be possible to identify a meaningful correlation between an entity's strategy of choice and their financial performance over the past five years (specific objective number 8, page 5).

5.7 Summary

Empirical research was conducted, after the various methods and types of research were investigated. The research took the form of surveys, which were distributed to 24 financial managers of pharmaceutical companies, after initial telephonic contact was made with the participants. Eleven responses were received and the results of the questionnaire were analysed using spreadsheets and graphs.

The objectives and results of the survey were as follows:

- To determine how entities in the pharmaceutical industry rate the level of competition, as well as the change in their view over the past five years (specific objective number 5, page 5). The competitive forces were also identified. 64% of the respondents indicated that they rate the level of competition in the industry as "very high", while five years ago only 18% considered the level to be very high (refer to table 5.1, page 53 and graph 5.4, page 54). The level of competition in the pharmaceutical industry has therefore increased over the past five years. It was also found that, five years ago, rivalry among existing firms was the largest competitive force, while 55% of the respondents answered "other" to this question when relating it to the current situation (refer to graph 5.5, page 55).

Government legislation was the main additional competitive force that was identified (refer to table 5.2, page 56).

- A further objective was to determine how important entities in the pharmaceutical consider competition to be, when carrying out their strategic planning. The results indicated that the majority of the respondents consider competition to be either the most important consideration or a highly important consideration in determining their strategy (refer to graph 5.6, page 57).
- The survey also aimed to determine what product-market strategies the respondents have adopted and how these strategies have changed over the past five years (specific objective number 6, page 5). The results of the empirical research indicated that the strategy of choice 5 years ago appears to have been the product development strategy, with 55% of the respondents selecting this option (refer to graph 5.7, page 58). 82% of the respondents experienced a change in product-market strategy over the past five years and no single strategy stands out as the current strategy of choice (refer to table 5.3, page 59 and graph 5.8, page 60).
- Another objective (specific objective number 7, page 5) of the empirical research was to determine how profitability, risk, growth and cash flow ratios of the entities in the pharmaceutical industry have changed over the past five years. The results of the survey indicated that, in broad terms, the financial performance of the entities has improved over the past five years (refer to graph 5.9, page 61, graph 5.10, page 63, graph 5.11, page 63 and graph 5.12, page 64).

In the next chapter, conclusions will be reached on the results of the empirical research and literature study, using the objectives of the study set in chapter 1 as a basis. Links will be formed between the results of the various questions of the questionnaire in order to determine whether all the objectives have been met. Chapter six will also include brief recommendations for further research that have come to light in the course of this study.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

In chapter 5, the results of the empirical research were analysed and discussed. This chapter will draw conclusions that stem from the results of the literature study and the empirical research. These conclusions will be discussed with reference to the specific objectives that were set in chapter 1, pages 4-5, after which the general aim of the study will be discussed. The hypothesis that was set in chapter 1, page 4 will thereafter be proved or rejected, stemming from the results of the objectives. Finally, brief recommendations for further research will be made.

6.2 Evaluate the sources of competition within the industry

This discussion relates to the achievement of specific objective number 1, page 5, which aimed to evaluate the impact of the changing competitive environment on the different strategies adopted by entities within the pharmaceutical industry. Porter (1980:4) determined that five competitive forces drive competition within an industry. This model was evaluated, using published literature as reference, and it was found that the following five competitive forces are indeed active in the pharmaceutical industry:

- **Rivalry among existing firms** – there are many players within the pharmaceutical industry that are constantly contesting for market share (Gradwell, 2003). The market concentration of the pharmaceutical industry was calculated using the market share of the top four pharmaceutical companies in the industry in South Africa. This market share was obtained from a research report compiled by Lok (2004) relating to the pharmaceutical industry. The market concentration was calculated as 24,5%, which indicates a highly competitive industry (Gwin, 2001).
- **The bargaining power of buyers** – there is currently legislation in force that makes it compulsory for generic drugs to be offered to a patient before the more expensive patented medication (Keeton, 2003:20). Moreover, buyers are becoming more and more sophisticated, which lends them the power to bargain down drug prices (Congressional Budget Office, 1998).
- **The bargaining power of suppliers** – in view of the fact that a large number of pharmaceutical companies in South Africa belong to larger, multinational groups (Lok, 2004), this source of competition is not considered to be a major factor in the pharmaceutical industry, as a large number of the drugs are manufactured internationally.

