

**PRODUCT QUALITY AND CUSTOMER SATISFACTION IN THE
AVIATION MARKET OF THE OIL INDUSTRY: A CASE STUDY OF
AIR BP SOUTH AFRICA**

**by
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**In partial fulfillment of the requirements for the degree of
MASTERS IN BUSINESS ADMINISTRATION**

In

**THE GRADUATE SCHOOL OF BUSINESS
UNIVERSITY OF NATAL (DURBAN)**

15 SEPTEMBER 2003

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CONFIDENTIALITY CLAUSE

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N. R. Bhengu

DECLARATION

I hereby declare that this dissertation is my own original work and that all the sources I have used have been indicated and acknowledged by means of references. I also declare that this research has not been previously accepted for any degree and is not being currently submitted in candidature for any degree

Signed 

Date 15/09/2003

ACKNOWLEDGEMENTS

Firstly I would like to thank my supervisor Professor Elsa Thompson for guidance and advice she gave me throughout the research. Without her patience and generous support this research would have not been a success.

I also wish to thank the following Air BP employees for giving me access to their customers for the purposes of this research and for their comments and opinions on some of the issues dealt with in this dissertation: James Machete, Lubelo Masina, Claudia Rousseau and Anthony Leon.

My sincere gratitude also goes to all Air BP customers who participated in this study. Their valuable contribution in this research is highly appreciated.

I'm also thankful to Air BP for financial support and allowing me to take this exciting challenge.

Finally, I extend my words of thanks to my family especially my brothers Nathi and Nhlaka Bhengu. Without them I would have not pursued higher education.

N. R. Bhengu

ABSTRACT

In order to survive in today's competition, organisations are faced with a challenge of continuous improvement. At the core of any improvement efforts in the production and marketing of goods and services there is quality improvement. Product or service quality has become one of the elements that give an organisation a competitive edge over its competitors, since today's customers logically take purchasing decisions based on what they pay for versus the price paid.

For businesses, a race to customer satisfaction is infinite, customer satisfaction is no longer a choice but the only means for survival for many organisations. Therefore, organisations do all that is in their powers to satisfy customers, retain or increase the market share, make profit and survive in the business. In view of such a tough business environment it has become necessary to study the two important business concepts namely product quality and customer satisfaction. The question is whether the efforts put on producing and supplying the best quality of products enhance customer satisfaction. In other words, are the two concepts related in some way?

The aim of this study is to describe relationships between product quality and customers satisfaction in the aviation market of the oil industry, specifically Air BP market. Since customer satisfaction is also manifested through other ways like product demand and customer loyalty, the research also studies the relationships between customer satisfaction and customer loyalty, as well as customer satisfaction and product demand. Finally the relationships between product quality, product demand and customer loyalty are studied as indications of customer satisfaction.

While emphasising on relationships, the study also describes the significance and importance of various quality dimensions to Air BP customers. It explains various quality definitions and dimensions and determines the most significant ones to the aviation market. The study also looks at the importance of product quality in comparison with price and service given to customers. Finally conclusions are drawn on the hypotheses and recommendations are given to Air BP.

While the study recommendations are not prescriptive, they provide necessary information relevant to Air BP Marketing in a pursuit for customer satisfaction, customer retention and market share.

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CHAPTER 1

INTRODUCTION

1.1 A SUMMARY OF THE STUDY

As the competition becomes more intensive in the market of goods and services, quality becomes a crucial part of the market offering. Kohler (2000, p.56) argues that “one of the major values customers expect from vendors is high product and service quality.....Most customers will no longer accept or tolerate average quality. If companies want to stay in the race, let alone be profitable, they have no choice but to adopt total quality management.”

That means quality is a customer-centered concept. It doesn't matter how sophisticated and expensive are components put in the product or service, if the product or service does not satisfy the customer needs it might not be perceived by the customer as a good quality product or service.

The oil industry internationally, especially the aviation business, puts a lot of emphasis on quality control and quality management systems and procedures in every stage of oil processing and marketing, from crude oil refining to fuel end usage. However, it is crucial to establish the extent to which product quality relates to customer satisfaction.

The study focuses on the aviation fuel market of South Africa, specifically to Air BP customers. Air BP is an aviation division of BP (Pty) Ltd, which is responsible for the supply and marketing of aviation fuels, lubricants and aviation services worldwide. Air BP is one of the largest suppliers of aviation fuel in the world, a market leader in Africa and the third largest supplier in South Africa.

By Air BP customers, the study refers to commercial airlines, dealers and general aviation customers (including the military, flying schools and private charters), who buy aviation fuel and oils from BP (Pty) Ltd locations (airports and fuel depots) within the boundaries of South Africa.

The study is within the broader concept of quality control and management, but it focuses specifically on the relationship between the product quality and customer satisfaction. Therefore it aims to determine the extent to which product quality relates to customer satisfaction.

1.2 BACKGROUND AND CONTEXT

The background and context of the study is discussed under the following two sections: Aviation Business in general and Air BP as a company.

1.2.1 THE AVIATION BUSINESS

The aviation business is regarded as a specialised sector of the oil industry. That is because of the following reasons:

Market concentration – aviation business is smaller than other business sectors of the oil industry in terms of the number of customers, but not volumes, its market consists of few big customers e.g. airlines, the military and private charters.

The financial contribution it makes to the entire industry – Although some aviation fuels, specifically Jet A1 fuel costs less than motor vehicle fuels in cents per litre costs, aviation customers still make a significant contribution to profits made by oil companies. That is due to the quantity purchased (aircrafts obviously consume more fuel than vehicles) and the ease of operating in global markets, as customers fly from one location to another location in a different country.

The nature of products supplied – Aviation fuels are very specialised products in the oil industry. They have very strict quality control procedures and systems from the crude oil refining stage to their final usage. That is because of the risk involved, should the product be out of specification. According to Ross (1993, p.3) the measurement of quality is the price of non-conformance.

Quality control procedures and standards of aviation fuels are determined at an international level and are well known to all participants, in the marketing channel, from the refinery to the end user. For instance, at the majority of its locations worldwide Air BP supplies Jet A1 confirming to the latest version of the Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS).

Customers supplied - Aviation customers (e.g. airlines) are few and very influential in the aviation market of the oil industry. Usually they have enough technical knowledge about the products they buy from the oils industry. They have a lot of influence in the goods and services market in general, since they make a significant contribution to the country's economy and some are to some extent owned by the state e.g. South African Airways (SAA).

The Price – The South African government regulates the price in the oil industry, but aviation fuel prices are not regulated. In addition to crude oil and manufacturing costs, prices are determined by the forces of supply and demand, in the aviation market. That makes the competition more intensive while the industry is highly concentrated.

1.2.2 AIR BP

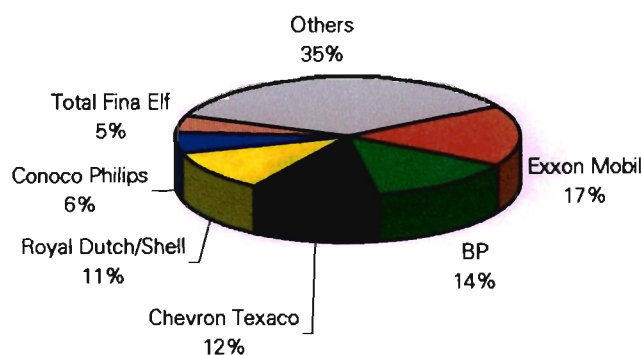
Air BP is one of the most successful business units within BP (Pty) Ltd group. It is one of the largest suppliers of aviation fuels, currently supplying over 26 million tonnes (around 8 billion gallons) of aviation fuels and lubricants to its customers around the globe. Air BP is represented at over 1600 airports in over 90 countries and with local offices in almost half of those countries. It is represented in all major airports in South Africa, and in all aviation market segments, directly and through third parties.

"Air BP, long known for its fuels reputation in the aviation industry, has widened its offerings to include some of the top caliber lubricants and specialty fluids available on today's advanced market. Their range of turbo oils has a reputation as some of the top turbine oils on the market today" (www.bp.com).

Air BP is also a registered supplier with the International Air Transport Association (IATA), and participates actively in IATA initiatives and events, to promote safe and efficient fuel supply and into-plane operations. Its market entails 700 airlines and approximately 20,000 card (general aviation) customers across the world. Figure 1.1 shows Air BP's jet fuel market share globally.

Figure 1.1

AIR BP'S GLOBAL JET FUEL MARKET SHARE



Source: www.airbp.bpweb : Air BP induction by David Laud

Since Air BP is one of the world's largest aviation fuel suppliers, a case study of Air BP customers will give a valuable information with regard to the relationship between product quality and customer satisfaction. Although focusing mainly on product quality, a study of this kind is a response to the broad question of what actually satisfies the customer in the entire market offer.

1.3 OBJECTIVES OF THE STUDY

The objective of the study is to identify the way in which product quality relates to customer satisfaction. It will also look at the impact of quality on customer satisfaction in relation to the impact of other elements like price and service.

The study will also attempt to identify the correlations between the product quality and product demand as well as between the product quality and customer loyalty, as these two concepts (product demand and customer loyalty) are possible indications of customer satisfaction. In so doing, the importance and benefits of maintaining good quality in the aviation fuel market will be clearly identified, so that recommendations will be made to Air BP South Africa.

1.4 THE PROBLEM STATEMENT

The quality has become an important concept in both operations and marketing divisions of product or service companies. More emphasis on quality has led to increased expenditure, resulting from the development or improvement of quality control systems, procedures, employment of qualified quality control technicians, sourcing high quality components or raw materials and any other total quality management (TQM) practices. According to Kohler (2000,p.56), "today's executives view the task of improving product and service quality as their top priority".

Air BP is one of the companies that take product quality seriously. There is no compromise on fuel quality. In every stage of handling aviation products, a high quality is maintained. All operations are focused on the production and supply of high quality fuels. Maintaining high quality is a transparent process at Air BP, major customers like South African Airways (SAA) are allowed to inspect or audit Air BP on regular basis, in terms of practices and procedures in place to maintain the high quality of fuel and oils supplied.

According to Kevin Bower (Air BP Fuels and Quality Engineer) fuel purity & quality are vital to the safety of aircraft in flight, so, jet fuel MUST conform rigidly to specification when supplied to aircraft. Therefore, it is important to apply a rigorous Quality Control scheme designed to detect and exclude off-spec material starting from manufacture through to aircraft (www.airbp.bpweb).

The problem lies in matching the emphasis and efforts put on production and marketing of high quality products and the extent to which customers are satisfied.

Does good quality mean customer satisfaction, customer loyalty, increased sales or high product value? Do companies benefit from the quality improvement initiatives like total quality management (TQM)? Does quality take priority over other elements of the market offer e.g. price and service given to customers? This study will determine the value attached by aviation customers to the product quality.

1.4.1 THE RESEARCH QUESTION

- Is there a relationship between the product quality and customer satisfaction in the aviation market of Air BP South Africa?

To address the research question the following sub questions will be used:

- Is the product quality more important than price and service given to the customer?
- Is there a relationship between product quality and product demand?
- Is there a relationship between product quality and customer loyalty?

1.5 HYPOTHESES

- There is a positive correlation between the product quality and customer satisfaction in the aviation market of Air BP.
- Product quality is more important than price and service to the aviation market of Air BP.
- There is a positive correlation between the product quality and product demand in the aviation market of Air BP.
- There is a positive correlation between the product quality and customer loyalty in the aviation market of Air BP.

1.6 BENEFITS OF THE STUDY

Air BP puts a lot of efforts and stringent rules to ensure compliance of all employees with quality control procedures and systems. This result in high direct and indirect costs e.g. time and labour spent on maintenance of high quality standards.

The risk of not maintaining specified high quality standards of aviation fuel and oils is high, as a result people involved in the process of aviation fuel production, marketing and supply are always made aware of possible incidents and reminded at all times to prevent such incidents taking place. However, the extent to which product quality relates to customer satisfaction is not that obvious.

There is a number of marketing elements that constitute an offer to the customer, which influence the customer's decision of accepting the offer. In some cases product quality does not appear strongly when sales negotiations are done. That could be due to the fact that the issue of product quality rests with operations or production departments whereas sales deals are the responsibility of marketing department.

The study of this nature directly links the two concepts, product quality and customer satisfaction. It shows whether the money invested by the company on quality control and quality management is converted to profits through customer satisfaction. That will help marketers to consider quality and its impact to customer satisfaction when developing the market offer and their entire marketing strategies.

By studying the importance of product quality to customers this study will show how much value is added by quality technicians or operations department to the market offer. On the other hand the marketing team will know whether it is necessary to focus on product quality as a main feature of the market offer in order to satisfy customers. According to Kohler (2000,p.57), total quality is the key to value creation and customer satisfaction. Total quality is everyone's job, just as marketing is everyone's job.

Daniel Beckham argued that "Marketers who don't learn the language of quality improvement, manufacturing, and operations will become as obsolete as buggy whips. The days of functional marketing are gone. We can no longer afford to think of ourselves as market researchers, advertising people, direct marketers, strategists – we have to think of ourselves as customer satisfiers – customer advocates focused on whole processes." (Kotler 2000, p.57).

