

**ANALYSIS OF THE EXTENT TO WHICH BARRIERS TO
ENTRY (BTE's) HAVE CONTRIBUTED TO PROFITABILITY
IN THE AIR COMPRESSOR
INDUSTRY IN KENYA**

BY

KIANDIKO K.R

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DECLARATION

This project is my original work and has not been submitted for a degree in University of Nairobi or any other University.

Signature _____

NAME: KIANDIKO K. RAPHAEL

DATE: _____

This research project has been submitted for examination with my approval as University Supervisor.

Signature _____

NAME: PROF. EVANS AOSA

DATE: _____

Lecturer, School of Business, University of Nairobi

DEDICATION

I dedicate this work to my wife Carol and son Mark for sacrificing our family time to allow me study for the MBA.

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To all my MBA colleagues, you added value not only to my studies but to life in general, many thanks.

ABSTRACT

Industry attractiveness is the (relative) future profit potential of a market. It is mainly measured by industry growth and average industry profitability. However other attractive industry characteristics like stability of demand, potential for entry and exit by major firms etc may be used. In general, industry attractiveness can be determined by analysing the competitive market forces. Porter (1980) provided a framework that models industry as being influenced by five forces. These forces are threat of new entrants, threat of substitute products, bargaining power of buyers, bargaining power of suppliers and rivalry among existing competitors. The combined effect of these forces determines the industry competition and profitability. However, it is expected that where incumbent firms are doing well and perceived profits exceed the cost of entry or of surmounting mobility barriers, new firms will enter the industry.

The objective of this study was to analyse the extent to which entry barriers have contributed to profitability in the air compressor industry in Kenya. Secondly, it sought to establish why the industry in spite of being profitable attracted only five players over a period of 71 years.

The research design was a cross sectional survey of the five incumbent firms in the industry based on Porter's five force industry model. Senior managers of these firms were interviewed using a standard questionnaire.

The research findings confirmed that Porter's five industry forces were at play in the air compressor industry in Kenya and that each force had a varying degree of influence on company profitability. However the threat of new entry was found to be the strongest force and the one that governed the rules of competition in the industry. It was the most critical for strategy formulation. Further, it was concluded that the competitive structure of the industry was unique and clearly attractive from a profit-making stand point. It was also found that competitive rivalry among the incumbents was moderate, high entry barriers existed, competition from substitutes was negligible, and buyers had a low bargaining leverage. On the other hand suppliers had considerable leverage.

CHAPTER ONE: INTRODUCTION

1.1 Background

1.1.1 Industry Structure

Industry analysis forms a critical framework for understanding the fundamental industry forces that shape competition in an industry (Porter, 1979). Porter (1980) defines an industry as a group of firms producing products or services that are close substitutes to each other. Further the industry is a key aspect of a firm's environment, but the environment is made up of many dimensions including economic, social- cultural, political and technological environments. For a company to succeed, it either must fit its strategy to the environment in which it operates, or be able to reshape the environment to its advantage through choice of strategy. Since the environment is constantly changing, it has become imperative that firms continuously adapt their activities to be assured of survival and profitability (Porter 1980; Aosa, 1997; Pearce & Robinson, 1997).

Industry competition and the potential strategies available to incumbent firms are strongly influenced by industry structure. Porter (1980) provided a framework that models industry structure as being influenced by five competitive forces. These five forces are threat of new entrants, threat of substitute products, bargaining power of buyers, bargaining power of suppliers and rivalry among existing competitors.

Individually, each of the five competitive forces influences industry structure to a varying degree but their combined effect determines the industry structure and potential profitability. For example different industries experience different levels of competitive rivalry. Some of the factors that cause competitive rivalry include industry growth, product differences, competitor concentration and balance, diversity of competition, fixed costs and exit barriers (Porter, 1985). Industry structure and profitability are also influenced by the pressure of substitute that emanates from among other factors the relative price performance of substitutes, switching costs and customer propensity to substitute. Further buyer power does influence industry structure and profitability. The determinants of buyer power are among others customer concentration and volume, customer information, impact on quality and performance, ability to backward integrate

and price sensitivity of customers. Again industry structure is influenced by supplier leverage consequently suppliers in different industries command different bargaining powers. Suppliers gain leverage from factors like impact of inputs on cost or differentiation, differentiation of inputs, supplier concentration and importance of volume to the supplier. Finally entry barriers influence industry structure and they arise from industrial organization or from strategic moves by firms. Entry barriers can be defined as deterrents designed to block potential entrants from entering a market profitably. They seek to protect the position or power of existing (incumbent) firms in an industry enabling the incumbents to maintain high profits in the long-run (Hax and Majluf, 1996). Existence of many entry barriers is generally in the interest of incumbent firms because they reduce industry competition by controlling new entry into the industry and or strategic groups. Entry barriers create cost asymmetry between the incumbents and the potential entrants. The cost asymmetry reduces the profit potential for the new entrants. Porter (1980) specifies seven major sources of entry barriers as economies of scale, capital requirements, switching costs, product differentiation, cost disadvantages, access to distribution channels and government policy.

Porter (1980) proposes that the state of industry competition and profit potential depends on the collective strength of the five forces, however the stronger each force is the more competitive the industry and the lower the rate of return that can be earned. Further when a change occurs in any of the forces, it normally requires that a company re-assesses the marketplace. The incumbent firms respond to these changes by making strategic decisions in such a way to achieve competitive advantage over their competitors (Johnson & Scholes, 1999).

1.1.2 Air Compressor Industry in Kenya

The air compressor industry in Kenya dates back to 1936 when the first compressor company, Atlas Copco AB opened in Nairobi. To date the industry is dominated by five main players namely Atlas Copco Eastern Africa, Timwood Products, Hollman Brothers, Car & General and Perfect Engineering Ltd.

The history of air compressors dates back to the ancient man. The first air compressors however were not machines but human lungs when ancient man blew on cinders to create fire. Today we know that healthy human lungs can exert a pressure of 0.02 to 0.08 bar but with the birth of metallurgy about 3000BC, people began to melt metals such as gold, copper, tin and lead, higher temperatures were needed and this pressure became inadequate. Consequently more powerful compressors were required. From that time, compressors have evolved from the natural origins to a highly technical field for cheaper source of energy compared to electrical energy and finds application across all industries (Bertil, 1975).

Compressors are basically air pumps and the simplest example of an air compressor is the “bicycle pump.” Compressor accessories include air dryers, filters, water separators, moisture traps, air receivers, after-coolers, pressure regulators etc. By use of various technologies compressors compress air to very high pressures. The compressed air contains “air energy” and this energy is used to drive varied industrial and construction equipment including packaging machines, industrial printing machines, bulk product conveyors, drilling rigs etc.