- **The threat of new entrants** – there are a number of barriers to entry in place in South Africa that limit the threat of new entrants. Among these are the amount of capital investment required in research and development, the interference of government in regulating the pricing of drugs, patent protection that is afforded to new drugs and the length of time it takes to register a new drug with the Medicines Control Council (Lok, 2004). The results of the empirical research (refer to 5.3.4) indicate that entities in the pharmaceutical industry do not consider the threat of new entrants to be a powerful competitive force. The reason for this is that the barriers to entry in the pharmaceutical industry are so high.
- **The threat of substitute products** – substitute drugs such as generics are often offered to the consumer at a lower price than the patented drug, which is adversely affecting the industry's growth rates (Johnsen, 2003).

The above five competitive forces are therefore the main sources of competition in the pharmaceutical industry, with the bargaining power of suppliers being a source that has less force than the others do.

6.3 Define and evaluate various product-market strategies

This relates to the achievement of specific objective number 2, page 5. Ansoff (1968:99) identifies four major growth strategies that are available to an entity:

- **Market penetration** – this strategy is all about offering existing products to an entity's existing markets. Pharmaceutical companies can achieve this by focusing on advertising aggressive sales strategies.
- **Product development** – when an entity adopts this strategy, it is offering a new product to its existing consumer market (Anon., 2000). This strategy requires a large amount of investment in research and development (Woodgreen School, 2003), which a pharmaceutical company achieves every time it invests in a new drug.
- **Market development** – by adopting this strategy, an entity enters into markets by offering its existing products (Sims & Smith, 2003:267). Pharmaceutical companies may prefer this strategy, as no new investment on research and development need to be made.
- **Diversification** – this strategy is the riskiest choice and involves an entity offering a new product to a new market (Anon., 2000).

6.4 Expansion of Ansoff's matrix

The discussion that follows relates to the attainment of specific objective number 3, page 5. A number of

expansions to Ansoff's matrix have been developed over the years in order to keep up with the changing business environment. It was decided to use the matrix expanded by Harper (1992) during the performance of the empirical research, given that it is the most applicable to the pharmaceutical industry.

Harper (1992) expanded Ansoff's matrix into a 3X3 matrix that takes into account the changing consumer needs, emerging local and international markets and the rate of technological change. The following five additional cells of the matrix were developed:

- **Product innovation** – this strategy focuses on the technological advancement of the process of manufacturing a new product and offering it to existing markets. Pharmaceutical companies could adopt this strategy, due to the necessity of state-of-the-art pharmaceutical science and technology (Rapp, 2004).
- **Product invention** – an entity that chooses this strategy offers a technologically superior product to new markets (Harper, 1992). Due to the high level of competition in the pharmaceutical industry, it seems reasonable to assume that companies would want to find new markets in which to sell their products.
- **Market transfer** – here, an entity offers existing products to emerging markets (Harper, 1992). Pharmaceutical entities could adopt this strategy by offering already patented drugs to emerging and Third World countries.
- **Market creation** – if this strategy is adopted, newly developed products are offered to emerging markets (Harper, 1992).
- **Pure “corpreneurship”** – entities that select this strategic option have chosen to offer technologically superior products to emerging markets (Harper, 1992). In view of the fact that technological advancement, as well as emerging markets, is applicable to the pharmaceutical industry, this option is also accepted as a possibility.

It can therefore be shown that Ansoff's matrix is still being considered and applied in research.