1.7 OUTLINE OF THE CONTENT

The flow of this dissertation is organised in chapters and subsections. The way chapters and subsections are structured in sequence will help the reader understand the story line. The contents of each chapter are briefly discussed below:

CHAPTER 2 : PRODUCT QUALITY AND CUSTOMER SATISFACTION

This chapter thoroughly discusses the two concepts under study, namely product quality and customer satisfaction. It reviews the current literature on these concepts. The relationship between product quality and customer satisfaction is also discussed. This chapter also looks at the importance of product quality in relation to other elements of the market offer i.e. price and service delivered to the customer. Existing theories on related concepts like customer loyalty and product demand are also discussed.

In brief, this chapter gives a theoretical background on the concepts under study by revisiting the theory given by other authors on this subject.

CHAPTER 3 : RESEARCH DESIGN AND METHODOLOGY

Chapter 3 discusses the methodology employed for collecting and collating data used in the study. That includes the sample and sampling techniques used, the research design and data collection methods used. This chapter also discusses difficulties and challenges experienced during data collection and collation and finally it discusses the categories of data collected.

CHAPTER 4: REPORTING & ANALYSING RESULTS

This chapter outlines the methods and techniques used to analyse data. It also reports and interprets results or findings

CHAPTER 5 : CONCLUSION AND RECOMMENDATIONS

Chapter 5 discusses conclusions drawn from the findings and recommendations made to Air BP.

CHAPTER 2

PRODUCT QUALITY AND CUSTOMER SATISFACTION

2.1 INTRODUCTION

This chapter examines the literature on product quality, customer satisfaction and relationships between these two concepts under study.

On the concept of product quality, this chapter discusses the various views on product quality, the changes on quality control and quality management systems over time and the various quality control systems and tools that are currently used. On the concept of customer satisfaction, this chapter gives the definition of customer satisfaction and it briefly discusses the customer value concept. The process of satisfying customers and maintaining customer satisfaction is outlined. Finally, this chapter looks at the issue of measuring customer satisfaction.

Since the crux of the matter is on the relationship between product quality and customer satisfaction, this chapter also discusses the quality management systems & tools in the context of customer satisfaction. The so called a “customer satisfaction framework” is introduced with a view of highlighting the role of quality and value networks in customer satisfaction. This chapter also looks at quality after sales, the importance of the product quality, in relation to other components of the market offer (i.e. price and service). Finally, relationships between product quality, product demand and customer loyalty are discussed.

2.2 QUALITY

The following discussion analyses various definitions of quality as given by different authors, dimensions of quality, the evolution and history of quality, the Quality Management Systems and finally it looks at various Quality Control Tools.

2.2.1 Definition of Quality

There are various definitions of quality given by different authors.

While manufacturers or suppliers define quality on the basis of certain specifications, manufacturing processes and components put in production processes, customers view quality in relation to their needs satisfaction. "We can say that the seller has delivered quality whenever the seller's product or service meets or exceeds the customers' expectations. A company that satisfies most of its customer's needs most of the time is called a quality company." (Kohler 2000,p.57). Discussed below are customer-based, manufacturing-based, value-based and product-based definitions of quality.

Customer-Based Definition

Kotler ((2000, p.57) defines quality as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. This definition was adopted by the ISO International Standard 8402 and it originates from Feigenbaum's definition which says "Quality is the total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectations of the customer" (Claude 1999, p.125). This is a user-based definition of quality. In simple terms it means that quality consists of the capacity to satisfy wants.

Quality, at an abstract level, has been defined by Joseph Juran and W. Edwards Deming as "fitness for use", meaning that a product or service should do what the user needs or wants and has a right to expect (Schuler 1992, p.21). This definition, as well, implies that quality is a customer perceived concept.

Manufacturing-Based Definition

On the other hand, Crosby (1979,p.17) defines quality as conformance to requirements or freedom from variation. This is a manufacturing based definition, which means that quality is the degree to which a specific product conforms to a design or specification. This implies that in order to be able to produce a required product quality, one needs to clearly understand the requirements or specification of a particular product. In that sense any non-conformance detected means the absence of quality.

Value-Based Definition

A value-based definition of quality says “quality means best of excellence at an acceptable price and the control of variability at an acceptable cost” (Garvin 1988, p.41). This means quality refers to “best” for certain customer conditions i.e. the actual use and the selling price of the product. According to this author, quality is defined in terms of costs and prices, a quality product is one that provides performance or conformance at an acceptable price or cost.

Product-Based Definition

A product-based definition refers to quality as “the amounts of the unpriced attributes contained in each unit of the priced attribute” (Garvin 1988, p. 41). This definition explains differences in level of quality as differences in the quantity of some desired ingredient or attribute. This does not mean a high level of a particular attribute always means a better quality of a product. A negative correlation between the attribute level and quality rating is also possible. In that sense quality is viewed as a measurable variable, for example a high quality education means a large academic content covered and a better quality fuel is an “unleaded fuel” (fuel with a low lead content).

All the above-mentioned definitions of quality are relevant to this study. Customer based and value based definitions of quality are more relevant in the section that explores quality in relation to customer satisfaction, customer loyalty and product demand. Manufacturing based and product based definitions are more relevant in the sections that discuss the importance of quality to the product supplier and the systems developed by the manufacturer or supplier to maintain and improve quality during the production and marketing of the product.

2.2.2 Dimensions of Quality

Understanding different dimensions of quality helps to analyse the product’s position in a specific dimension as compared to other dimensions and identify those dimensions that matters most to customers and influence their decision to purchase a product.

As a result of such analyses, quality dimensions that are closely related to customer satisfaction can be identified and one can direct the quality improvement efforts to those important quality dimensions. For example, Mercedes Benz could be the best car in performance (low engine noise and high speed), however if it is difficult and costly to get Mercedes Benz parts, it might not appeal to customers who are more concerned about servicing and maintaining the vehicle. In that sense, one can say Mercedes Benz vehicles are strong on "Performance" dimension, but not the best option on "Serviceability" dimension.

Discussed below are the nine inter-related dimensions of quality, namely: performance, conformance, features, durability, reliability, serviceability, aesthetics, perceived quality and information.

Performance

Performance refers to the primary operating characteristics of the product. These characteristics vary from one product to another. For example, in fuel, this may mean energy supply levels, combustibility, freezing point etc. Such operating characteristics can be ranked in a certain way e.g. on basis of low, medium, high or very high. According to Garvin (1988,p.50), this dimension of quality combines elements of both the product-based and user-based approaches of quality definition. Performance can be measured and compared over time and against competitors.

This dimension of quality is very influential to customers who take a purchasing decision logically or who would make a considerable effort to look for a product to purchase. In other words performance, as a quality dimension, is more prevalent to specialty goods than convenience goods. For example, a customer who is purchasing a pen might not worry much about a performance of BIC as compared to Parker pens, but a customer who is purchasing a computer will derive his/her satisfaction from its performance elements (e.g. the memory, processing speed etc.)

Conformance:

Garvin (1988,p.50) defines conformance as a degree to which the product's design and operating characteristics meet pre-established standards.

In other words, it is the extent to which the product meets specifications and is absent of defects. "Conformance involves matching competitor's offering and meeting consumers' expectations in terms of established standards for design and operating characteristics" (Schuller et al 1992,p.28).

These authors define conformance dimension as the product adherence to a specification. In this sense, if any of the pre-determined standards (specification element), is not met by a finished product, that product is not of good quality. This dimension is stronger to industrial products than consumer products. It is also more relevant in cases where buyers have enough technical knowledge about the product. Aviation fuel is a good example of such products. Users rely on the fuel specification (e.g. density, freezing point, flash point etc) to make conclusions about its expected performance. According to Kevin Bower (Air BP Fuels and Lubricants Engineer), the function of the specification is to define the minimum standard of a product (that is "fit for purpose"), written in terms of laboratory test results and laboratory tests used should have been found to relate to actual operating performance (www.airbp.bpweb.com).

Since conformance is the central dimension of quality that drives performance, reliability, durability and perceived quality, it is usually controlled during production through various quality control and improvement tools.

Features:

Garvin (1988,p.50) defines features as secondary elements of a product that complement the primary characteristics or the product's basic functioning. For example, airbags in a vehicle is a feature that enhances the vehicle safety. With technological improvements, in some products, what used to be features in the past have now become primary characteristics of the product. For example, oil companies produced cleaner (unleaded) fuel in the past as a feature. In the near future, due to the pressure exerted by environmentalists to the oil industry, a low lead or lead free fuel will become a basic requirement in fuel production. Features are very obvious as compared to other elements of the product; hence they are mostly used in marketing communication to attract customers.

Features easily differentiate one product from another that does the same work, as a result they strongly influence a number of customers' satisfaction. A good example of the impact of features, as a quality dimension, is on cellular phones. Cellular phones with a large number of features are perceived as better quality phones than those with fewer features (e.g Nokia in comparison with Siemens cellular phones).

Reliability:

According to Schuler, (1992,p.28) reliability reflects the probability of a product's malfunctioning or failing within a specified time. In other words it means consistency of performance over time and from purchase to purchase. Reliability becomes more important as downtime and maintenance become more expensive. Also when the consequence of product malfunctioning is high, consumers are likely to value the reliability of product more than other dimensions of quality. Electrical appliances are a good example of products in which reliability is very important and determines the product quality. As a result customers buy warranty to get assurance on the product reliability.

Durability:

Durability measures product life in both technical and economic dimensions (Schuler 1992,p.28). Technical durability means the amount of use one gets from a product before it physically deteriorates. Economic durability means the amount of use one gets from a product before it breaks down and replacement is regarded as preferable to continued repair. For products that cannot be repaired expected technical and economic life is the same.

This dimension is difficult to measure in product that their level of usage is dependent on other products. For example, the consumption of fuel is the function of the engine size and the vehicle type. In that sense it is not easy to measure the durability of diesel as compared to petrol. However, it should be noted that "Durability and reliability are closely linked. A product that fails frequently is likely to be scrapped earlier than one that is more reliable" (Garvin 1988,p.56). Again warranty or guarantee on the product is used to give customers some assurance on the product's expected lifespan.

Serviceability:

Serviceability refers to the speed, courtesy, competence and ease of repair or replacement. In brief, it is the ease of servicing the product. This dimension is not that important to products that are completely consumed with one usage. However, it is relevant considering that the product can be affected during the distribution process and hence need a repair or replacement. For example, aircrafts fuel (Jet A1) can be dispatched from the refinery in good condition, but it can lose the additive, which is used to prevent the static electricity build-up, during its distribution to the airfield. In that case serviceability will mean the speed and ease of preventing the static build up at the airfield in order to regain the fuel specification.

Another example of the importance of serviceability is on motor vehicles. During the liquidation of Hyundai, Hyundai vehicles were considered as low quality cars because of the difficulty of getting spares and fewer maintenance workshops.

Aesthetics:

Aesthetics refers to how a product looks, feels, sounds, tastes, or smells. It is a matter of personal judgment and a reflection of individual preferences (Garvin 1988,p.59). This is a very subjective customer-based dimension, as a result it is difficult to measure. However, customer preferences or rankings of products in terms of aesthetics can be established through market research. This dimension of quality is related to the dimension of features; it can be influenced by features, like packaging, method of delivery, service given with the product etc.

Perceived Quality:

Perceived quality results from the information that the customer gets about the product. Sources of that information are company or brand reputation, image, advertising, warranties and guarantees. Reputation is the most significant source of perceived quality (Schuler 1992, p.30).

Some customers do not believe in products they have never seen or heard about from anyone. They usually buy certain products because they have been recommended by friends, relatives etc.

Therefore, advertising plays an important role in marketing products through this dimension of quality, by creating certain perceptions about the product. For instance, showing a celebrity using that particular product can create a perception that, that product is a good quality for high profile people.

Information:

While the above-mentioned eight dimensions of quality are relevant in both physical products and services, Schuler (1992, p.30) argues that the availability and accuracy of information is an additional quality dimension that is relevant to services. A service without complete and accurate information can be regarded by the customer as a poor quality service.

The importance of these quality dimensions vary from one person to another, they are not equally important to everybody. Therefore it is important to the organisation to understand which component of their product is valued most by customers and influence the customers' decision of what they regard as good quality. This study discusses all the above-mentioned dimensions of the product quality in relation to customer satisfaction. However, the focus is more on performance quality since it has more impact on customer satisfaction than other dimensions. "A buyer's satisfaction is a function of the product's **perceived performance** and the buyer's expectations" (Kohler 2000,p.58).

2.2.3 The History and Evolution of Quality

The concept of quality has evolved in different forms over years. Recently, it has emerged as a formal management function included in the strategic business planning. Although quality was not directly linked to customer satisfaction in the olden days, the idea behind the production of good quality product was to provide the best, have minimal rejects and beat the competition in both profits and costs. None of those could happen without a sustainable market share resulting from satisfied customers. In that sense quality always had implications on customer satisfaction.