In Kenya, there are no compressor manufacturing plants and the industry players’ import assembled compressor equipment and accessories from their overseas factories or suppliers. The local firms’ scope of operation covers equipment and accessories sales, equipment installation and commissioning, maintenance and provision of technical support. These functions are carried out by product specialists and engineers.

The compressor market in Kenya is imperfect and the players exhibit many aspects of an oligopoly, however they do not connive to fix prices. Some mechanisms may have prevented new entrants because new ventures in the industry are almost non-existent. Such mechanisms hamper the market process of allocative and dynamic efficiency. This scenario may be due to the industry structure and or presence of structural and strategic entry barriers.

1.2 Research Problem

When incumbent firms in a market are doing well and perceived opportunities for growth exist, and perceived profits exceed the cost of entry or of surmounting mobility barriers, new firms enter the market. They make entry if profits are above the long-run competitive level. Consequently in the long-run profits are expected to decrease to an equilibrium level. The movement of profits foster dynamics in the economy (Gerhard et al, 2006). Further, new entrants are considered important change agents because they introduce into a market the desire to gain market share and often substantial resources that threaten the profitability of the existing firms (Barney, 1991). However incumbent firms use entry deterrent mechanisms to limit the intensity of competition and may enable them to raise prices to realise supernormal profits (Bain, 1956).

Previous research work on the industry was not found, although Karanja (2002) studied competitive strategies of real estate firms using Porter's generic model. Also Oluoch (2003) in her study on the attractiveness of the local freight and forwarding industry applied a modified Porter's model.

The local air compressor industry is 71 years old, has five main players and is both attractive and profitable. These are conditions that encourage new entry and it is expected that the industry would attract many new entrants but this has not happened. Why then has the industry attracted only five players over a period of 71 years?

1.3 Research Objectives

The research had two objectives:

- To find the extent to which entry barriers contributed to profitability in the air compressor industry in Kenya and
- Find out why the industry has attracted five players only despite being profitable.

1.4 Importance of Study

This research forms the basis for understanding competition in the air compressor industry in Kenya. Secondly it forms the basis for future research work on the industry since prior to this research no documented work on the industry existed.

The research will be insightful to compressor industry players that are keen to develop or sustain competitive advantage in the market place. While the research is specific to the compressor industry in Kenya, other local firms in different industries may draw parallels from this study to understand competition better. It is expected that firms that consider entry into the local compressor industry will ponder the importance of the different entry barriers and compare these barriers with their perceived entry barriers. This is expected to help the potential entrants to craft responsive and winning entry strategies.

Finally it is expected that from the social economic view point, the government will use this research to develop policies beneficial to the economy.

CHAPTER TWO : LITERATURE REVIEW

2.1 Industry Structure

Formulation of strategy bears its foundation from relating a company to its environment. The environment is however made up of many dimensions including economic, social-cultural, political and technological environments. A key aspect of the firm's environment is the industry (Porter, 1980). An industry is a group of firms producing products or services that are close substitutes to each other, for example telecommunications industry, transport industry and banking industry (Porter, 1980). Rowe et al (1994), defines industry analysis as an environmental scan to determine what forces in a firm's external environment have direct impact on its competitive position and what competitive actions need to be taken to achieve a sustainable competitive advantage. It focuses on the industries in which the firm competes (Comeford and Callaghan, 1990). It is an orderly process that attempts to capture the structural factors that define the long term profitability prospects of an industry (Hax and Majluf, 1996).

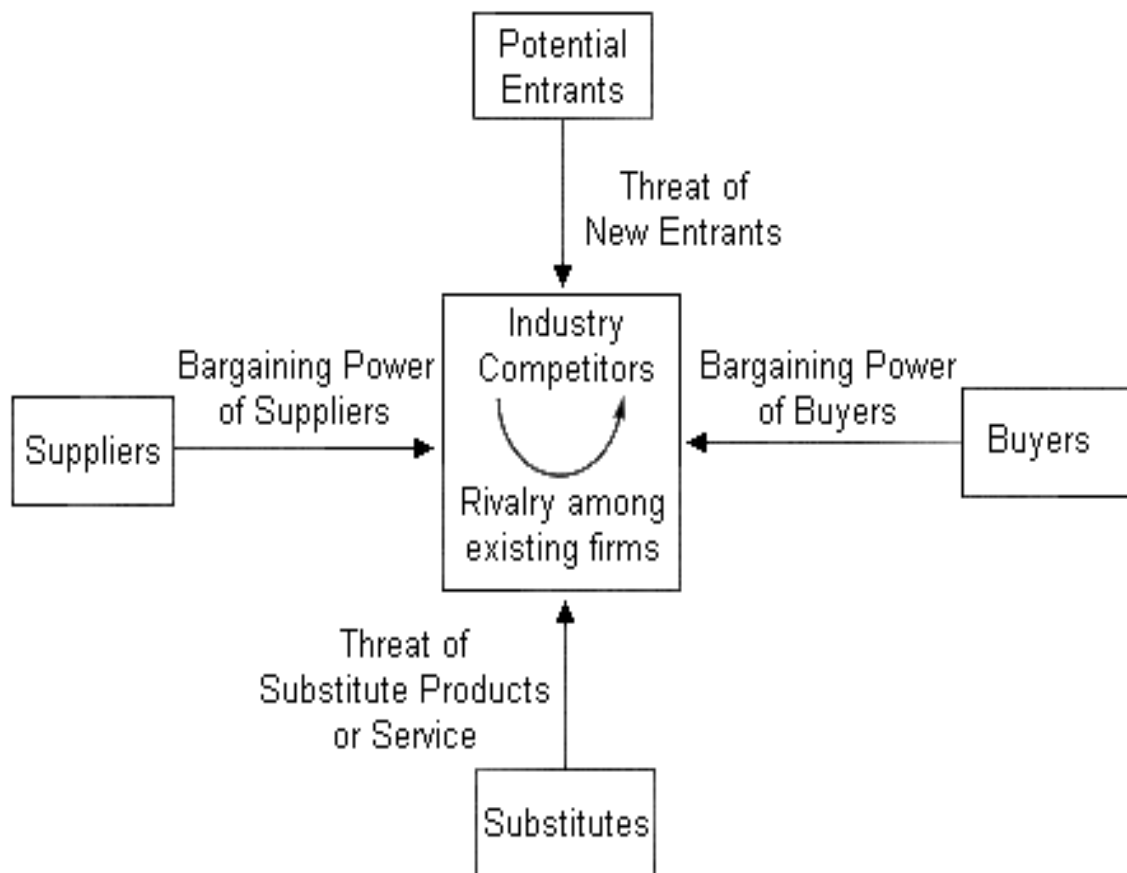
Industry structure has a strong influence on industry competition, profitability and the potential strategies available to firms. According to Porter (1979), industry analysis forms a critical frame work for understanding the five fundamental industry forces that shape competition in an industry. He proposes that the state of competition in an industry depends on the five basic competitive forces and their collective strength determines the ultimate profit potential in the industry.