6.5 Basic financial performance indicators

This paragraph deals with specific objective number 4, page 5. During the empirical research, the effect of the increasingly competitive environment on the financial performance of entities in the pharmaceutical industry was to be evaluated. However, before this could be done a basic understanding of a number of ratios was obtained so that they could be used in the empirical research:

- **Return on total shareholders' interest after tax** – this is calculated by dividing net profit after tax by the total shareholders' interest, and is an indication of the return that a company is making the money that it already has (Correia *et al.*, 2003:5-17).
- **Return on total assets** – this ratio is calculated by dividing the profit before tax and finance costs by total assets (McClure, 2004a), and is an indication of how much value the company is creating (Maranjian, 2002).
- **Gross profit margin** – gross profit margin is derived by dividing the gross profit (sales less cost of sales) by the turnover of a company (Lesonsky, 2000). The higher the margin, the more money is left for other business operations (McClure, 2004b).
- **Solvency ratio** – the solvency of a company indicates its ability to repay its long-term debt and is calculated by dividing the total assets of the company by the total liabilities (Koen & Oberholster, 1999:51).
- **Debt/equity ratio** – this ratio is calculated by dividing the total liabilities by the total shareholders' interest, and is an indicator of the extent to which the company is financed by debt (Maltzman, 2004).
- **Current ratio** – this is an indication of the ability of a company to settle its short-term debts and is calculated by dividing current assets by current liabilities (Anon., 2004e).
- **Inventory turnover** – this is calculated by dividing the cost of goods sold by the average inventory, and is a good method of evaluating the effectiveness of a company's working capital management (McClure, 2003c).
- **Growth** – growth for any financial statement figure can be calculated by dividing the difference between the value in the current year and the value in the previous year, by the value in the previous year (Koen & Oberholster, 1999:75).
- **Cash flow to sales** – this ratio is calculated by dividing cash generated from operations by turnover and indicates the percentage of sales that are realized in cash (Koen & Oberholster, 1999:22).
- **Cash return on total assets** – this ratio is calculated by dividing cash available for operating activities by total assets, and is a measure of the cash return on the assets utilised (Koen & Oberholster, 1999:22).

A basic understanding of the meaning of the ratios was obtained in order to ensure that they could be utilised during the execution of the empirical research.

6.6 Importance and level of competition in the pharmaceutical industry

The discussions and conclusions that follow relate to the achievement of specific objective number 5, page 5. During the performance of the empirical research, a number of questions were included in the

questionnaire that was sent to financial managers of 24 pharmaceutical companies. These questions related to the level of competition within the industry, based on the literature study and sources of competition in chapter 2, summarized in paragraph 6.2.

Based on the results of the empirical research, the following conclusions can be drawn with regard to the competitiveness of the pharmaceutical industry in South Africa:

- Most of the companies that compete in the South African pharmaceutical industries are part of large multinational groups (refer to graph 5.1 and 5.2, page 50 and 51).
- An increased investment in research and development would not provide South African companies with much competitive advantage, as most of research takes place internationally (refer to graph 5.3, page 52).
- The level of competition in the pharmaceutical industry is currently very high and has perceived to increase over the past five years (refer to graph 5.4, page 54).
- Porter's model for determining competition was applicable in the pharmaceutical industry five years ago (refer to graph 5.5, page 55). However, in the current industry, a new force has entered the competitive environment – government legislation. This is currently seen as the most influential competitive force in the industry (refer to table 5.2, page 56).
- Competition plays a very important role on the strategic planning process of pharmaceutical companies. It is one of the most important factors taken into account when determining a pharmaceutical company's strategy (refer to graph 5.6, page 57).

6.7 The product-market strategies adopted by entities

This paragraph relates to the achievement of specific objectives 6 and 8, page 5. The conclusions reached were based on the results of the empirical research, based on Harper's extension of the matrix, as summarized in paragraphs 6.3 and 6.4. When looking at the product-market strategies that are adopted by entities in the pharmaceutical industry, the following conclusions can be arrived at:

- Five years ago, there was a definite concentration of strategy within the product development section of Harper's 3X3 matrix. Pharmaceutical companies therefore seemed to favour the offering of new products to existing markets (refer to graph 5.7, page 58).
- There has been a definite change in the strategies that are adopted by entities over the past years (refer to table 5.3, page 59).
- In the current competitive environment, there is not one single strategic option that stands out as the most popular or the most widely followed in the pharmaceutical industry (refer to graph 5.8, page

60). It therefore is not possible to make a recommendation regarding the most widely adopted strategy, as the entities appear to be widely divided regarding the choice of product-market strategy.