The United States of America has led the evolution of quality processes through their ideologies and systems. Japan adopted quality concepts from the United States of America through seminars given by some of the US Quality Gurus (Edwards Deming & Joseph Juran). Japanese then spread principles of quality to everyone through training and education.

The approaches to quality have emerged gradually into six distinct quality eras namely, Operator Quality Control, Foreman Quality Control, Inspection, Statistical Quality control, Quality assurance and Strategic quality management. Each of these stages is discussed below.

(i) Operator Quality Control

This is the first step in the development of quality management field. It goes back to the time when one worker, or at least a very small number of workers was responsible for the manufacture of the entire product. According to this system a person responsible had to totally control the quality of his entire work (Feigenbaum 1983, p.15). In this view, if a person or a group of people who are responsible for the production of a particular product do not do what is necessary to maintain good quality, the quality of that product is automatically compromised.

This system gave the entire responsibility of quality to the people on the floor, that was empowering and motivating in a way, but it lacked the ways of controlling or managing the human error.

(ii) Foreman Quality Control

In the early 1900s manufacturers progressed from one-man operation to a system where people doing the same job were grouped together in the product process. A foreman directed each group of people in this system. Therefore the responsibility of quality control became the responsibility of the foreman (Feigenbaum 1983, p15).

Having vested the responsibility of quality to one man, the foreman, the disadvantage of this system was that the chances of consistently achieving good quality of the finished product were slim, because there were many people involved in the process, who could have different ideas of what was a good quality in their respective stages of the production process, which could differ from the foreman's point of view. For good results foremen had to give clear instructions and be very influential in the production system.

(iii) Inspection

When goods were produced in small volumes in the eighteenth and nineteenth centuries, a decent quality control system did not exist. Parts were matched to one another by hand and that necessitated inspection to ensure high quality was conducted. According to Garvin (1988,p.3) formal inspection became necessary only with the rise of mass production and the need for interchangeable parts as volumes increased. Inspection was a very reactive method of controlling quality as compared to the current proactive methods. During this era quality control was limited to inspection and to narrow activities as counting, grading and repair.

According to Burrill (1999, p.45), other limitations of inspection identified in Japan and United States of America were as follows:

- It placed quality responsibility on the inspector, not the producer
- Feedback on quality from the inspection department to manufacturing took too much time
- Inspectors could not keep pace as production increased
- For complex products, quality could not be assured through inspection alone
- Reliance on inspection could not guarantee quality because not all defects could be found.

These limitations on inspection led to the development of Statistical Quality Control methods.

(iv) Statistical Quality Control

Process control and sampling were the main pillars of statistical quality control methods. In his book called “Economic Control of Quality of Manufactured Product”, W.A. Shewhart gave a precise definition and measurable definition of manufacturing control, developed powerful techniques for monitoring and evaluating day-to-day production, and suggested a variety of ways of improving quality (Garvin (1988,p.3). Shewhart acknowledged the fact that variability was a fact of industrial life. Raw materials, operator skills, and equipment would all vary to some degree. He then developed the methods of process control using the principles of probability and statistics.

While Shewhart was pursuing the concept of statistical quality control other researchers were advancing the practice of sampling. Sampling method entailed checking a limited number of items in a production lot, then deciding on that basis whether the entire lot is acceptable. Sampling method had a high risk of errors since samples are never fully representative. Although some methods were devised to systematically deal with that risk, the sampling method was limited in application. It applied only to individual production lots, rather than to the overall level of quality produced by a manufacturing process (Garvin (1988,p.8).

Through the visit by Joseph Juran in 1954, the Japanese stopped overemphasizing on the importance of statistical quality control methods. According to Burrill (1999, p.45) the following limitations of statistical methods were identified in Japan:

- Workers found statistical methods difficult
- Standards required to apply the concepts were not always available
- There was a lack of data
- Workers feared that measuring devices used to collect data were put there to monitor their work.
- Quality control remained the preserve of engineers and workers, top and middle management showed little interest

Problems identified with Statistical Quality Control led to the development of the quality assurance methods.

(v) Quality Assurance

During this era, quality evolved from a narrow, manufacturing-based discipline to a discipline with broader implications for management. Problem prevention remained the primary goal, but the profession's tools expanded far beyond statistics. The following four separate elements were used to control quality according to the quality assurance method: quantifying the costs of quality, total quality control, reliability engineering and zero defect (Garvin 1988,p.12)

Quantifying the Costs of Quality

In the first effort to quantify the costs of quality, Joseph Juran argued that the costs of achieving a given level of quality could be divided into avoidable and unavoidable costs. Avoidable costs referred to defects, product failures, scrapped materials, labour hours required to rework and repair. Unavoidable costs referred to costs associate with prevention i.e. inspection, sampling, sorting and other quality control initiatives. This guided managers in deciding on how much they could invest on quality improvement.

Total Quality Control

In the 1950s Armand Feigenbaum, came with an idea that "to provide genuine effectiveness, control must start with the design of the product and end only when the product has been placed in the hands of a customer, who remains satisfied.....quality is everybody's job" (Garvin 1988,p.13). This idea laid the foundation of the current quality control systems where quality management is a strategic function and quality control is important in all stages of the product processing until it reaches the end user.

The concept of total quality control still recognised traditional methods like inspection, gauging and statistical methods, however, it included new product development, vendor selection, and customer service in quality control process.

Increasing responsibilities led to the development of the new function of quality control engineering or reliability engineering.

Reliability Engineering

The goal of reliability engineering was to improve reliability and reduce failure rates over time. A variety of techniques were developed. One technique called "Failure Mode and Effect Analysis" was developed to systematically review the ways a product could fail and on that basis propose alternative designs. Another technique called "Individual Component Analysis" was used to compute the probability of failure of key components and then tried to eliminate or strengthen the weakest links.

Zero Defect

The last element of quality assurance developed in the 1960s was called zero defect. This came in realisation that the three most common causes of worker errors were lack of knowledge, lack of proper facilities and lack of attention. The idea was to design a program whose overriding goal was to promote a constant, conscious desire to do a job right the first time. While the above discussed elements of quality assurance focused in preventing defects, Zero Defect focused on management expectations and the human relations side of the equation. "While heavy on philosophy, motivation, and awareness, a key step of this element was the identification of problems at their source and the design of remedial efforts" (Garvin 1988,p.17)

(vi) Strategic Quality Management

The pressures of increasing demand, mass production, local and foreign competition, market share, profitability and complex manufacturing systems made manufacturers see the need of linking quality with the entire business management strategy. According to Feigenbaum (1983, p.17) the total quality control had a major impact upon management and engineering practices and hence provided the foundation for the evolution of strategic quality management.

A strategic approach to quality management was developed as a result of the too limited scope of both quality assurance and statistical quality control. "A more outward perspective was needed to gain the commitment of top managers whose interests were strategic and competitive (Garvin 1988,p.24). That is the current approach in businesses, which has a view of quality as a competitive opportunity. This method puts emphasis on the market and consumer needs and it is based on strategic planning, goal setting, and mobilising the organisation. This is the first approach to make quality a responsibility of everyone in the organisation, with top management exercising strong leadership.

2.2.4 Quality Management and Control Systems

The evolution of quality management as discussed in section 2.2.3 above was not an overnight process, it took place over a certain period of time and in varying levels and stages from one country to another, from one industry to another and from one product to another. According to Burrill et al (1999, p.15) goods have been the major focus and major beneficiary of modern quality movement. The great improvement in the quality of goods since the 1950's has been due largely to worldwide competition, which awakened consumers to the possibility of better quality and made them more demanding.

The quality of business information has improved but at a slower rate than that of goods. For computerised information processes, a large variation exists between the best and the worst. The majority of firms do not have time to do things right, but find time to do them over. Most firms focus on building products and give little effort to improving the building process. Service providers were the last to embrace the quality movement. In 1980s considerable progress has been made, especially in areas that experience strong competition, such as financial services and the hospitality industry. Where there is less competition, however there has been less improvement.

Overall all business sectors have incorporated quality management principles in their business strategies through various systems and tools available. Product quality is important in both manufacturing and marketing stages of the product.

“Reflecting the importance of product quality, a number of firms have embraced concepts such as “quality function deployment” (QFD) and “total quality management” (TQM) to direct their efforts to maximise the quality of their products” (Keller 1998,p.177).

Discussed below is the concept of Total Quality Management and other techniques and tools used to maintain and improve quality at various stages of product manufacturing and marketing. These techniques have been adopted by the rest of the world.

2.2.4.1 Total Quality Management

“Total Quality Management (TQM) refers to the management philosophy and company practices that aim to harness the human and material resources of an organisation in the most effective way to achieve the objectives of the organisation” (Fox 1995, p. 262). TQM includes all functions of the business and it is the integration of those functions and related processes into the product life cycle such as design, planning, production, distribution, and field service.

TQM is viewed as a natural and logical extension of earlier approaches to quality management discussed in section 2.2.3. What makes TQM different from the ancient quality approaches is its comprehensive approach. TQM does not ensure quality only at a specific point of the production process like inspection and sampling, however it integrates quality function with the entire function of business management. Differences between the ancient quality approaches and TQM are tabulated on Table 2.1:

Table 2.1
QUALITY CONTROL APPROACHES

INSPECTION	STATISTICAL QUALITY CONTROL	QUALITY ASSURANCE	TOTAL QUALITY MANAGEMENT
<ul style="list-style-type: none">• Error Detection• Rectification	<ul style="list-style-type: none">➤ Statistical Methods➤ Process Performance➤ Quality Standards	<ul style="list-style-type: none">➤ Quality Systems➤ Quality Costing➤ Problem Solving➤ Quality Planning	<ul style="list-style-type: none">➤ Whole Operation Involved➤ Quality Strategy➤ Teamwork➤ Staff Empowerment➤ Customers & Supplier involvement

Source: Pyncraft (1997, p.737)

From the above table it appears that in TQM, quality becomes the integral part of the entire process from the components procurement to the production function until the product is handed to the customer. Since TQM needs the entire organisation's involvement, according to Ross (1993, p.2) the following were identified as key elements for the Total Quality Management to be a success:

- A cultural change based on the management philosophy of meeting customer requirements through continuous improvement
- Management behaviour that includes acting as role models, use of quality process and tools, encouraging communications, sponsoring feedback activities and a supporting environment
- Mechanisms of change including training, communications, recognition, teamwork, and customer satisfaction programs
- Proper implementation of TQM by defining the mission, identifying system output, identifying customers, negotiating customer's requirements, developing a supplier specification that details customer requirements and expectations and determining the necessary activities required to fulfill those requirements and expectations.
- The cost of quality as the measure of non-quality (not meeting customer requirements)

The above listed elements show that TQM is a customer-orientated programme that requires the contribution of all the members of the organisation in their respective fields. "TQM is not just a programme, but a complete change in an organisation's culture and the way of working. While quality improvement initiatives can be undertaken without top management involvement, the evidence is that substantial and sustained change does not happen without top management commitment" (Edvardsson et al 1994,48). More about TQM is discussed in section 2.4 with the aim of showing the relationship between product quality and customer satisfaction.

2.2.4.2 Quality Control Tools or Techniques

Since TQM is a broad concept that involves the entire organisation, there are various quality tools or techniques that complement the TQM while focusing in different parts of the organisation. Those tools are Quality Function Deployment (QFD), Just-in-time (JIT), Failure Mode & Effect Analysis, Statistical Methods, Quality Circles and Quality Audit. Each of them is discussed below.

(i) Quality Function Deployment

Quality Function Deployment (QFD) integrates the following three dimensions into the manufacturing process: company wide quality; focus on customer requirements and translation of quality perceptions into product characteristics (Ross 1995, p.67). While TQM covers the efforts and requirements of the entire organisation, QFD is meant to ensure good quality at the early stages of making the market offer, specifically during the product development stage. However, both programmes require the involvement of the top management and the active participation by various departments of the organisation.

The principles of QFD do not contrast the TQM, instead QFD is one of the tools that contributes to the completeness of the TQM. The starting point of the QFD are the latent or explicit requirements of a target market segment, which are jointly defined by marketing, customer service and Research & Development (R&D). These customer requirements serve as an input to the product development process in order to ensure that the product developed is exactly what the customer requires. Discussed below are four stages of the QFD process that go in line with the product development process:

Concept Development: Once the customer requirements have been identified, the resulting design characteristics of products are quantified and described in such a way that the end product will correspond with the original requirement of customers. This includes engineering features and quality traits of the product, weighed according to their importance to the customer and set out in writing as specification elements. This stage includes Marketing, Sales, Customer Service, Development and possibly Suppliers.

Engineering Planning: Once the engineering features of the product have been described, the necessary components for producing those features are identified. This stage involves various departments like Development, Customer Service, Sales, Purchasing, Production, Process/Production Planning, Maintenance and Industrial Engineering. The outcome of this stage is components or parts characteristics.

Process Planning: Having identified the required components from the previous stage, the production process parameters are determined. The outcome of this stage is a clear elaborated process plan that also identifies checkpoints in the process parameters. Depending on the organisation and the product at hand, this stage involves Development, Purchasing, Production, Process/Production Planning, Logistics, Maintenance and Industrial Engineering.