The underlying structure of an industry reflected in the strength of the forces, should be distinguished from many short run factors that can affect competition and profitability in a transient way. For example fluctuations in economic conditions over the business cycle influence the short run profitability of nearly all firms in many industries. Although such factors may have tactical significance, the focus of the analysis of industry structure or structural analysis is on identifying the basic underlying characteristics of an industry rooted in the economics and technology that shape the arena in which competitive strategy must be set (Porter, 1979).

2.2 The Five Fundamental Industry Forces

The five industry forces otherwise referred to as the five fundamental industry forces are rivalry among existing competitors, threat of substitute products, bargaining power of buyers, bargaining power of suppliers and threat of new entry (Figure 1 of Porter's Model).

Figure 1, Porter's Model



Source: Porter M.E., (1980), Competitive Strategy, pp.4

The above model forms a critical frame work for industry analysis and is key in understanding the five competitive forces.

For example all firms in an industry compete with industries producing substitute products and therefore the threat of substitute products influences industry competition and profitability. According to Hax and Majluf (1996), substitutes limit the potential industry returns by placing a ceiling on the prices firms in the industry can profitably charge. Further, factors that influence the relative attractiveness of substitute products include relative price performance of substitutes, switching costs and customer propensity to substitute. Porter (1980) identifies four special substitutes that are present in every industry but are often overlooked. They include not purchasing any thing at all, lowering the usage rate of the product required, using used, recycled or reconditioned products and backward integration. For example, the more corporations that self insure, the less insurance they purchase and the lower the industry demand for insurance services. From the industry participants' point of view, substitute products that deserve the most attention are those that are subject to trends improving their price performance trade-off with the industry's product or are produced by industries earning high profits (Porter, 1979; Charles and Jones, 2001).

On the other hand bargaining power of buyers is experienced when buyers compete in an industry by leveraging their power to force down prices, bargaining for higher quality or more services, and playing competitors against each other all at the expense of industry profitability (Keegan, 1995). According to Porter (1980), the power of each of the industry's important buyer groups depends on a number of characteristics of its market situation and on relative importance of its purchases from the industry compared with its overall business. The factors that influence buyer power are customer concentration and volume, customer information, impact on quality and performance, ability to backward integrate, price sensitivity of customers and channel ability to influence buyer purchasing decisions. As the factors determining the power of buyers change with time or as a result of a company's strategic decisions, naturally the power of buyers rises or falls. Rarely do all the buyer groups a company sell to enjoy equal power (Porter, 1979; Charles and Jones, 2001). Therefore a company's choice of buyer groups should be viewed as a crucial strategic decision because it can improve its strategic posture and profitability by finding buyers who possess the least power to influence it adversely, in other words buyer selection.

Moreover bargaining power of suppliers is another force that affects competition and profitability in an industry. Suppliers can exert bargaining power over participants in an industry by threatening to raise prices or reduce the quality of purchased goods and services. Powerful suppliers can thereby squeeze profitability out of an industry unable to recover cost increases in its own prices (Porter, 1980; Singh et al, 1998). The bargaining power of suppliers is determined by one or more of the following factors: impact of inputs on cost or differentiation, differentiation of inputs, supplier concentration, and importance of volume to the supplier. The conditions determining suppliers' power are not only subject to change but also often out of a firm's control. However as with buyers power the firm can sometimes improve its situation through strategic selection of suppliers.

Further the threat of new entry is another broad force that affects industry competition and profitability but firms cope with the threat by erecting entry barriers. Entry barriers can be defined as deterrents designed to block potential entrants from entering a market profitably. They seek to protect the position or power of the incumbent firms and therefore enable them to maintain high profits in the long-run (Hax and Majluf, 1996). Entry barriers emanate from economies of scale, proprietary product differences, proprietary low cost product design, brand identity, switching costs, capital requirements, access to distribution, absolute cost advantages, proprietary learning curve, access to necessary inputs, government policy and expected retaliation.

Finally, intensity of rivalry among existing firms is the last broad force that influences industry structure. Rivalry of existing firms takes the familiar form of jockeying for position using tactics like price competition, advertising battles, product introductions and increased customer service or warranties. Competitive rivalry in an industry increases when one or more competitors either feel the pressure or the opportunity to improve position. Because of the mutual interdependence of firms such moves incite retaliation from the other firms and often result in reduced profitability. The extreme case of competitive intensity is the economist's perfectly competitive industry, where entry is free, existing firms have no bargaining power against suppliers and customers, and rivalry is unbridled because the numerous firms and products are all alike. Rivalry may

be characterized in some industries by such phrases as “warlike”, “bitter”, or “cutthroat”, whereas in other industries it is termed as “polite” or “gentlemanly” (Porter, 1980; Wheelen and Hunger, 1995). If moves and counter moves escalate, then all firms in the industry may suffer reduced profitability and be worse off than before. However the factors that determine the intensity of competitive rivalry can and do change (Porter, 1980; Pearce and Robinson, 1997). These factors include industry growth, product differences, competitor concentration and balance, diversity of competition, fixed costs, exit barriers, brand identity, switching costs, informational complexity, intermittent over capacity and corporate stakes (Porter, 1985).

When a change occurs in any of the five forces, it normally requires that a company re-assesses the market place. As the environment is constantly changing, it has become imperative that firms continuously adapt their activities in order to be assured of survival and profitability (Porter 1980; Aosa, 1997; Pearce & Robinson, 1997). Further, firms may take retaliatory actions when a change occurs in any of the forces but this pattern of action and reaction may leave the initiating firm and the industry as a whole worse off. These retaliation actions may be summed up as strategic responses or competitive strategy formulation. Competitive strategy can therefore be defined as taking offensive or defensive actions to create a defensible position in an industry to be able to cope successfully with the five competitive forces and thereby yield a superior return on investment for the firm (Porter, 1980). Although the strongest of industry forces governs the rules of competition in an industry and is the most critical for strategy formulation, the collective strength of the five forces determines profitability and the ultimate profit potential in the industry, where profit potential is measured in terms of long-run return on invested capital.

The five industry forces reflect the fact that competition in an industry goes well beyond the established players. Customers, suppliers, substitutes and potential entrants are all “competitors” to firms in the industry and may be less or more prominent depending on the particular circumstances (Porter, 1980).

2.3 Barriers to Entry

Stigler (1968) defines an entry barrier as a cost of producing (at some or every rate of output) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry. Porter (1980) and Grant (2001) define barriers to entry as obstacles in the path of a firm that wants to enter a given market.