6.8 The impact of competition on the financial performance

This relates to specific objective number 7, page 5, which was achieved by means of empirical research. From 6.6 above, it is clear that the environment, in which pharmaceutical entities are currently operating, is a very competitive one. The following findings relate to the financial performance of entities within the industry:

- A large number of companies in the industry have experienced an increase in profitability over the past five years (refer to graph 5.9, page 61).
- Most of the companies in the pharmaceutical industry have experienced an improved financial soundness and stability over the last five years (refer to graph 5.10 and 5.11, page 63).
- Despite the high level of competition, entities have experienced growth in revenue, net profit and net asset value over the past five years (refer to graph 5.12, page 64).
- Pharmaceutical companies have, over the past five years, generated increased cash returns on sales and total assets (graph 5.13, page 65).

It therefore appears that an increased level of competition in the pharmaceutical industry has either not had a negative impact on the financial performance of the industry, or the strategies applied by the entities were sufficient to counteract the effect thereof.

As a result, it is difficult to determine, based on the results of the research, what the main reasons are for the improved financial performance of the companies.

This conclusion is, however, subject to a limitation of the research – no detailed financial information could be obtained to analyse and compare to others in the industry – the reason for this being the high level of confidentiality in the industry (Lok, 2004). The decision not to obtain this detailed financial information was proved correct during the initial telephonic contact made with the subjects to whom the survey was to be sent. The majority of the subjects were only willing to participate in the survey based on the fact that no financial information was asked, only movements in ratios.

6.9 Impact of the changing competitive environment on strategy

This conclusion relates to achieving the general aim of the study, as set on page 4. The general objective

of the study can be said to have been achieved, based on the following:

- The level of competition in the industry is perceived as very high (refer to 6.6 above).
- The impact of competition plays an important role in determining the strategy of entities in the pharmaceutical industry (refer to 6.6 above).
- There has been a major shift in the product-market strategies adopted by pharmaceutical entities over the past five years (refer to 6.7 above).
- It can therefore be concluded that, since competition in the industry is high and this competition is one of the most important factors considered when determining a strategy, the shift in product-market strategies over the past five years can be attributed, at least greatly, to the impact of competition.
- The changing competitive environment therefore had the impact of causing entities in the pharmaceutical entities to change their strategies.

It is concluded that competition has an impact on the product-market strategies of entities in the pharmaceutical industry and that this impact manifests itself in the changing product-market strategies of the entities over the past five years. There is, however, not a single sought-after strategy adopted in the industry.

6.10 The hypothesis

In paragraph 1.3, page 4, the hypothesis was set as follows:

Pharmaceutical entities consider competition to be an important factor in strategy-formulation and, due to the increase in competition in the industry, have adapted their product-market strategies considerably over the past five years. The level of competition in the pharmaceutical industry should have a negative impact on the financial performance of the entities

Correspondence with the Statistical Consultation Services of the North-West University confirmed that the response rate of the survey, and therefore the results, can be seen as representative of the population, in view of the fact that the largest industry players were among the respondents (refer to paragraph 5.2.6.3, page 48-49). The results of the empirical research therefore provide sufficient evidence to prove or reject the hypothesis, as stated above.

In order to prove or reject the above hypothesis, it will be split into two parts:

Pharmaceutical entities consider competition to be an important factor in strategy-formulation and,

due to the increase in competition in the industry, have adapted their product-market strategies considerably over the past five years.

Based on the results of the literature study and the empirical research, it was concluded that entities within the pharmaceutical industry consider the level of competition in the industry to be very high, and, accordingly, it is one of the major factors that they consider when determining which product-market strategy to adopt. Because of this, the product-market strategies adopted by entities in the pharmaceutical industry have changed substantially over the past five years. These conclusions therefore prove the first part of the hypothesis.

The level of competition in the pharmaceutical industry should have a negative impact on the financial performance of the entities.

Over the past five years, most of the entities in the pharmaceutical industry have displayed improved profitability, risk and cash flow ratios, as well as growth in revenue, net profit and net asset value. This improvement in financial performance is despite an increased level of competition. It can thus be concluded that the level of competition in the pharmaceutical industry is not reflected directly in the overall financial performance of companies in the industry, and the above part of the hypothesis is therefore rejected.