Procedural Planning: This stage entails laying down all the concrete procedural and working instructions to ensure that the most important parameters are observed. Involved in this stage are the following departments: Production, Process / Production Planning, Logistics, Sales, Customer Service, Maintenance and Industrial Engineering.

It should be noted that QFD is an inter-disciplinary programme; it involves various departments in varying degrees at different stages. Like TQM, the successful implementation of QFD depends on the active involvement of the top management. According to Gunter et al (1996, p.187) QFD is more appropriate where the product development assignment is more innovative and products are complex.

(ii) Just In Time

Originating from Japan, Just In Time (JIT) is known as the programme directed towards ensuring that the right quantities are purchased or produced at the right time, and that there is no waste. JIT reduces inventory cost, production time, and space requirements (Ross 1995, p.67).

However, JIT goes beyond controlling the inventory, it entails the control of quality in the production process. According to JIT, if one of the key processes fails to produce a quality part, the production line stops. Individual operators are their own inspectors and the process is continuously being fine tuned for quality production (Ross 1993,p.158). In JIT system quality control is built into the production process.

JIT is meant to improve operations performance. However, it does have the quality improvement implications, Fox (1995, p.331) defines it as a series of operating concepts that allow systematic identification of operational problems, and a series of technology-based tools for correcting problems following their identification. JIT identifies problems by tracking any delays, stoppages or diversions on the materials movement, which can be the symptoms or results of some operational problems under JIT. In that sense the proper quality is maintained in the whole production line.

Discussed above are the implications of JIT to the product quality. On the other hand, JIT system requires high quality operations processes and components or materials for it to be successful. Pycraft et (1997,p.532) argues that in a JIT system, quality must be high because disruption in production due to quality errors will slow down the throughput of materials, reduce the internal dependability of supply and possibly cause inventory to build up if errors slow the production rate at any point in the operation.

Like TQM, JIT provides guidelines, which embrace everyone and every process in the organisation. An organisation's culture is seen as important in supporting these objectives through an emphasis on involving all the organisation's staff. "JIT encourages team-based problem solving, job enrichment, job rotation and multi-skilling. The intention is to encourage a high degree of personal responsibility, engagement and ownership of the job" (Pycraft et al 1997,p.536).

(iii) Failure Mode and Effect Analysis

Failure Mode and Effects Analysis (FMEA) refers to an analysis of a product carried out at the design stage, in order to predict the effects of any possible source of failure of a component or sub-unit of the complete product (Ross 1995, p.196). The information obtained is then used to anticipate and avoid the results of such failures, especially the ones that have the most serious effects.

This is a proactive tool that is meant to prevent than correct quality mistakes. This tool is used at a design stage and actions are taken to prevent any deviations from the required quality before the design is finalised. FMEA is not limited to any one component of design, rather it is used to pinpoint failures which may arise in a product, in the functional interfaces, or in a process and the effects they may have on quality.

According to Gunter (1996, p.191) FMEA is more useful where the product is complex, however, it can be used in any area. Like QFD, FMEA is carried out by the interdisciplinary team including various departments, but it is led by the product development function, since it is more focused to the design stage. As compared to other tools FMEA is better in the sense that it identifies failures at the early stages of the product development.

(iv) Statistical Methods

Statistical Process Control (SPC) and Statistical Quality Control (SQC) are the two statistical methods used in manufacturing to measure and analyse quality-related product parameters or process parameters. "SQC represents all the quality control methods which rely on the use of statistical disciplines, for example, statistical acceptance sampling techniques. SPC is the aspect of SQC which relates to statistical monitoring and control of the operation of a process, whether it is a manufacturing process or a process concerned with the delivery of a service" (Fox 1995, p.159).

Analytical results from these methods are then compared with target values and that determines the extent to which the parameters of a manufacturing process have to be adjusted (Gunter 1996, 207). Statistical methods are used during the production stage. However, some companies use them during the development stage to pilot the production process and identify possible deviations on target values before production actually takes place.

According to Ross (1993,p.67) the objectives of statistical methods are (a) to build in the control limits of a process that spots and identifies causes of variations from limits and (b) to provide information on how productivity and quality can be continuously improved through problem identification. These methods predict bad product rather than preventing it, however, they prevent in the sense that they give warning, hence production can be stopped and deviations investigated and corrected.

(v) Quality Circles

"A quality circle is not just a method, but also an organisational approach. According to this system a group of workers come together to help improve the quality produced or productivity by means of structured problem-solving processes (Gunter 1996, p.214). The objective of this method is to solve quality-related problems on a voluntary basis and to strive to improve the quality produced on the basis of combined staff efforts.

This is a complete employee initiated, directed and implemented programme. According to this method a quality circle made up of people from different disciplines meet on regular basis to solve important shared quality problems. The subject matter is chosen by the group or top management. The process of quality circles includes identifying the quality problem, analysing causes, generating and evaluating quality improvement ideas, implementing measures and checking the success of the measures and adjusting them accordingly if necessary. (Gunter 1996, p.215).

This method is not limited to any specific functions or product lines, it can be used in various areas. Since this method requires the active participation of employees it enhances quality awareness in the organisation.

(vi) Quality Audit

“Quality audit is defined by ISO 8402 as a systematic and independent inspection, with the aim of ascertaining whether quality-related activities and their consequences correspond to the stated instructions, and whether these instructions are suited to achieving the objectives which have been set” (Gunter 1996, p.220).

Quality audit is the useful tool for continuous quality improvement since it examines the efficiency and effectiveness of a company's quality management. According to this method various types of audit are used to different angles of quality management. That entails:

- (a) System Audit, which ascertains whether the quality management system includes the necessary components
- (b) Process Audit, which is concerned with the quality capability of processes and work routines and the basic appropriateness of certain processes and activities.
- (c) Product Audit, which examines a given number of end products, intermediate products, or parts to see whether they meet specifications and requirements
- (d) And the Service Audit, which assesses to what extent certain activities meet customer requirements.

This method has unrestricted range of application, it can be implemented in all functions and for all processes, either on regular basis or under certain circumstances.

2.3 CUSTOMER SATISFACTION

Customer satisfaction has become the key element that makes business survive in today's competitive markets. All other benefits, like profits and market share, follow as a result of satisfied customers. According to Duktá (1994,p.1) satisfied customers offer businesses a promise of enhanced revenues and reduced operating costs.

The literature has shown that customer satisfaction is an integral part of the total quality management. There is a two-way relationship between product quality and customer satisfaction. A good quality of a product satisfies the customer, and a satisfied customer is able to give input to the quality improvement processes of the business, by stating his/her changing requirements and expectations.

The relationship between these two concepts i.e. product quality and customer satisfaction will be thoroughly discussed in section 2.4 below. This section explores the concept of customer satisfaction in detail. The following discussion gives a definition of customer satisfaction as given by various authors, it delves into the concept of customer value as the key element that leads to satisfaction, the process of satisfying customers is discussed from the company vision stage to the customer retention stage, the discussion also looks into the strategies and ways of maintaining customer satisfaction and lastly, the methods of measuring customer satisfaction are discussed.

2.3.1 Definition

In simple terms, customer satisfaction refers to the extent to which the consumer's needs are satisfied by a particular product. This definition makes sense in view of the notion that products are produced to satisfy consumers' needs and consumers buy products in order to satisfy their needs. However, in a real world it is not that simple, there are various factors that affect the need-satisfaction relationship between consumers and products. Some of those factors are customer related, some are product related and some are market related. Therefore in consideration of those factors various authors have come with a number of interrelated definitions of the term "Customer Satisfaction".

Kohler (2000,p.36) defines customer satisfaction as the person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectations.

In this definition the author gives two customer related concepts that gives a meaning to the term "customer satisfaction", the first one is "feeling of pleasure or disappointment" and the second one is "expectations". The author also gives a product related concept that gives "customer satisfaction" a meaning and that is "Perceived Performance or outcome".

"Satisfaction may be considered as a customer's evaluative reaction to how a particular product performed when compared to how he or she anticipated that it would perform" (Stahl 1999,p.15). This author highlights three important factors that define customer satisfaction. Those are (a) customer evaluative reaction, (b) product performance, and (c) anticipated performance.

This definition conveys customer satisfaction as a subjective concept. The level of satisfaction by a particular product may vary from one customer to another, depending on what the customer expected as compared to what he or she received or perceived as a result of using that particular product. Stahl, (1999,p.16) argues that the other way of looking at satisfaction is that it is the customer's feelings about the value that they received from a particular product experience.

All the above-mentioned definitions show that customer satisfaction is a function of perceived performance and expectations. If the product performance does not meet customer expectations, the customer is dissatisfied. If the product performance matches customer expectations, the customer gets satisfied and if the product performance exceeds customer expectations, the customer is highly satisfied or delighted.

2.3.2 Understanding Customer Value

Understanding customer value is a first step in a journey of satisfying customers. It is not easy to identify customer needs and develop products and services that meet those needs if there is no clear understanding of what the customer values in a product or service. Consumers today are increasingly adamant about demanding quality products and services.

Business success in today's competitive market requires that the seller adopt the customer's viewpoint, sales of a product or service must satisfy the customer's objectives and requirements Dukta (1994,p.7).

In order to understand customer value one needs to know exactly what is meant by value and how is that value derived. The customer value is a key to customer satisfaction. Therefore, the conversion of customer needs to products and services is meant to produce the customer value, which gives satisfaction to the customer.

Customer value is defined by Woodruff (1996,p.54) as the customer's perception of what they want to have happen (i.e. the consequences) in a specific use situation, with the help of a product or service offering, in order to accomplish a desired purpose or goal. This definition of value consists of four key elements, namely: possession value, value in use, outcomes value and the situation based value. Each of these elements is defined by Woodruff (1996,p.55) as follows:

Possession value refers to the value derived by the customer by simply possessing a product. That can result from the important symbolic, self-expressive, and aesthetic qualities that accrue to the customer through proximity and association with the product.

Value in use refers to the functional outcome, purpose or objective that is served directly through product consumption.

Outcomes based value refers to the value of consequences that are experienced by the customer as a result of product use. In this case value is the result of the trade off between the positive consequences (e.g. desired benefits) and negative consequences (e.g. costs or price and sacrifices) of product use as perceived by the customer.

Situation based value is created when a product and user come together within a particular use situation or occasion.

This perspective is important because customers' value judgments are highly influenced by and best determined within the constraints of a particular use situation.

From the above discussion of what makes the customer value, one should note the following two things:

(a) The subjectivity of the concept under discussion "customer value". A value enhancing situation for one customer might not have any significance on the product use for another customer. A value creating outcome for one customer might not be what the next customer expect to get from the product use. A value derived from possessing a certain product might not make sense to a customer who values the outcome of product use more than possession.

(b) Building customer value cannot be easily achieved by a single person, department or function, it is a multi-functions task, it needs the involvement of various departments, to ensure that value is created and added in all upstream and downstream stages of the product supply.

There are two well known methods of creating customer value, namely value-chain and value-delivery network. Each of them is briefly discussed below:

Value Chain

Kohler (2000,p.44) defines value chain as a collection of nine strategic activities that are performed to design, produce, market and deliver products. The firm creates value in each of these activities by reducing costs and increasing performance in each activity and look for the ways to improve that particular activity.

These value-creating activities consist of five primary activities and four support activities. The primary activities represent the sequence of bringing materials into the business (inbound logistics), converting them into final products (operations), shipping out final products (outbound logistics), marketing them (marketing and sales), and servicing them (service & maintenance).

The support activities consist of procurement, technology development, human resource management, and firm infrastructure.

This method of value creation shows how each department contributes directly or indirectly to the customer value creation. That proves the point that customer satisfaction is the responsibility of the entire organisation. If any of the above mentioned functions does not create value in its activities, the product might lose on the specific value element which is most valued by the customer and which could lead to customer satisfaction.

Value-Delivery Network

Value-Delivery network or value system refers to the strategic partnership of the organisation with its external environment e.g. customers, suppliers and distributors with the intention of creating sustainable competitive advantage in the products or service supplied. The logic behind this concept is that a real competitive advantage may come from using best suppliers or distributors, new distribution systems and obtaining new relationships with suppliers and customers.

This method of value creation shows that creating customer value is not a function of a manufacturing plant, it does not start and end within the boundaries of the organisation, but external relationships contribute a lot on the value creation system. Customers themselves are to some extent responsible for creation of their own value of products consumed. The concept of supplier and customer relationships is further discussed in section 2.4.2 under the topic "Customer Satisfaction Framework"

2.3.3 Customer Satisfaction Process

The customer satisfaction process is not isolated from the overall business development and management process. In every step of the business development process there is an element of customer satisfaction or a purpose of satisfying customers. That might not be clearly expressed in every step of developing a business, but it may be implied somehow.

Discussed below are well known steps of developing a business, however the focus is on highlighting the intentions or goals of satisfying customers in these stages:

Step 1: Developing the Vision

A customer orientated organisation incorporates its customer satisfaction goals in the vision of the organisation. The vision is defined by Lynch (1997, p.392) as the future picture of the organisation..... an awareness of why, where and how the organisation and its competitors will be competing in the future. The vision leads to the mission and objectives of the organisation, to be discussed in step six below.