A large body of literature discusses the importance of entry barriers but two different traditions can be distinguished: industrial organization (Bain, 1956, Stigler, 1968; Weizsacker, 1980) and strategic management (Porter, 1980, Singh et al., 1998, Robinson et al., 2001). The first tradition focuses on the industry as the unit of analysis, strives for efficiency and identifies harmful barriers for economic development. The second tradition takes the firm as the unit of analysis and assesses entry barriers as a resource to create competitive advantage for individual firms. To create sustainable competitive advantage these firms use superior strategies that should make use of entry barriers that deter new competitors in the firms' market.

The contradictory assessment of the value of barriers to entry is related to the unit of analysis and the role competition is expected to play in the two traditions. However entry barriers reduce competitive forces in the industry. Since 1990, it has been argued that regulatory entry barriers and bureaucratic delays are a major factor causing low entry rates in developing economies. They cause negative implications for output and employment growth (Bennet et al, 2006). However at the firm's level it is indeed important to develop resources that are difficult to copy by competitors (Barney, 1991).

In line with the two traditions, two types of entry barriers can be distinguished: structural and strategic barriers. Structural barriers stem from market characteristics and are discussed in the tradition of industrial organisation while strategic barriers occur when individual firms use entry barriers as a resource to create competitive advantage. For example firms with financially well resourced corporate parents may enjoy the resources to strategically retaliate against potential entrants. They will be in a favourable position to counter new entry by waging price wars, intense advertising etc. (Charles and Jones, 2001).

The strategic management tradition stresses the importance of strategic barriers. Strategic entry deterrence involves any move by existing firms to reinforce their position against other firms or potential rivals. Therefore entry barriers do not only result from structural characteristics of the market but can be created as a result of strategies by individual firms that reduce the threat of new entrants. Existing firms may be content to control the flow of new firms coming into the market rather than engaging in strategies designed to block the out right entry of any new firm (Charles and Jones, 2001).

Incumbent firms erect barriers to counter threat of new entry because entrants bring in new capacity, the desire to gain market share and often substantial resources that threaten the profitability of the incumbents. Although strategic entry barriers have the effect of making the market less contestable, they may be deemed as anti-competitive (Barney, 1991).

An example of a strategic entry barrier is the cost asymmetry between the incumbent firms and the potential entrant. If the existing businesses have managed to exploit some of the economies of scale that are available to firms in a particular industry, they have developed a cost advantage over potential entrants (Hunger, 1995). They may use this advantage to cut prices if and when new suppliers enter the market, moving away from short run profit maximization objectives. This is designed to inflict losses on new firms while protecting the incumbents' market position in the long-run. Firms will therefore need to understand all the major entry barriers to keep competitors at bay (Inc. Magazine, Oct. 2001). They also need to constantly erect strategic entry barriers to counter the threat of new entry in an attempt to achieve or maintain sustainability (Rowe et al, 1994).

Porter (1980) does not define the strategic aspect of entry barriers but specifies seven major sources of entry barriers: economies of scale, capital requirements, switching costs, product differentiation, cost disadvantages, access to distribution channels and government policy. Implicitly he uses a broad definition for barriers to entry in order to encompass the barriers that result from strategic behaviour. He provides a kind of typology of entry barriers that firms should take into account when their competitive

strategy is developed. Porter's specification also shows that structural and strategic barriers are related. The barrier may be rooted in the market structure but this will not discourage firms from reacting to the characteristic strategically.

Although entry barriers are generally viewed as industry characteristics that deter new firms from coming into an industry, some sources of entry barriers will not equally protect all firms in an industry. According to Porter (1980) overall entry barriers will depend on the particular strategic group that an entrant wants to join. For example if entry barriers are caused by economies of scale, they will be more significant in protecting the large and vertically integrated firms. Where learning curve entry barriers exist, they are important in protecting groups of firms with market experience and so on for each other source of entry barrier.

In the industry profits viewpoint, the best scenario is one in which entry barriers are high and exit barriers low. Here entry will be deterred and unsuccessful competitors will leave the industry. When both entry and exit barriers are high, profit potential is high but it is usually accompanied by more risk because although entry is deterred, unsuccessful firms will stay and fight it out in the industry. The worst case scenario is when entry barriers are low and exit barriers high. Here entry is high however capacity will not leave the industry when results deteriorate. This results in high capacity in the industry and chronic poor profitability (Porter, 1980).

2.4 Mobility and Exit Barriers

Entry barriers not only protect firms in a strategic group from entry by firms outside the industry but also provide barriers to shifting strategic position from one strategic group to another. The factors that deter the movement of firms from one strategic position are generally referred to as mobility barriers (Porter, 1980).

Mobility barriers provide one major reason why some firms in an industry will be persistently profitable than others. The firms in strategic groups with high mobility barriers will have a great profit potential than those in groups with lower mobility

barriers. Without mobility barriers, firms with successful strategies would quickly be imitated by others. The presence of mobility barriers mean that market shares for firms in some strategic groups in an industry can be very stable and yet there can be rapid entry and exit in other strategic groups in the same industry. Just as entry barriers, mobility barriers can change and as they do firms often abandon some strategic groups and jump on to new ones. According to Porter (1980) entry into an industry or strategic group can occur in a variety of ways for example a takeover from outside the industry, widening of a product range, increasing competition from overseas, etc. Firms therefore invest in making mobility barriers. A situation that is likely to be more stable and profitable is one in which there are only a few large strategic groups where each participant compete for distinct customer segments (Porter, 1980).

Although entry and exit barriers are conceptually different they often are related. For example substantial economies of scale in production are usually associated with specialized assets implying high exit barriers. Firms that enjoy economies of scale would lower the profit potential for new entrants and are likely to do intense rivalry when threatened because implicitly the exit barriers would be high. Entry and exit barriers can either be high or low.

2.5 Generic Strategies

Firms in an industry use three generic strategies applied singly or in combination to create defensible position, outperform competitors and cope with the five competitive industry forces. These generic strategies are: cost leadership, differentiation and focus. The low cost competitive strategy's objective is to achieve overall cost leadership in an industry through a set of functional policies aimed at this objective (Porter, 1980; Thompson and Strickland, 1998). The strategy affords firms a low-cost position that yields the firm above average returns in the industry. The factors that lead to low cost position usually also provide substantial entry barriers in terms of economies of scale or cost advantage. The low cost strategy will deter firms that are not well resourced from market entry.

The differentiation generic strategy is one in which firms differentiate their product or service offering by creating something perceived unique in the industry (Rowe et al, 1998). When a firm employs differentiation strategy and achieves it, it will earn above-average returns. Differentiation will result in customer loyalty that creates the need for a competitor to overcome the entry barriers of uniqueness to enter the market (Porter, 1980).