6.11 Recommendations for further research

The results of the research have identified the following areas in which future research can be executed:

- Due to the limitation experience during the evaluation of the financial performance of the entities (i.e. no ratios were calculated and compared to others in the industry), it could be of value for further research to focus on the actual financial performance of pharmaceutical companies. By calculating the financial ratios of entities and comparing them to industry norms, or to ratios of other companies in the industry, it may be possible to determine exactly how well the industry is performing in this changing environment.
- Further research may be carried out on the reasons for the improved financial performance, despite strong competition, of the entities, as this study was not designed to focus on this.
- Stemming from the fact that a large number of respondents indicated that government legislation is becoming an increasingly important force with which they have to contend, further research could explore the impact that the regulatory environment has on pharmaceutical entities. In view of the fact that major regulatory changes have been implemented in 2004, it may be a few years before

this impact is seen in the strategies and financial performance of the pharmaceutical industry.

- There may also be room for research in the expansion of Porter's "five forces" model, in order to identify any additional competitive forces that play a role in today's business environment.

6.12 Summary

In this chapter, conclusions were reached regarding the impact of competition on the product-market strategies of entities in the pharmaceutical industry. These conclusions are briefly set out as follows:

- Competition in the pharmaceutical industry has increased considerably over the past five years, and is an increasingly important factor that is considered in the strategy-formulation process.
- As a result of the level of competition, companies have changed their strategies rather drastically, with no single product-market strategy standing out above the rest as the strategy of choice.
- Despite the increased level of competition in the industry, companies have shown an improved financial position and results.

The following recommendations can be made:

- Entities should keep competition as one of the most important factors for strategic planning purposes.
- In order to gain a competitive advantage, the entities should focus on the main forces of competition, namely government legislation and the threat of substitute products.

The hypothesis set in chapter one was both proved and rejected, as entities are changing their strategies, but the level of competition has not appeared to have a direct negative effect on the financial performance of those entities.

The chapter concluded by making recommendations for further research. Recommendations include further research into the financial performance of the entities and the reasons for this, as well as research regarding the impact of the regulatory environment on pharmaceutical entities.



TO WHOM IT MAY CONCERN

School For Accounting Sciences
Tel: (018) 018-2991459
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28 June 2004

Dear Sir/Madam

M.COM RESEARCH

Ms. Sharon Horsten (student no 11793260) is current enrolled for a Masters degree in commerce at our institution. The title of her research proposal for her dissertation is "The impact of competition on the product market strategies of entities in the pharmaceutical industry".

In conducting her research she will have to contact various parties and I would like to ask you to assist her as far as possible. All information will be regarded as confidential and will be used for the sole purpose of the study.

Should you have any reservations please contact me at the above number or leave a message at the secretary at 018-2991452.

We appreciate your assistance.

Yours sincerely

Prof. P. Fouché
Program for CA Training (study leader)

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In accordance with section 23(1) of the Higher Education Act, 1997 (Act No. 107 of 1997), as amended, the Potchefstroom University for Christian Higher Education and the University of North-West merged to form the North-West University on 1 January 2004. In accordance with section 24(1) of the Higher Education Act, 1997 (Act No. 107 of 1997), as amended, the staff and students of the Sebokeng Campus of the Vista University were incorporated into the North-West University on 1 January 2004.

TO WHOM IT MAY CONCERN:

PURPOSE OF THE QUESTIONNAIRE

I am currently completing my Master's Degree in Financial Management at the North-West University (previously Potchefstroom University for Christian Higher Education). This questionnaire forms part of the empirical research to be included in my final dissertation. The title of my dissertation is "The impact of competition on the product-market strategies of entities in the Pharmaceutical industry". The aim of the study is to attempt to identify a relation between the degree of competition experienced by a company, and the strategy that is adopted by the company.

Should you have any queries, please feel free to contact me (Sharon Horsten) on 082 923 8279, or e-mail sharon.horsten@za.pwc.com.

YOUR COOPERATION IS GREATLY APPRECIATED!

GUARANTEE OF CONFIDENTIALITY OF INFORMATION

1. All the information provided in the questionnaire will remain completely confidential.
2. Companies that respond will remain anonymous.
3. Responses to the questions will be pooled and used in a summarized format.