At this level it might not be easy to clearly state the customer satisfaction goals, however it can be implied through the statement of outcomes required e.g. " To be no.1 Oil Company in the Southern Africa". This vision already implies getting a biggest market share and sales, and both these are results of having satisfied customers.

Step 2: Assessing Viability

Having set the future picture and the direction of the business, the following step is to assess the viability of the business. This entails studying both external and internal environment in order to establish whether that particular business will be feasible and sustainable.

Having customer satisfaction in mind, as a priority and basis for future business growth, the organisation at this stage needs to research whether there will be enough customers to keep the business going, healthy and growing? How will be their attitudes to the business? Will they be able and willing to buy? And what other factors will influence their purchasing patterns? This list of questions is not exhaustive, however it covers the critical areas that the organisations will be looking at to study the viability of the business.

Step 3: Identifying Customer Needs

The survival of any profit making organisation is based on its ability to satisfy customer needs. That is a reason for its existence.

However, it is impossible to satisfy customer needs if the organisation does not understand what those needs are. A clear understanding of the market (from the previous step) takes the organisation to a position where it is able to identify the customer needs.

At this stage the organisation should discover the real needs and wants of its potential customers, how these needs are being met at present by existing organisations, what is the gap and how they might be met in the future?

(Sewel 1988,p.13).

Step 4: Sub-dividing Customers

Customer segmentation, as a marketing concept, means grouping customers according to certain variables e.g. age, sex, race income level, education etc, with the intention of recognising and understanding their variations so that the market offer will be made to suit the particular segments identified. This step is necessary in the customer satisfaction process. Even though customer needs might have been identified, if customers have not been subdivided accordingly it will be difficult to develop an offer which provides for variations in the market.

Step 5: Selecting Customers

From the previous stages the business might realise that it cannot satisfy the entire market, but certain market segments. Therefore at this stage, the organisation selects the group of customers whose similar needs and wants can be satisfied better, and with which the organisation can gain competitive advantage over its competitors and improve its profit margins.

Some organisations fail because they try to make products that will suit everybody in the market and fit all situations of consumption. The danger of this approach or strategy is the lack of focus. This approach is likely to result in a high customer turnover, unsustainable sales and dissatisfied customers.

Step 6: Mission Statement

From the information obtained from the previous steps, at this step the organisation is able to write its mission statement, which is the way in which its vision will be achieved. According to Sewell (1988,p.16) the mission statement is a foundation stone of the business which shows which customers will be served, which customer needs will be met, the way in which those needs will be met, the culture which will motivate employees to meet customer needs and the physical and financial resources needed.

The mission and objectives define the role and tasks that the organisation chooses to adopt, based on the current situation. The vision, the mission and objectives are regarded as the goal setting tasks of the organisation. Having a customer satisfaction strategy built into these three concepts is a secret of a successful organisation.

Step 7 : Creating a Customer Satisfying Service

With the mission statement as a direction for the organisation to operate successfully within the stated parameters, the organisation has to develop a customer satisfying service. With an understanding of who the target customers are and what their needs are, the organisation should establish what service do target customers want, what other implications to be considered and decide what approach to be used and what systems should be in place for a customer satisfying service to be delivered.

Step 8: Attracting Customers

All the above discussed efforts are useless if the target market is not attracted to make business with the organisation. Especially in the current competitive world, attracting customers is the key to developing a sustainable market share and profit margins. In this step the organisation should attract its potential customers in various ways. A company image, advertisements, promotions etc, should be used to attract the potential customers. Methods used to attract customers might have an effect on the customer's perceived performance of the product.

Step 9: Satisfying Customers

According to Sewell (1988 p.21) the ultimate test by which every business stands or falls is the extent to which it succeeds in satisfying customers. This step (satisfying customers) is, in a way, a reason for having all the above-discussed steps. In addition to a need satisfying service or product, this step calls for feedback from customers about their satisfaction and the ability to measure the customer satisfaction so that the organisation will improve continuously.

Step 10: Retaining Customers

One could think that the previous step is an ultimate destination in the customer satisfaction process. Satisfying customers in a particular point in time is not good enough, however retaining those customers for a long term is critical to keep the business going. Therefore the organisation needs to revisit every step of this process and adapt to any internal and external changes with the intention of improving its customer satisfaction strategies, retain customers and grow the business. This step takes us to the next topic of discussion “ Maintaining Customer Satisfaction”

2.3.4 Maintaining Customer Satisfaction

Customer satisfaction is not a once off occurrence, instead it is a continuous process of retaining customers and keeping them satisfied, regardless of the external and internal changes affecting the business. Once achieved, customer satisfaction needs to be maintained in order to maintain the market share, the profits and the organisation survival.

“The key to customer retention is customer satisfaction. A highly satisfied customer stays loyal longer, buys more as the company introduces new products and upgrades existing products, talks favourably about the company and its products, pays less attention to competing brands and advertising and is less sensitive to price, offers product or service ideas to the company and costs less to serve than new customers because transactions are routinised.” (Kohler,2000 p.48).

In view of the changing markets, competitive environment, changing customer needs, continuously improving technology and resources; it is not an easy task to maintain customer satisfaction. However, the organisation needs to improve its products and services continuously to cope with the changes in the market and maintain customer satisfaction. **“Continuous improvement** is the secret to maintaining customer satisfaction. Clear, consistent and systematic improvement is necessary to demonstrate that customer satisfaction is a strategic business objective and not another short-term program” (Dukta 1994, p.203). Continuous improvement implies that business philosophies must change from meeting expectations to exceeding expectations.

In addition to continuous improvement, **partnerships between businesses and customers** help to maintain customer satisfaction. A partnership between businesses and customers enhances the performance in the areas of product quality, delivery time, availability, service, responsiveness, inventory, technology and price. These are core areas of exceeding customer expectations. Through partnerships the business gets the first hand information of how customers feel about its products and services. Some businesses and customers can share common goals and technology and form customer/client quality teams. That benefits both customers and suppliers. Dukta (1994, p. 209) argues that suppliers who understand the expectations and requirements of their customers will be in envious position of receiving even more business as the number of vendors decreases.

The last element of maintaining customer satisfaction is the **top management commitment** to customer satisfaction. Section 2.3.3 has shown that customer satisfaction process starts when the vision of the organisation is developed and it develops with every stage of the business development. Without the senior management’s commitment on customer satisfaction, it might not be possible to the marketing department to develop a viable customer satisfaction strategy. The commitment to customer satisfaction should be organisation wide. It is not only the top management that is expected to show commitment, but all departments involved in the value chain should focus on satisfying customers. “Satisfied customers are absolutely vital to business success”. (Dukta, 1994 p. 211)

2.3.5 Measuring Customer Satisfaction

Measuring customer satisfaction can be a difficult activity when considering the subjectivity and the complexity of the concept of customer satisfaction. However, due to the increasing focus on satisfying customers as one of the main business goals and the high costs of losing dissatisfied customers, businesses find themselves compelled to develop effective Customer Satisfaction Measurements (CSM).

According to Woodruff et al (1996,p.223), there are many methods of measuring customer satisfaction but the heart of any system should be data coming directly from customers. In addition, a CSM must incorporate what the organisation know about customer value. Discussed below are direct and indirect methods of measuring customer satisfaction, these methods can complement each other:

Direct Methods

“Direct Methods measure customers’ perceptions as to how well a supplier is delivering value....these methods bring feedback directly from customers back into the organisation” (Woodruff et al, 1996, p.223). Examples of direct methods are comment cards and mail surveys requiring customers to write their opinions on questionnaires.

Direct methods e.g. customer complaints can give early warning of changes to be expected in the business e.g. sales drop. This can help the management to take early decisions before customer dissatisfaction impacts on the business. When using direct methods it is important to respond to what customers say, because these methods raise expectations from the customer that something is going to be done about issues raised. Direct methods e.g. surveys are relatively expensive, especially when using external research companies

Indirect Methods

“Indirect methods bypass customer opinion to measure various indicators of satisfaction....in one way or another, most of these indicators reflect customer behaviour” (Woodruff et al, 1996,p.223). An example of this could be measuring repeat business, sales performance, market share and profits. These methods are good in the sense that the information is readily available to the business through business reports. The disadvantage of indirect methods is that they might be late in showing a problem. The problem of customer dissatisfaction can only be realised when it reflects on the business's key performance areas, e.g. decreasing market share or decreasing sales.

It is advisable to use indirect and direct methods as complements. Direct methods are good in the sense that they tell the organisation exactly what the customer wants. Indirect methods are useful as well when checked from time to time to see the business trends that might reflect customer satisfaction levels, without engaging to a survey.

2.4 THE RELATIONSHIP BETWEEN PRODUCT QUALITY AND CUSTOMER SATISFACTION

Having defined product quality and customer satisfaction as separate concepts, the next question follows: Is there a relationship between the product quality and customer satisfaction? What kind of relationship? if there is any. Kohler (2000,p.57) argues that there is an intimate connection among product quality, customer satisfaction, and company profitability. Higher levels of quality result in higher levels of customer satisfaction while supporting higher prices and often lower costs. This statement implies that there is a positive correlation between the two concepts under study (product quality and customer satisfaction).

The discussion on quality has shown various tools and systems used by organisations to make good quality products and match certain specifications.

Organisations do not engage in those efforts for their internal purposes whatsoever, but to make the customer happy "It is not those who offer the product but those whom it serves – customers, users, and those who influence or represent them – who have the final word on how well a product fulfills needs and expectations...Satisfaction, as related to competitive offerings, is formed over the product lifetime, not just at the time of purchase. A composite of attributes is needed to provide the most satisfaction to those whom the product serves" (Garvin 1988,p.24)

Amongst the various definitions of quality given in section 2.2.1 it appeared that value based and customer based definitions highlight the importance of quality to customers and show that customer needs and customer satisfaction are the main concepts that give the concept of quality a meaning. In that sense manufacturing requirements are secondary concepts to the definition of quality. "Customers and not internal departments, have been given the final say in determining whether or not a product is acceptable. Meeting specifications has become a secondary concern to be pursued only after users' needs have been carefully defined.

"(Garvin 1988,p.24)

According to Ross (1993, p.3) one of the benefits of superior quality is customer satisfaction that results in customer loyalty and repeat business. Emphasising the existing relationships between product quality and customer satisfaction, the following discussion will look at the relationship between customer satisfaction and quality management tools, the customer satisfaction framework will be discussed, this discussion will also delve on quality after sales as an important concept in the customer satisfaction endeavor, the importance of product quality in relation to price & service will be discussed and finally the relationships between the product quality and customer loyalty & product demand will be briefly discussed.

2.4.1 CUSTOMER SATISFACTION AND QUALITY MANAGEMENT TOOLS

This section will discuss the way in which the quality management tools discussed in section 2.2.4 relates to customer satisfaction.

The use of these tools do not start in the product or concept development stage and end when the final product is produced according to the specification, but it starts with the recognition of customer needs and end by ensuring that the customer is satisfied.

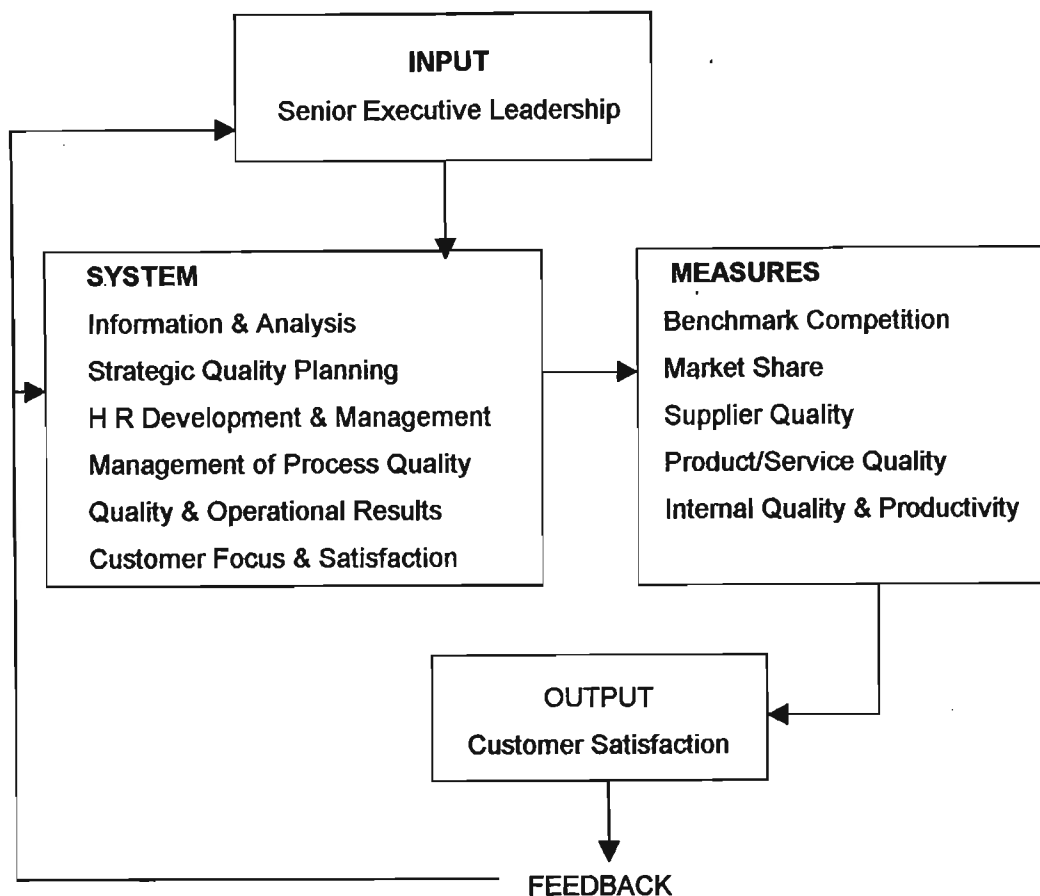
Total Quality Management (TQM) can be seen as just a quality control and quality management initiative or tool. However, its objective goes beyond meeting specifications to meeting the customer needs, hence satisfying the customer. "TQM is traditionally defined as the attainment of zero defects or the attainment of complete customer satisfaction" (Ross 1993, p.110). Some of the various characteristics claimed for TQM is that "it makes quality a central management concern, requires all to participate, anticipates future needs and expectations, **sees customer satisfaction as the route to success**, benefits employees and enriches the society." (Fox, 1995, p262).