The third generic strategy is focusing on a particular buyer group, segment of the product line or geographic market. This strategy means that a firm has either a low cost position with its strategic target, high differentiation or both. It provides defences against entry and counteracts the threat of new entry (Hunger, 1995). However the three generic strategies are predicted to erect differing kinds of entry barriers into an industry (Porter, 1980).

In many industries there are firms that have adopted very different competitive strategies, along such dimensions as breadth of product line, degree of vertical integration, and so on, and have achieved differing levels of market share. Also some firms out perform others in terms of rate of return on invested capital. The five broad competitive forces provide a context in which all firms in an industry compete but industry analysis explains why some firms are persistently more profitable than others and how this relates to their strategic postures. The profit potential in different strategic groups is often different, quite apart from their implementation abilities because the five broad competitive forces will not have equal impact on different strategic groups (Porter, 1980; Charles and Jones, 2001). The competitive structure of an industry is clearly unattractive from a profit-making stand point if the rivalry among sellers is very strong, entry barriers are low, competition from substitutes strong, and both suppliers and customers have considerable bargaining leverage (Porter, 1980).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The research design used was a cross sectional survey. This design was adopted because a cross sectional study allows the researcher to describe the overall picture or phenomenon of a situational problem, attitude or an issue by asking a cross section of the target population.

3.2 Population

In Kenya, the air compressor industry has two segments the industrial and the light duty air compressor segments. The population of study was all the firms in the industrial air compressor segment. They are five in total. These are firms whose compressor business is their core business or one of their main product portfolio(s) and have invested a high proportion of their resources in aftermarket and service departments. They serve the industrial clients only and include Atlas Copco Eastern Africa Ltd, Timwood Products, Car & General, Holman Brothers and Perfect Engineering Ltd. On the contrary firms in the light duty air compressor segment are firms whose compressor business is not their core business, they do not employ compressor specialists and do not invest in product development and aftermarket organisations. These firms were not included in the research. All the five firms in the industrial segment will be studied.

3.3 Data Collection

The data required for this research was both quantitative and qualitative. The primary data collected was by use of a questionnaire while secondary data was obtained from company websites, publications, newspapers and the internet. Before embarking on data collection, the researcher identified the targeted individual respondents for each firm under study and wrote an introduction letter to them. After the letter, the questionnaire was sent in advance to the respondents to familiarize themselves with the questions. Later personal interviews between each respondent and the researcher were arranged and conducted. During the interviews, the respondents were asked to indicate on a five point

Likert scale to what extent the five Porter industry forces contributed to their company profitability. The main focus was to find out the influence of entry barriers to profitability. More information was captured from the questionnaire structured around the following three parts; Part I, aimed at gathering information on company ownership, year of establishment and organizational structure, Part II sought to find information on the five Porter industry forces, while Part III was to evaluate the effect of government policies on the compressor industry profitability. The respondents were given liberty to express their responses in detail and flexibility allowed for either party to seek clarification on unclear terms and or responses. The interviewer probed the interviewees for additional relevant information. The respondents were senior managers of the firms studied.

3.4 Data Analysis

In data analysis both quantitative and qualitative primary data was collected, coded and tabulated. The quantitative data was analysed using geometric mean and computation of percentages attributed to each industry force contribution to profitability. Geometric mean was used because it is suitable and frequently used in the determination of average percent of change. It is often used in the preparation of index numbers or when dealing with ratios (Kothari, 1985). In reporting the research findings, the researcher first classified and grouped the data according to the research questions. The research findings were presented using frequency tables and pie charts with accompanying descriptive details.

CHAPTER FOUR: FINDINGS AND DISCUSSION

4.1 Ownership and Entry

During the interview, senior managers of the five firms were asked to give their company background information including year of entry in to the local market, ownership structure and relationship with parent company where that relationship existed. The results indicated that company ownership was either local or foreign with 80% of the firms locally owned and the remaining 20% foreign owned. Local ownership was found to be through dealership agreements with international overseas companies.

It was further found that Atlas Copco AB was the first company to enter the industry in 1936, followed by Holman brothers in 1962, 26 years later. After 1962, the subsequent entries were by Timwood Products in 1982, after 20 and Car & General in 1993, 11 years later. The latest entry was in 2005 by Perfect Engineering, 12 years after the previous entry (Table 1). From the data collected, the rate of industry entry has been very slow and with wide gaps in between implying either the industry was unattractive or there were mechanisms that prevented entry by new firms.

The industry was found to be characterized by a low concentration of firms with a high power imbalance. Further more it was found that Atlas Copco the first market entrant is a global company set up in 1873 and enjoyed long market experience. It was found that the parent company heavily supports the local strategic business unit (SBU) with both financial and intellectual resources thus creating the high power imbalance with the other players.

Table 1 Ownership and Entry

Company Name	Ownership	Year of entry to local Industry
Atlas Copco Eastern Africa	Foreign	1936
Holman Brothers	Local	1962
Timwood Products	Local	1982
Car and General	Local	1993
Perfect Engineering	Local	2005

Source: Research data

4.2 Entry Barriers

The researcher identified eleven most important barriers to entry and asked the respondents to rate their strength as deterrents to potential entry. The geometric mean for each entry barrier was computed. However the results must be understood in the context of two sets of barriers, the first set being barriers rated to have between moderate to very high deterrence and barriers rated to have between low to negligible deterrence to entry. From the geometric mean computation, proprietary learning curve scored the highest mean of 5 implying it was the strongest entry barrier. By virtual of the air compressor business being very specialized, the high geometric mean for proprietary learning curve implied that experience was a key competitive advantage for incumbent firms. This meant that participants without market experience found it difficult to enter the industry profitably.

The second strongest barriers were brand identity, strategic alliances, high operating costs, price wars and market share. The reason for the second strongest group of entry barriers may be explained from the fact that compressor business being technology driven, huge financial resources are required for research and development, hiring and retention of product specialists and building of effective aftermarket organizations. Although price wars scored a mean of 2.45 the same as the second group of strongest barriers, from the raw data it was rated between high to moderate barrier while all the

other barriers with the same mean were rated between high and very high. Consequently price war was a weaker barrier and therefore rated as the third strongest barrier. Technology and capital requirements were the fourth and fifth strongest barriers with means of 2 and 1.59 respectively. The reason why capital requirement had surprising low rating as a barrier was because specialists with the technical skills could easily enter the market to service the existing competitor equipment without employing any capital investments except their skills. Looking at the second set of barriers with the least effect on entry deterrence, access to distribution was the weakest with a geometric mean of 2.45 while government policy had a mean of 2 indicating that government policy was a stronger barrier compared to access to distribution channels (Table 2). From the foregoing analysis, it can be concluded that the presence of many and high entry barriers has successfully prevented regular entry in to the air compressor industry. This has resulted in low industry concentration of firms and good industry profitability.