SHARON HORSTEN
(MASTER'S STUDENT)

INSTRUCTIONS

All the questions in Part A and Part B of this questionnaire relate to two different periods in time – the current situation, and the situation as it was five years ago. Please provide one answer per question for each time period. A column exists for each. Mark the applicable numbered block with an X.

PLEASE NOTE: IF YOUR COMPANY WAS NOT OPERATING IN SOUTH AFRICA FIVE YEARS AGO, PLEASE INDICATE HOW MANY YEARS AGO THE FIRST YEAR OF OPERATIONS IN SOUTH AFRICA WAS, AND PLEASE ANSWER THE QUESTIONS BASED ON THAT PARTICULAR TIME PERIOD:

PART A: Competitive Environment

1. Is your South African company part of a multinational pharmaceutical company?

Response	Currently	5 years ago
Yes	1	1
No	2	2

2. Where is the majority of your company's Research and Development expenditure incurred – in South Africa or abroad?

Response	Currently	5 years ago
South Africa	1	1
Abroad	2	2

3. Does the South African company compete in global markets?

Response	Currently	5 years ago
Yes	1	1
No	2	2

4. How do you rate the level of competition in the pharmaceutical industry?

Response	Currently	5 years ago
Very High	1	1
High	2	2
Moderate	3	3
Low	4	4



5. Which one of the following competitive forces does your company consider to be the largest competitive influence?

Response	Currently	5 years ago
Existing companies	1	1
The bargaining power of customers	2	2
The bargaining power of suppliers	3	3
The threat of new entrants/companies	4	4
The threat of substitute products	5	5
Other (please specify)	6	6

PART B: PRODUCT-MARKET STRATEGY

6. How important is the impact of competition on the strategic planning of the company?

Response	Currently	5 years ago
Most important	1	1
Highly important	2	2
Marginally more important than other factors	3	3
No more or less important than other factors	4	4
Least important	5	5

7. What is the company's key strategic focus for product development?

Response	Currently	5 years ago
Keep <u>existing</u> products	1	1
Develop and introduce <u>new</u> products	2	2
Develop and introduce <u>technologically superior</u> products	3	3



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8. What is the core market that the company targets with its product-market strategy?

Response	Currently	5 years ago
Existing markets	1	1
New markets (i.e. markets that previously existed but had not been serviced by the company)	2	2
Emerging markets (i.e. markets that had never been serviced by any company in the Industry)	3	3

PART C: RATIO ANALYSIS

9. Return on equity is calculated by dividing net profit after tax by total shareholders' interest. Please indicate which category below best describes the movement in the company's return on equity over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

10. Return on assets is calculated by dividing the profit before tax and finance costs by total assets. Please indicate which category below best describes the movement in the company's return on assets over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

11. Gross profit margin is calculated by dividing gross profit by turnover. Please indicate which category below best describes the movement in the company's gross profit margin over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3



12. Solvency ratio is calculated by dividing the total assets of the company by the total liabilities. Please indicate which category below best describes the movement in the company's solvency ratio over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

13. Debt/equity ratio is calculated by dividing total liabilities by total shareholders' interest. Please indicate which category below best describes the movement in the company's debt/equity ratio over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

14. Current ratio is calculated by dividing current assets by current liabilities. Please indicate which category below best describes the movement in the company's current ratio over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

15. Inventory turnover is calculated by dividing cost of sales by average inventories. Please indicate which category below best describes the movement in the company's inventory turnover over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

16. Please indicate which category below best describes the movement in the company's turnover over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3



17. Please indicate which category below best describes the movement in the company's net profit after taxation over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

18. Please indicate which category below best describes the movement in the company's net asset value over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

19. Cash flow sufficiency is calculated by dividing cash generated by operations by turnover. Please indicate which category below best describes the movement in the company's cash flow sufficiency over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

20. Cash return on total assets is calculated by dividing cash available from operating activities (before interest and tax) by total assets. Please indicate which category below best describes the movement in the company's cash return on total assets over the past five years:

Response	
Increased	1
Decreased	2
Did not increase or decrease	3

THANK YOU VERY MUCH FOR COMPLETING THE QUESTIONNAIRE



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