Customer satisfaction is the yardstick with which the efficiency or effectiveness of TQM can be measured. Fox (1995,p.1) argues that the measurement of success in Total Quality Management is customer satisfaction and the way to achieve it is through continuous improvement.

Emphasising the relationship between total quality management and customer satisfaction, Ross (1993, p.212) argues that "TQM involves two major actions; determination of customer requirements or expectations and organising to deliver those requirements or expectations." A systems view of TQM starts with senior executive leadership as input to the system and ends with customer satisfaction as output (as depicted in Figure 2.1). This shows how important it is for the senior management to understand and implement the quality management system at a strategic level, with a view of satisfying customers.

Figure 2.1

THE TQM FRAMEWORK



Source: Ross (1993 p.213)

The relationship between TQM and customer satisfaction is two-way. The above diagram shows that the senior management implements the quality management system in order to achieve customer satisfaction. On the other hand the customer needs and expectations are inputs to the TQM in order to produce and deliver the product that complies with the customer requirements.

“The key to achieving TQM from the customer’s point of view is a plan to identify customer needs and expectations and convert this information into continuous improvement through all organisation processes.” (Ross 1993,p.214).

Quality Function Deployment (Q)FD as discussed in section 2.2.4 above, starts with understanding the customer requirements and end with the conversion of those requirements into products and services which satisfy the customer. "In line with the quality objective of total customer satisfaction, QFD provides guidelines for a customer-oriented working and management style. It bundles the knowledge, skill, and will of the entire workforce in order to translate customer demands into products, services and processes" (Gunter et al 1996, p.186).

Failure Mode and Effects Analysis (FMEA) as well, is a customer orientated quality management tool. "In the medium term FMEA can vastly improve a company's quality image in the eyes of the customer: recurring failures are eliminated, bad product design is avoided, the risk of recalls is reduced, and warranty and ex gratia costs are cut" (Gunter 1996,p.195).

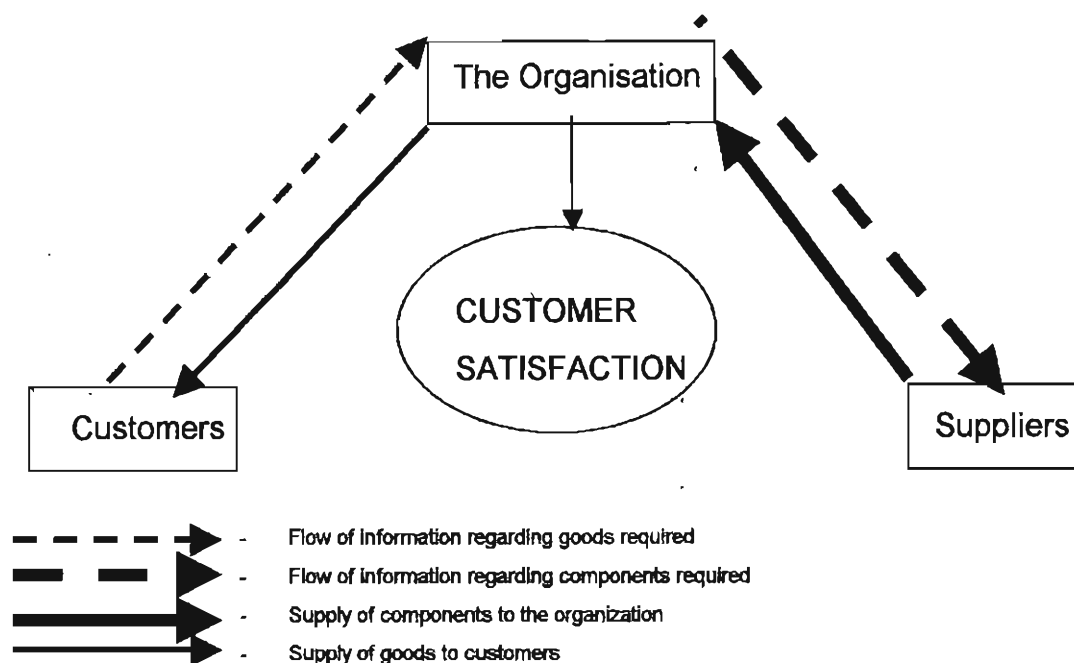
2.4.2 THE CUSTOMER SATISFACTION FRAMEWORK

The customer satisfaction framework entails three parties, namely: customers, suppliers and the organisation. It is the combination of efforts made by these parties that satisfies the customer. Customers make their expectations and needs known to the organisation. The organisation develops the product concept, determine the components and materials required and devise the process required to produce the product that will satisfy the customer needs. The material or components suppliers provide the required material to ensure that the end product meets the specification, in order to satisfy the customer.

According to this framework all three parties, the organisation, suppliers and customers, as depicted on Figure 2.2 below, are jointly responsible for customer satisfaction.

Figure 2.2

CUSTOMER SATISFACTION FRAMEWORK



The concept of quality is built in the process of information and goods or components supply between the organisation and customers and between the organisation and suppliers. Customers' needs imply the quality of the end product required, the components provided by the supplier determine the quality of the end product to be manufactured and the production process by the business ensures that the quality implied by the customer is produced and the end product satisfies the customer. Because of the impact of the relationship amongst these parties, in the product quality, key suppliers should be involved early in design processes so that they can be alert of impending changes, take advantage of the expertise, help contain costs, and provide accurate estimates while ensuring proper quality" (Schuler, 1992.p.145).

Customers give feedback to the organisation with regard to the quality of products they get, their level of satisfaction and changes in their needs if there are any. The organisation gives feedback to the components suppliers regarding the quality of components supplied and the change required in the market demands change. The business improves or change its production processes and improve the quality of the products as may be required and that enhances customer satisfaction.

According to Schuler et al (1992, p.141) quality improvement depends on effective relationships with customers and suppliers.

The vital role of the marketing department in quality management is to ensure that the company is aware of the customer wants. This can be done through market research, surveys and proper handling of customer complaints. "If the initial customer specification is not an accurate representation of the customer's needs and perception, then no matter what efforts are made by the rest of the organisation, quality problems will be encountered" (Fox, 1995, p.21).

Like customers, suppliers play an important role in the production of good quality products, hence customer satisfaction. "High quality products can only be manufactured if the company uses quality suppliers and integrates them as partners in the development process" (Gunter et al, 1996, p. 76).

Organisations and customers should work together, sharing ideas, capabilities, and expertise to improve the overall quality of output. Quality improvement is a critical and ongoing process to keep customers satisfied. "Any company that can not produce high quality products and services exposes itself to the risk of competitive extinction. Business relationships with customers and suppliers are essential to the production of quality product and customer satisfaction. Schuler et al (1992, p.146) argues that these relationships create competitive advantages from lower costs, higher quality, and frequently, quicker product introductions.

Burrill (1999,p470) argues that the effective quality programs focus on process improvement – making incremental changes in a process in order to bring about continual improvement in the quality of the products.

2.4.3 PRODUCT QUALITY AFTER SALES

Quality management and control does not end when the product has passed the final inspection stage of manufacturing or when the product is handed over to the customer. It extends beyond the point of sale, for example it extends to delivery, installation, service or maintenance, spares provision and repairs.

There are a lot of quality problems that can arise during the consumption stage of the product. If such problems can be traced back to the production or distribution stage, they are likely to result in a bad image for the supplier of the end product and that can also result in customer dissatisfaction.

Fox (1995,p.75) argues that after-sales service and the development of good customer relationships are powerful ways of gaining a competitive edge – influencing new and repeat purchase decisions, thereby increasing market share.

According to Juran et al (1970, 518), there are a number of pre-usage phases that take place between the final product release and customer usage. These phases vary from one product to another, but the common ones are packing, shipping, receiving and storage. Following manufacture, the supplier should establish and maintain a system to control packing, preservation and marketing processes to ensure conformance to customer requirements. That includes adequate written instructions or procedures for products transportation, handling and storage.

Distribution stages (packaging, shipping and storage) are the most likely to reduce the product quality levels due to bad handling and lack of knowledge about the product. This could result from the involvement of third parties e.g. transport and warehousing companies. It is at the interest of the supplier to ensure that the proper quality is maintained during this process. That could be done through close working relationship with all the parties involved in the supply chain and training them on the proper handling of products involved.

Following the pre-usage phases are the usage phases, namely: installation, checkout, operation and maintenance. A quality-orientated company should ensure effective and efficient quality management during these phases. To prevent quality deterioration during customer usage, customers need to be educated on the specifications, storage and handling methods, transportation requirements (in case customers have to transport products from one place to another), installation procedures, directions for use and maintenance of the product.

In some cases installation, repairs and maintenance are the supplier's responsibilities. In that sense the marketing and maintenance functions of the business form a direct link with the customer and as such provide the main channel for the feedback of market reaction to goods and services supplied. This is total quality management system that goes beyond the manufacturing company's premises through the whole distribution chain to the customer.

2.4.4 PRODUCT QUALITY, PRICE AND SERVICE

When studying the relationship between customer satisfaction and quality it is important not to overlook other elements that constitute the product offer which may impact on customer satisfaction i.e. product price and service rendered during the product sale. These concepts will be briefly discussed, especially on the research methodology and data analysis sections, in order to identify the importance of quality to the customer as compared to these closely related elements and to identify the relationship between the product quality and these concepts (price and service).

Both price and service are more obvious in the market offer, than the product quality, however they are somehow related to the product quality. Keller (1998,p.178) argues that consumers often combine quality perceptions with cost perceptions to arrive at an assessment of the value of a product. He also argues that product quality may also be impacted by factors such as the speed, accuracy, and care of product delivery and installation; the promptness, courtesy and helpfulness of customer service and training; the quality of repair service and so on. All these are components of the service attached to the product. For example, in the case of aviation fuel as a product under study, the kind of service referred to is the service given by a Refueling Operator or the Credit Controller to the customer, as part of the transaction of selling fuel to the customer.

2.4.5 CUSTOMER SATISFACTION, PRODUCT DEMAND & CUSTOMER LOYALTY

Kohler (2000,p.58) argues that high satisfaction leads to the high customer loyalty, as a result many companies strive to achieve total customer satisfaction. This statement suggests a positive correlation between customer satisfaction and loyalty.

Since customer satisfaction is an abstract concept, it will also be studied through other related concepts e.g. customer loyalty and product demand. According to Ross (1993,p.3), superior quality results in customer satisfaction that results in customer loyalty and repeat business (increased demand). "Top quality companies cite the complete and precise fulfillment of customer demands as the main benefit of QFD. This benefit is hard to quantify, but sales growth is one gauge of success: companies using QFD experienced an average growth rate of around 15 per cent per year" (Gunter 1996, p190).

"The outstanding quality to which top companies owe their success is mostly generated right up front in the product development stage. It is at that stage where they ensure that both the customer and their own in-house production function will have every reason to be satisfied with the product. It goes without saying that the R&D process also has to meet the highest standards; not only are its end products better than those of the competition, but the better design and process quality costs less time and money" (Gunter 1996,p.55).

According to Linton (1993,p.103) oil companies face competition within their own industry, as well as from other energy suppliers, and the drive to build customer loyalty operates at a number of different levels....there are few opportunities to differentiate the product – it is the level of service which wins and retains customers.

2.5 SUMMARY

This discussion has shown that the concept of product quality is very broad. It can be defined in various ways depending on the context. None of the definition is incorrect, rather each of them relates to a specific stage of the product processing and utilisation e.g. manufacturing-based, customer-based & value-based definition. In review of the current literature on product quality it has appeared that there are various inter-related dimensions of product quality, therefore all of them should be taken into consideration, the relevance of each in different business situations and the important ones should be identified in the endeavor to satisfy customers.