Table 2 Sources of Entry Barriers

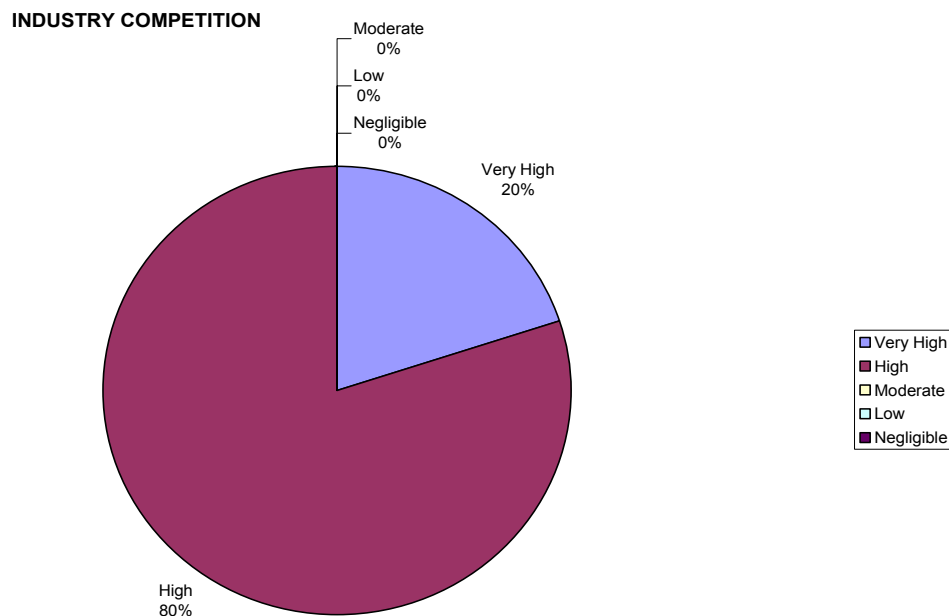
Barrier to Entry	Strength of Barrier as a Deterrent to Entry					Mean
	Very High	High	Moderate	Low	Negligible	
Capital Requirements	2	2	1	0	0	1.59
Strategic Alliances	3	2	0	0	0	2.45
High Operating Costs	3	2	0	0	0	2.45
Price Wars	0	2	3	0	0	2.45
Government Policy	0	0	0	4	1	2.00
Economies of Scale	4	0	1	0	0	2.00
Access to Distribution	0	0	0	2	3	2.45
Technology	4	1	0	0	0	2.00
Market Share	2	3	0	0	0	2.45
Brand Identity	3	2	0	0	0	2.45
Proprietary Learning Curve	5	0	0	0	0	5

Source: Research data

4.3 Rivalry among Existing Firms

The respondents were asked various questions about industry competition and the nature of competitiveness was found to be unique since 80% of the firms rated competition to be high and 20% as very high but no firm rated competition as moderate, low or even negligible (Figure 2). Industry competition was enhanced through use of differentiation strategies driven by technological innovations, cost leadership strategies and to a small extent a combination of the generic strategies. However the most intense competition was experienced in the same strategic groups. Atlas Copco Eastern Africa was identified by 80% of the firms as the market leader and the competitor that sets the rules of the game in the industry.

Figure 2 Intensity of Industry Competition



Source: Research data

Further, the respondents were asked to name the strategies employed by their companies in the market. It was found that industry competition was based on the three generic strategies with 40% of the firms using cost leadership, 40% a combination of differentiation and focus strategies and the final 20% differentiation strategy only. Two

strategic groups with minor overlaps were mapped out and firms using similar strategies were found to operate in the same strategic group.

4.4 Bargaining Power of Buyers

Research findings indicated that buyers lacked considerable bargaining leverage since 80% of the firms rated buyer power as moderate while 20% rated it high (Table 3). Since the Air Compressor business is very specialized, buyers lacked enough information and technical capacity to interrogate the product qualities and functions. This resulted in weakened buyer power. The weakening of buyer power was further compounded by high buyer concentration relative to the compressor firms' concentration and the inability of buyers to backward integrate. This situation was favourable for high industry profitability.

Table 3 Bargaining Power of Buyers

Do Buyers have Leverage?	Effect of Buyers' Leverage on Profitability			Mean
	High	Moderate	Low	
Yes	1	4	0	2.00
No	0	0	0	0.00
Not applicable	0	0	0	0.00

Source: Research data

4.5 Other Buyer Considerations

Besides price, buyers were found to have other key purchase considerations. Some of these considerations were availability of technical support, availability of spares parts, efficiency and reliability of the compressor equipment, payment terms and buy-back schemes. Both technical support and spare parts availability scored a mean of 5 and rated as the highest purchase considerations besides price. Further probing by the interviewer indicated that buyers wanted to see an effective aftermarket organization, well staffed with skilled specialists, stocked with critical spare parts and at competitive pricing. Air

Compressors were found to be capital items and considered as the “heart” of any plant, therefore buyers wanted to be assured of technical support and consequently made purchase decisions not primarily based on price only. Further, payment terms just as technical support and spare parts availability was rated with a mean of 5. Therefore payment terms, availability of technical support and parts had the highest mean implying these were the second highest considerations after price that buyers made. Further, payment terms was rated as a very high consideration because of the high amounts of capital required for purchase compressor equipment. Buy back policies were the third biggest consideration with a mean of 2.45 while equipment efficiency was fourth with a mean of 2. The last buyer consideration was the equipment reliability with a mean of 1.59. Equipment reliability translated into efficient energy utilization which is an important buyer consideration (Table 4).

Table 4 Other Buyer Considerations

Purchase Considerations	Importance of Buyer Considerations				Mean
	Very Important	Important	Not very Important	Not Important	
Availability of Technical support and Spare Parts	5	0	0	0	5.00
Efficiency of Technology	0	4	1	0	2.00
Reliability of Technology	2	2	1	0	1.59
Buy Back Policies	0	3	2	0	2.45
Payment Terms	5	0	0	0	5.00

Source: Research data

4.6 Bargaining Power of Suppliers

From the research, suppliers were rated by 60% of the firms to have a very considerable bargaining leverage. This situation was found to exist because of the five firms studied four had one supplier who happened to be the franchise owner, with an exception of Timwood Products who had two suppliers, while Atlas Copco Eastern Africa supplier was the parent company. However, very high supplier power did not negatively affect profitability because the suppliers' objectives were found to be congruent to those of the dealers or business unit (Tables 5 & 6).

Table 5 Bargaining Power of Suppliers

Do Suppliers have Bargaining Leverage?	Suppliers' influence on Business Decisions					Mean
	Very High	High	Moderate	Low	Negligible	
Yes	3	2	0	0	0	2.45
No	0	0	0	0	0	0.00
Not applicable	0	0	0	0	0	0.00

Source: Research data

Table 6 Supplier effect on Profitability

Do Suppliers affect Profitability?	Supplier effect on Profitability					Mean
	Very High	High	Moderate	Low	Negligible	
Yes	3	1	1	0	0	1.44
No	0	0	0	0	0	0.00
Not applicable	0	0	0	0	0	0.00

Source: Research data

4.7 Threat of Substitute Products

The air compressor industry in Kenya was found to be unique because the only available substitute for the main products was electrical energy. Due to the prevailing high cost of electricity during the research period, compressed air energy provided the most cost effective source of industrial energy. Consequently 60% of the firms rated threat of substitute products as low and 20% negligible. The final 20% said substitutes posed no threat to industry products and profitability (Table 7).

Table 7 Threat of Substitute Products

Do Substitutes affect Profitability?	Effect of Substitutes on Profitability					Mean
	Very High	High	Moderate	Low	Negligible	
Yes	0	0	0	3	1	1.73
No	0	0	0	0	1	1.00
Not applicable	0	0	0	0	0	0.00

Source: Research data

4.8 Effect of Government Policy on Profitability

According to this research government policies impacted positively on 60% of the firms businesses and negatively on 40% of the firms. Government policies mentioned were high taxation, liberalization and generally all policies that led to good economic growth during the time of the research. However all the firms indicated that government policies did not favour any particular industry participant (Table 8).

Table 8 Effects of Government Policy on Profitability

Does Government Policy affect Profitability?	Effect of Government Policy on Profitability			Mean
	Positive	Negative	Not applicable	
Yes	3	2	0	2.45
No	0	0	0	0.00
Not applicable	0	0	0	0.00

Source: Research data

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

5.1.1 Extent to which Entry Barriers Contributed to Profitability

The first objective of this study was to find the extent to which entry barriers contributed to profitability in the air compressor industry in Kenya. The study was based on Porter's five force industry model and examined the influence of each of the forces on industry profitability.

Porter's five industry forces were found to be in play in the local industry however each force exhibited a varying degree of influence on profitability. Of the eleven entry barriers studied, proprietary learning curve was identified as the highest entry barrier while strategic alliances, high operating costs, market share and brand identity were rated as the second strongest entry barriers. From the foregoing findings, the industry was attractive from a profitability point of view.

The industry was found to be characterized by low buyer leverage because buyers had limited technical knowledge to interrogate key product aspects. The situation was compounded by the low concentration of industry players creating a favourable environment for profitability. It was further found that purchase decisions were not only based on pricing but other key purchase considerations existed. Some of the other key purchase considerations besides price were payment terms, availability of technical support, spares parts and buy-back schemes. However the key purchase considerations were company specific and tended to reduce buyer power while creating a favourable situation for profitability for the incumbent firms. 60% of the firms sampled indicated that suppliers had considerable bargaining leverage. However the suppliers were the franchise owners and therefore their profitability goals were congruent to those of the dealers or business unit. Again this was found to have created a favourable environment for profitability. The threat of substitute products was found to be almost non-existent and consequently substitutes' threat to compressor industry products was negligible. This again created a favourable environment for profitability for the incumbent firms. Finally

government policy was rated by 60% of the firms as a positive influence on the industry. Government policies that created favourable industry conditions included all policies that spurred the good economic growth of approximately 5.4% that prevailed at the time of the research. Policies with negative influence on profitability were however not industry specific and applied across all the local industries. It was further found that the leading industry player experienced an average annual turnover growth of 29% between years 2002 and 2006. The above combination of favourable factors created an industry that was profitable.

5.1.2 Why the Industry has attracted few Entrants despite being Profitable

The second objective of the study was to find out why the industry attracted five players only despite being profitable. The industry was found to be unique because it was profitable and yet attracted few players, precisely five firms in 71 years. Further, industry competition was found to be based on differentiation, cost leadership and a combination of both differentiation and focus strategies. The incumbent firms generally have long market experiences ranging from 14 – 71 years and 2 years for the most recent entrant. They have therefore over time refined their strategies, creating key competitive advantages that have become deterrents to new entry.

Results of the research showed the reason for low entry as the existence of high entry barriers both structural and strategic. Of the eleven most important barriers studied (Table 2), nine were rated to have between moderate and very high deterrence to entry. However, only two entry barriers namely government policy and access to distribution channels were rated to have between low and negligible deterrence to entry. The incumbent firms responded to the five forces by building strategic defences that over time resulted in a highly fortified industry with reduced competitive rivalry. Structural barriers emanated from the industry organization with the industry leader Atlas Copco Eastern Africa being a global company while the other firms were local. This created a huge power imbalance between Atlas Copco Eastern Africa and the other firms in the industry. Further, Atlas Copco also happened to be the earliest industry entrant 26 years earlier than the second entrant Holman Brothers. Despite the industry being profitable, entry barriers limited new entry to a total of only five companies in 71 years.

5.2 Conclusion

The competitive structure of the air compressor industry in Kenya is unique and clearly attractive from a profit making stand point. This situation was because rivalry among sellers was moderate, entry barriers high, competition from substitutes negligible, buyers had low bargaining leverage while suppliers had considerable bargaining leverage. However the suppliers were the franchise owners and their profitability goals were congruent to those of the strategic business unit or dealers. The industry was characterized by many and high entry barriers that dominated all the other industry competitive forces. Consequently the threat of new entry force was found to be the strongest and most critical for strategy formulation. Further the interplay of the five competitive forces created an industry that was very difficult to new entry as evidenced by entry sequence of one firm after 26, 20, 11 and 12 years since 1936 when the first Air Compressor Company opened in Kenya. Finally, from the incumbent firms' point of view, government policy had created an enabling environment for profitability.

5.3 Recommendations

Singh et al. (1998) raised the question of empirical evidence on the importance of barriers to entry. An empirical research is recommended to confirm the strength of each entry barrier and differentiate between real and perceived entry barriers.

Since from the economic welfare viewpoint entry barriers have negative implications for out put and economic development, the government should make policies that reduce entry barriers in the local industry. This would encourage entrepreneurship and new venture creation that would in turn reduce unemployment and increase dynamics in the economy.

Finally since the local Air Compressor industry is well fortified with high entry barriers, potential entrants may craft strategic entry around provision of aftermarket services for the competitors' equipment already in existence in the market. After gaining market information, contacts, experience etc. the new firms would then introduce their own brand of equipment.

5.4 Suggestion for future work

This study provided an understanding of the extent to which entry barriers contributed to profitability in the air compressor industry in Kenya but further research is needed to determine the industry profitability relative to other local industries. Further, an empirical research is recommended to confirm the strength of each entry barrier and differentiate between real and perceived entry barriers.