This chapter has also shown that the concept of quality control and quality management has developed significantly over a period of time. A number of approaches to quality management have been introduced in the process of improving quality management efforts, from the ancient methods to the current approaches like Total Quality Management.

The literature on customer satisfaction has defined customer satisfaction as a function of perceived product performance in relation to customer expectations. The subjectivity of the concept is noticeable in view of the fact that satisfaction results from different things to different customers, customer expectations are not the same and customer perception of the product performance also varies from one customer to another. This discussion has also looked at the concept of customer value as a significant factor in customer satisfaction. Four elements of customer value and value creation methods have been discussed.

The above discussion has also looked at the process of satisfying customers in the context of business development process. It is also acknowledged that the concept of customer satisfaction cannot be easily achievable if there is no yardstick to measure it. As a result the methods of measuring customer satisfaction have been discussed.

This chapter has also discussed the relationships between the product quality and customer satisfaction through various quality management tools like QFD and TQM. The theory of customer satisfaction framework has been introduced in order to highlight the comprehensive approach to customer satisfaction, which involves the organisation and its external partners (suppliers and customers).

A brief discussion on “quality after sales” has introduced an argument that quality control and management extends beyond the point of sale in order to achieve customer satisfaction. Finally other concepts related to product quality and customer satisfaction have been discussed in the context of relationships between the two concepts under study ie. product demand and customer satisfaction. Those concepts are product price, service, product demand and customer loyalty.

CHAPTER 3

THE RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This section discusses the approach upon which the study has been conducted. It discusses the sampling techniques used to select a representative sample from which the inferences about the population under study were drawn. It outlines the design of the study, the methods and techniques used to collect data and the difficulties experienced during data collection. It finally discusses the categories of data collected from both primary and secondary sources approached.

3.2 THE SAMPLE AND SAMPLING TECHNIQUES

The following discussion looks at the sample population, the sample design and the sample size.

3.2.1 THE POPULATION

Air BP as an aviation division of BP (Pty) Ltd, is an international business unit, which consists of a large number of customers worldwide. The study focused on the customers of Air BP South Africa i.e. those who have credit accounts to purchase aviation fuel and oils from Air BP in different locations within the boundaries of South Africa.

The study population consists of all aviation customers for Air BP in South Africa. That includes commercial airlines, dealers and general aviation customers (private charters and flying schools) whose accounts are managed in South Africa.

Other involved people who do not form part of the mentioned population are members of the marketing team of Air BP South Africa.

3.2.2 THE SAMPLE DESIGN

Due to time, labour, financial and logistical constraints it was not possible to contact the entire sampling frame. Therefore Stratified Random Sampling technique was used to select the representative sample of aviation fuel customers. Stratification was used in order to provide adequate data for analysing the following three market segments: Commercial airlines, Air BP Dealers and General Aviation customers (Private Charters and Flying Schools). According to White (2000 p.62), stratified sampling lessens the occurrence of one-sidedness as can be present in simple random sampling, but it requires clear and distinct groups showing in what proportions they are present in the population.

Each market segment is represented in the sample in the same proportion as its representation in the sampling frame. The sampling frame consists of 80.6% general aviation customers (200 of 248 customers), 10.08% commercial airlines (25 of 248 customers) and 9.27% dealers (23 of 248 customers). The sample was designed to include 80% general aviation customers (40 of 50 customers), 10% commercial airlines (5 of 50 customers) and 10% dealers (5 of 50 customers).

3.2.3 THE SAMPLE SIZE

Deciding the appropriate size of this study was not an easy task. According to Ghauri (1995, p.81) there is no 'correct' sample size. However, there is a general agreement that the greater the sample size, the greater the power of a study, and the smaller is the probability of failing to detect a difference between groups being compared when a difference exists (Ibid on Bhengu, 1998, p. 58). White (2000, p.64) on the other hand, argues that if the sampling frame consisted of very similar types of respondents, a large sample would not be needed, what is more important in this situation is the accuracy of the information collected from the sample.

Cooper et al (2001, p.172) argues that “the greater the subgroups of interest within a sample, the greater the sample size must be, as each subgroup must meet minimum sample size requirements, however if the calculated sample size exceeds 5% of the population, sample size may be reduced without sacrificing precision”.

As in January 2003, the size of the population under study (customers of Air BP South Africa operating within the boundaries of South Africa) was 248 customers, splitted as follows: 25 Commercial Airlines, 23 Air BP Dealers and 200 General Aviation customers (Private Charters and Flying Schools). The total sample consists of 50 customers (20% of 248 customers) from the abovementioned 3 market segments. That is 5 commercial airlines (20% of 25 airlines), 5 dealers (20% of 23 dealers) and 40 general aviation customers (20% of 200 general aviation customers).

In this study, the total sample is 20% of the entire population and each market segment is represented by 20% in the sample. This is regarded as a reasonable size when taking into consideration both statistical requirements and economic limitations. It is also representative and big enough to allow the researcher to measure consistency of results received. This size complies with the one-tenth rule that stipulates that “The researcher should obtain a tenth of the population he studies in his sample” (Black et al, 1976,p.312).

3.3 THE RESEARCH DESIGN

The design of this study is discussed under the following categories:

3.3.1 Degree of Research Question Crystallisation

This is a formal study that is designed to test the hypotheses and answer the research questions listed in section 1.4.1 of this paper. According to Cooper et al (2001, p 134), the formal study begins where the exploration leaves off – it begins with a hypothesis or research question and involves precise procedures and data source specifications. The goal of formal study is to test hypotheses and answer research questions posed.

3.3.2 Manipulation of Variables

The design of this study is “ex post facto”, that means no variables were manipulated by the researcher, the study was carried out in the natural setting. Cooper et al (2001, p 136) argues that with the ex post facto investigators have no control over the variables in the sense of being able to manipulate them. They can only report what has happened or what is happening”

3.3.3 The Purpose of the Study

As the purpose of this study has been briefly discussed in chapter one, this is a co-relational, co-variation study, which addresses the question of association among variables. It is descriptive in nature, it identifies and describes relationships among various concepts, namely: product quality, price, service, customer satisfaction, customer loyalty and product demand.

The question of causality is not addressed in this study, no cause and effect relationships among the above-mentioned variables, are measured in this study. Cooper et al (2001, p 148) argues that the essential element of causation is that A produces B or A forces B to occur, but that is an artifact of language, not what happens. Empirically, we can never demonstrate an A-B causality with certainty. While some findings suggests causal correlations between variables under study, studying causation could be a subject of another research, with correlations identified as the basis of that future research.

3.3.4 Time Dimension

The approach upon which the study was conducted was cross-sectional, all variables were measured at one point in time via the survey and interviews. “Cross sectional studies are carried out once and represent a snapshot of one point in time” (Cooper et al 2001, p.136).

3.3.5 The Topical Scope

According to White (2000,p.20), business studies are wide-ranging and covers many areas, therefore they employ a variety of methodologies and research methods.

What is important is the use of a recognised and accepted methodology, together with accurate methods of data collection. This is a statistical study meant to test the hypothesis quantitatively. However, both qualitative and quantitative data was collected through the use of interviews, questionnaires and secondary sources. While conclusions were drawn on the basis of quantitative information, qualitative information was used to verify, clarify and support quantitative information received.

According to Dukta (1993, p.26) choosing qualitative or quantitative research is not an either-or-situation. The methodologies are complementary and should be combined to maximise their individual strengths. Initial qualitative research can be used to help develop an effective quantitative telephone or mail questionnaire. Qualitative research can also be used after a telephone or mail survey to explain or provide additional insight into unanticipated results in the quantitative survey.

In this study interviews with knowledgeable individuals from Air BP were carried out after the survey in order to get the information that could not be supplied by customers via the questionnaire and also to get more clarity on the responses of some customers.

In brief, this study has adopted the methodology called "Method Triangulation", which means using both qualitative and quantitative methods in the same research study. In this case questionnaires and interviews have been used in a case study of Air BP.

3.3.6 The Research Environment

This study took place under actual working conditions. Therefore it is a field study. None of the processes were simulated or took place in a laboratory situation.

3.4 METHODS OF DATA COLLECTION

The primary and secondary methods were used to collect data, as discussed below.

3.4.1 PRIMARY METHODS

According to Cooper et al (2001, p.295) there are two approaches for collecting primary data. The first one is observing conditions, behaviour, events, people or processes. The second one is communicating with people about various concepts. The communication approach involves questioning or surveying people and recording their responses for analysis. Questioning is more efficient and economical than observation, a few well-chosen questions can yield information that would take much more time and effort to gather by observation.

It is acknowledged that the questioning techniques have its shortcomings. One weakness is that the quality and quantity of information secured depends heavily on the ability and willingness of respondents to cooperate. Even if respondents do participate sometimes they may not have the knowledge sought or even have an opinion on the topic of concern. Sometimes they may also interpret a question or concepts differently from what was intended by the researcher. Therefore it is at the onus of the researcher to approach the right people for questionnaires and interviews and to control non response bias.

“Despite these weaknesses, communicating with research subjects is a principal method of management research” (Cooper et al 2001, p.295). That is the reason why this study used communication approach by conducting a mail survey and interviews as discussed below.

3.4.1.1 Survey

Due to time and costs constraints it was difficult to conduct the survey telephonically. A telephone survey would reduce non-response bias and also facilitate the data collection process, as the turnaround time would be faster. It would also give the researcher an opportunity to direct and follow up on open-ended responses. However, it was not the best choice since the research population is scattered all over the country and difficult to reach by telephone.

The researcher could not have time to phone all the sample elements during the normal working hours and they would not be available after hours since these are businesses. In addition, it would be costly for the researcher to do the telephone survey as compared to the mail survey. "The more geographically dispersed the sample, the more likely it is that mail will be the low-cost method. A mail study can cost less because it is often a one person job" (Cooper, 2001 p. 312). Therefore a mail survey became the best option for this study.

In order to provide for a non-response error, questionnaires were distributed to 100 randomly selected customers (40% of the total population), with the intention of getting at least 50 responses (50% response rate), 20% of the population. The sample of the questionnaire is attached (Annexure B). According to Cooper et al (2001, p. 314) even mail surveys with a return of about 30% are often considered satisfactory, but there are instances of response rates that exceed 70%. Cooper et al (2001, p.306) defines the non-response error as the situation when you cannot locate the person whom you are supposed to study or you are unsuccessful in encouraging that person to participate. Non-response bias can distort the survey results in the following two ways:

- (a) A significantly few responses might not be a true reflection and representation of the population under study; hence incorrect conclusions about the population can be made.
- (b) People who are interested in and satisfied with the company are likely to respond and those who are not may not respond, hence the results will reflect the feelings and opinions of one group.

Dukta (1994, p.62) argues that typical response rates for mail questionnaires are in the 20% to 30% range unless specific actions are taken to increase the number of returns. In order to reduce the non-response error the following measures were applied:

- (a) Follow-ups or reminders to customers were made telephonically and by e-mail
- (b) Stamped return envelopes were enclosed together with questionnaires.
- © A deadline date for the return of questionnaires was given to customers
- (d) A covering letter (Annexure A) was sent with the questionnaire to customers

(d) Questionnaires were brief and simple to understand (Annexure B)

Out of 100 questionnaires distributed, 55 questionnaires were returned. In other words this study achieved 55% response rate, which is a good response for a mail survey. Questions were made simple for average person in the aviation industry to be able to answer. However, respondents were helped telephonically to answer the questionnaire where they needed clarity.

Since the concept of customer satisfaction is not directly observable in a questionnaire, customers were asked to give ratings on their satisfaction levels and other related concept like product demand and customer loyalty were used as indications of satisfaction. Cooper et al (2001 p. 228) argues that when the constructs measured are more complex and abstract, standardised measures neither exist nor provide a close enough fit to a particular researcher's scenario, therefore, in such cases customised measurement scales are developed. Ranking and rating scales are used to quantify dimensions that are essentially qualitative. While rating scales are used when respondents score an object or indicant without making a direct comparison to another object or attitude, ranking scales constrain the study participant to make comparisons among two or more indicants or objects" (Cooper et al, 2001 p. 229). The following rating and ranking measurement scales were used in this study.

Multiple Choice Single-Response Scales

This scale was used to produce nominal data, especially on the customer profiles section e.g. customer type and volumes of fuel and oils purchased per month.

Dichotomous Scale

This scale was used to produce nominal data on:

- the elements that affect the customer's overall satisfaction with Air BP
- customer's awareness of Air BP quality control procedures and tools
- customer's involvement on the quality control processes
- increase or decrease in product demand
- customer loyalty with Air BP.

Multiple Choice Multiple-Response Scales

This scale was used to produce nominal data on products purchased by different customers from Air BP, in order to compile customer profiles.

Lickert Scale

This scale was used to produce interval data on:

- the customer's view of Air BP's commitment to quality management after sales
- the customer's level of satisfaction with Air BP and its products.