5.5 Limitations

The research interviewed incumbent firms but it would have been more accurate to interview firms seeking entry to the industry. However potential new comers are difficult to identify and therefore incumbents were interviewed instead.

The interviewees were not willing to reveal actual profitability figures but gave generalized responses like, good, high profitability etc. These being relative terms, the level of industry profitability needed to be determined relative to other local industries.

The Air Compressor industry in Kenya has two segments, the industrial and the light duty segments. The sample of study was all the five firms in the industrial segment but excluded the light duty Air Compressor segment. Therefore findings obtained using the cross sectional survey research design may not accurately describe the overall picture of the Air Compressor industry in Kenya. Finally, the list of entry barriers used for the research was not exhaustive, neither did the research attempt to differentiate between real and perceived entry barriers.

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APPENDIX I

RESEARCH QUESTIONNAIRE

A Survey on analysis of the extent to which Entry Barriers have contributed to Profitability in the Air Compressor Industry in Kenya

Questionnaire.

Please provide answers for the following questions by giving the necessary details in the spaces provided.

PART I

COMPANY DATA

1. Name of your organization-----

2. Year of establishment-----

3. Who owns the company? (Please tick where applicable)
 - a) Local { }
 - b) Foreign { }
 - c) N/A { }
 - d) Other (Specify)-----

4. Does the parent organization support your company?
Yes { } No { }

5. If YES, explain how-----

6. Is your firm a local or International company?
Local { } International { }

PART II

Barriers to entry/Threat of new entry

1. Do you think there are barriers to entry into the air compressor industry in Kenya?

Yes { } No { }

If YES, please name the barriers

For this question, the following rating will be used

- a) Very high-----1
- b) High-----2
- c) Moderate -----3
- d) Low-----4
- e) Negligible-----5

2. How would you rate the following aspects as being barriers to entry into the air compressor industry in Kenya?

	(a)	(b)	(c)	(d)	(e)
a) Start up costs	()	()	()	()	()
b) Strategic alliances	()	()	()	()	()
c) High operating costs	()	()	()	()	()
d) Price wars	()	()	()	()	()
e) Government policy	()	()	()	()	()
f) Economies of scale	()	()	()	()	()
g) Access to distributors	()	()	()	()	()
h) Technology	()	()	()	()	()
i) Market share	()	()	()	()	()
j) Competition	()	()	()	()	()
k) Intellectual property rights	()	()	()	()	()
l) Experience	()	()	()	()	()

3. Are there firms in the industry with similar strategies to yours?

Yes { } No { }

4. Do the industry players serve different segments in the industry?

Yes { } No { }

5. If YES, is there free movement from one segment to another?

Yes { } No { }

6. If NO, what prevents movement from one segment to another?

7. How would you rate the threat by potential new entrants into the industry in Kenya?

() () () () ()

8. Would you say new entrants are a big threat to your profitability?

Yes { } No { }

9. What is your overall assessment of the entry barriers in the industry in Kenya?

Rivalry among Competitors

1. How many competitors are there in the industry? -----

2. Whom do you consider as the main competitor in the air compressor industry in Kenya? -----

3. How would you rate the intensity of competition in the industry in Kenya?

() () () () ()

4. Which is the strategy adopted to face the industry competition in Kenya?
- a) Differentiation { }
 - b) Cost leadership { }
 - c) Focus { }
 - d) Combination of strategies { }, Explain-----

5. What is your assessment of industry competition in Kenya?-----

6. Is your business profitable?
- a) Very profitable { }
 - b) Profitable { }
 - c) Marginally profitable { }
 - d) Unprofitable { }
7. What percentage growth have you experienced in the last four years?

Bargaining Power of Buyers

1. Do you think the customers have bargaining power over your company?
Yes { } No { }
- If YES, please specify on what aspects they exercise power over you-----

2. Approximately how many customers do you deal with? -----
3. How would you rate the power of customers over you?
() () () () ()
4. Do you think customers have an effect on your profitability?
Yes { } No { }

5. What is your overall assessment of your power over buyers?

() () () () ()

6. What other considerations do your clients make before making a purchase?

- a) -----
- b) -----
- c) -----
- d) -----
- e) -----

7. How do they rate the above considerations?

Very Important { } Important { } Not very Important { } Not Important { }

Bargaining Power of Suppliers

1. Approximately how many suppliers do you deal with? -----

2. Who are your suppliers?

- b) -----
- c) -----
- d) -----
- e) -----
- f) -----

3. Do suppliers have power over you?

Yes { } No { }

If YES, please rate the strength of suppliers in regard to your business decisions?

() () () () ()

4. Do you think you have some power over your suppliers?

Yes { } No { }

If YES, how would you rate your influence over suppliers?

() () () () ()

5. Please rate the suppliers' effect on your profitability?

() () () () ()

Threat of Substitute Products

1. Does the threat of substitutes affect your profitability?

Yes { } No { }

If YES, explain to what extent-----

Please rate the effect of substitutes on the prices of the your product

() () () () ()

2. Has the presence of substitutes affected your profitability?

Yes { } No { }

If YES, to what extent can you say substitutes affect the profitability?

() () () () ()

3. What is your overall assessment of threat of substitutes to your business?

() () () () ()

PART III

The Government

1. Do you think government policies affect your operations in Kenya?

Yes { } No { }

If YES, is the effect negative or positive?

Positive { } Negative { }

2. Which aspects of government regulatory role affects your profitability?-----

3. Do you think the government policies favour some of the players in the industry?

Yes { } No { }

If YES, can you say how?-----

4. Which other aspects of government policies do you think affect your operations?-----

5. Overall, how would you rate government policy in the compressed air industry in Kenya?

Good { } Poor { }

APPENDIX II

LIST OF FIRMS

- 1. Perfect Engineering Ltd**
- 2. Timwood Products Ltd**
- 3. Atlas Copco Eastern African Ltd**
- 4. Car and General Ltd**
- 5. Holman Brothers Ltd**

APPENDIX III

LETTER OF INTRODUCTION

Raphael Kiandiko
School of Business
University of Nairobi
P O Box 30197
Nairobi

I am a post graduate student in the school of Business, University of Nairobi and conducting a study on analysis of the extent to which barriers to entry (BTE's) have contributed to profitability in the air compressor industry in Kenya. This is in partial fulfilment of the requirement for the Masters of Business Administration Degree (MBA).

Your firm has been selected for this study and I seek a personal interview with you at a time and place of your convenience to help me complete the attached questionnaire. The information is purely for academic purposes and will be treated in strict confidence. A copy of the research project will be available free of charge to your company upon request.

Your assistance will be highly appreciated

Thank you in advance.

Yours sincerely

Raphael Kiandiko

MBA Student

Prof. Evans Aosa

SUPERVISOR