Multiple Rating List Scale

This scale was used to produce interval data on:

- products and company attributes that impact on customer satisfaction in order to determine what mostly influences customer satisfaction
- the importance of different dimensions of quality, in order to determine which dimensions are highly valued by customers.
- the importance of various elements of the product offer in order to determine the importance of quality as compared to service and price

Semantic Differential Scale

This scale was used to provide interval data on:

- the quality of Air BP products as perceived by customers
- the extent to which quality, price and service influences the level of customer satisfaction

Forced Ranking Scale

This scale was used to provide ordinal data on the customer ranking of Air BP in terms of preference, as compared to other oil companies and the customer ranking of the impact of quality to customer satisfaction as compared to the impact of other product or service factors and company attributes

3.4.1.2 Interviews

Personal Interviewing is as well recommended as the method of data collection for research purposes.

A more detailed information can be secured through interviews as compared to other methods. In addition, during the interview the interviewer can do more things to improve the quality of the information received than with other methods, for example he/she can interpret questions to the interviewee. The main disadvantage of interviews is that it is costly, in terms of both money and time, especially when the study covers a wide geographic area. Despite this disadvantage, interviews can still be used to complement a mail survey.

In this study an interview was held with James Machete (General Aviation Manager: Air BP South Africa), in order to seek evidence on the information obtained from the survey and to obtain information that was not attainable through the questionnaire.

3.4.2 SECONDARY METHODS

Secondary methods were used to obtain data that could not be secured through the above-mentioned primary methods. According to Cooper et al (2001, p.140), within secondary data exploration, a researcher should start first with an organisation's own data archives. Reports of prior research studies often reveal an extensive amount of historical data or decision-making patterns. External sources of secondary data include data published by other authors outside the organisation, business magazines and the Internet. In this study, Air BP customer database, Aviation magazines and journals and the Internet were used to collect secondary data.

It is worth mentioning that due to the abstract nature of the concepts being studied (e.g. satisfaction), an observational research would be impossible. Therefore, data collection was not through the actual observation of the variables under study, but it was through the questionnaire to customers. For instance, one's level of satisfaction could not be observed, but the researcher relied on customer responses. As a result all conclusions drawn were based on customer opinions on those variables and the input of Air BP specialists and other secondary sources discussed above, which were used to get more information in order to interpret customer responses.

3.4.3 DIFFICULTIES EXPERIENCED DURING DATA COLLECTOIN

Amongst other difficulties experienced, the following were the most significant ones. However, since some of them are inherent to any study, the research was designed in such a way that any difficulties experienced do not distort the findings and the conclusions drawn from the study.

3.4.3.1 Non-Response

Out of 100 questionnaires distributed, only 55 responses were received back. That was due to various reasons that were beyond the control of the researcher. Although follow ups were made by telephone calls, faxes and e-mails, some customers still did not show interest in the study. In some instances, the questionnaire was received by people who did not have enough knowledge to complete it on behalf of the company concerned, and did not pass it to relevant people.

As questionnaires were sent to the postal addresses of the selected companies, extracted from Air BP database, in some cases those questionnaires reached the senior management or administration staff whereas the people who actually deal with Air BP are the Technical staff and Pilots who are usually based at the airports, where fuelling operations take place. In such cases the targeted individuals within approached companies were never reached.

3.4.3.2 Delayed Response

In order to encourage customers to respond as quick as they could a closing date for returning questionnaires was set. All customers were given more than twenty days to respond to the questionnaire. However, only 50% of the total responses was received before the deadline. Another 50% responded after receiving follow-up e-mails and telephone calls. That prolonged data collection process and also delayed the analyses of findings. As a result data collection process took two months.

3.4.3.3 Incorrect Contact Details

Customer contact details were extracted from Air BP sales database. For most customers there were postal addresses for the respective company offices, mainly where invoices and statements are posted to.

For some customers there were physical addresses in the system that were presumably used by Air BP for both mail and delivery purposes. There were telephone numbers and contact names for some customers but not all. As a result follow-up calls could not be made to some customers. All customers who were selected still had open accounts with Air BP and that gave a researcher a confidence that those were still existing customers. However, 4 sets of questionnaires were returned to the researcher as undeliverable mail. Probably some customer contact details had changed and Air BP's database was not up to date.

3.4.3.4 Market Concentration

An oil industry in general is highly concentrated. What makes it worse in the aviation sector is that it is very rare to find more than one oil company operating in the same Airport. That is because of fuel quantities sold and high fixed operating costs which result from a very specialised equipment required in order to operate in aviation refueling environment. In South Africa, Johannesburg Airport is the only Airport with six oil companies operating as a consortium. Usually each airport has one or two oil company operating in its premises.

That restricted some customers in terms of their answers, especially when they had to rate Air BP against other companies. Some customers do not have a choice, they have to buy fuel from the oil companies who operate where they land, especially small customers who do not land in big airports, where there is competition. Therefore, those customers could not benchmark Air BP and its products because they are not exposed to Air BP competitors.

3.4.3.5 Geographical Location of Customers

Since Air BP customers are scattered all over the country, the researcher had no other reliable and economical means to collect data except by the mail survey. In that sense the inherent disadvantages of the mail survey could not be avoided. For example, it was not easy for customers to ask for clarity where they did not understand the questionnaire, since they would have to phone the researcher. However few customers did call to ask for clarity or to elaborate on their answers.

On the other hand, the researcher could not detect misunderstanding by customers and elaborate where necessary. As a result, minimal misinterpretations of the questions by some customers were picked up from their responses.

3.5 CATEGORIES OF DATA COLLECTED

Various data collection methods, discussed in section 3.4 above were used to collect data on the following categories:

3.5.1 CUSTOMER PROFILES

The aviation market consists of various customer segments as discussed in detail in sampling under section 3.1 above. In order to ensure that the conclusions drawn are based on the information received from all market segments, hence from the representative sample; the information on customer profiles was collected through section 1 of the questionnaire (Annexure B). This section provided the researcher with the following information:

- The customer's contact details
- The respondent's level of knowledge about Air BP products
- The market segment in which the customer belongs
- The products purchased by the customer from Air BP
- The customer size in terms of the quantity of purchases per month
- The customer experience with Air BP in terms of period spent as Air BP customer

This information allowed the researcher to analyse data collected taking into consideration the diversity of customers targeted for the study and to highlight differences and similarities amongst various customer segments in terms of their responses on the subject under study.

3.5.2 PRODUCT QUALITY

The questionnaire was designed also to gather information on the customer's overall perception of product quality and understanding of quality control systems used by Air BP. In this section of the questionnaire, customers were asked:

- To give their definition of the acceptable or best quality of aviation fuel or oil
- To rate the quality of products they buy from Air BP
- To rate various dimensions of quality in terms of importance
- To rate the price, quality and service in terms of importance
- To state their view of the overall quality control and management at Air BP
- To state their understanding of and involvement on quality control systems used by Air BP
- To give their view on Air BP's involvement on quality control after sales or after product delivery

This information helped the researcher to draw conclusions regarding the customer's quality expectations, the significant dimensions of product quality, the extent to which the customer value quality in relation to price and service, the customers' understanding of Air BP quality control and management systems/tools and the quality control / management function as a whole.

3.5.3 CUSTOMER SATISFACTION

The third section of the questionnaire gathered information on customer satisfaction and business factors that impact on customer satisfaction. The intention was to identify the impact of product quality on customer satisfaction. Customers were asked

- To define the concept of satisfaction in their business context
- To rate their level of satisfaction with Air BP and its products
- To rate Air BP against other oil companies
- To rate some business factors according to their impact on satisfaction
- To rate the impact of product quality on satisfaction as compared to the impact of price and service
- To state their future intentions regarding doing business with Air BP
- To state their past purchasing trends (quantity increases or decreases)

This information allowed the researcher to draw conclusions on customer satisfaction levels, on the factors that affect customer satisfaction and on the customer's view of the concept of customer satisfaction.

In that sense the relationships between product quality and customer satisfaction were identified. Through this information the researcher also identified the indications of customer loyalty and the trends of product demand.

An interviews with Air BP staff member (James Machete: General Aviation Manager: Air BP) was held to get information on the extent to which Air BP use quality as a component on its marketing strategy to achieve customer satisfaction. This interview also gave elaboration on the difference of opinions displayed by different market segments when answered questions.

3.6 SUMMARY

This chapter has given a detailed discussion of the research design and methodology followed in the case study of Air BP. The first section has looked at the sampling method used by this study. As the sampling frame entails Air BP customers within the boundaries of South Africa, a representative sample of fifty elements has been drawn from three market segments in South Africa (airlines, dealers and general aviation customers), using the random stratified sampling method.

The second section of this chapter has discussed the design of the study. While this is a correlational study, meant to address the question of correlations between product quality and customer satisfaction, no cause and effect relationships were measured in this study. Variables under study were not manipulated, but studied on the natural setting and in one point in time via the survey and interviews. The study used the methodology called method triangulation, which is a combination of both quantitative and qualitative methods. Questionnaires were used to collect quantitative data, but qualitative data collected through an interview and from other secondary sources was also used to complement, verify and explain quantitative data collected.

Also discussed in this chapter are primary and secondary methods used to collect data, ie. questionnaires, interviews, internet, aviation magazines, Air BP database and business journals. Finally this chapter has discussed the categories of data collected (data on customer profiles, product quality and customer satisfaction) and difficulties experienced during data collection.

CHAPTER 4

REPORTING AND ANALYSING RESULTS

4.1 INTRODUCTION

Once completed questionnaires were received, 50 of them (total sample) were prepared for analysis. Out of those 50 responses, 80% was from the general aviation sector, 10% was from the airlines sector and 10% was from the dealers sector. These percentages are true representation of each sector in the aviation market (total population) in terms of the number of customers, not the quantity purchased. Discussed below are the procedures and methods used to analyse data collected and the actual analyses of findings.

4.2 DATA ANALYSES

The following sections give a brief discussion of the approach used to prepare data for analyses and the actual methods used to analyse data

4.2.1 CODING AND STORING

After the proper scrutinisation for errors and outliers, data was captured into a spreadsheet to make a major data file. A data matrix was compiled, showing a column for each variable and a row for each individual studied (Appendix C). Data was coded in order to allow for easy analysis, non-numerical codes were used. Refer to Appendix D for the definition of codes used.

4.2.2 DATA ANALYSES METHODS

This study used simple descriptive statistics (tables, charts and graphs) to describe and analyse data. Cross tabulation between two or more variables was done in order to allow for studying relationships between those variables. Cross tabulation also allowed for the discussion of the study findings in both actual numbers and percentages. Correlation analyses have been used to analyse relationships between factors like product quality and customer satisfaction, price and customer satisfaction, service and customer satisfaction, product quality and customer loyalty, customer satisfaction and product demand etc.

4.3 FINDINGS

Following are analyses of results in terms of variables under study. Findings are discussed under four categories of data, namely: customer profiles, product quality, customer satisfaction and product quality & customer satisfaction (relationships).

4.3.1 CUSTOMER PROFILES

The first part of the questionnaire gathered information on the customer details. For the researcher to interpret the findings and draw meaningful conclusions it was necessary to consider the profiles of respondents. This information helped the researcher to understand some of the significant differences in their opinions, which could be related to differences in their businesses. This information was also gathered in order to draw a clear and complete picture of each customer who responded to the questionnaire, for the benefit of the end users of the study results.

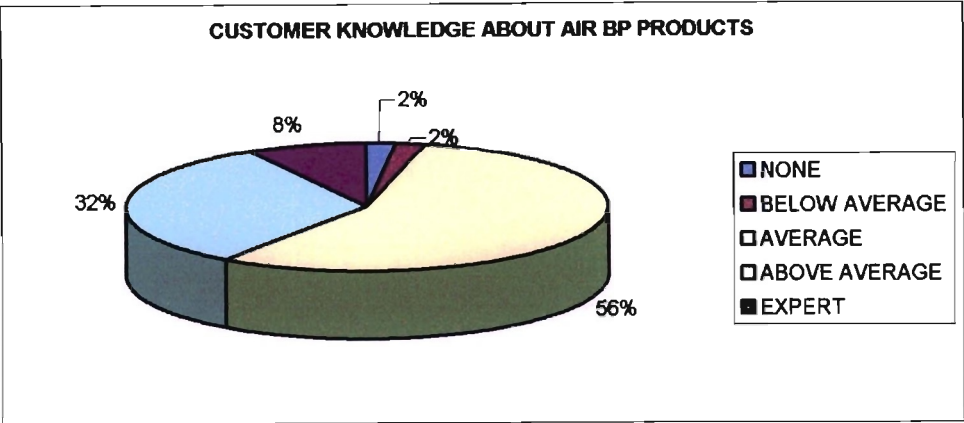
Following is the discussion of findings on: Customer's level of knowledge for aviation products, Products purchased, Customer's experience with Air BP in years and Customer size in terms of quantities purchased.

(a) CUSTOMERS' LEVEL OF KNOWLEDGE FOR AVIATION PRODUCTS

Since the bulk of data was collected through the mail questionnaire, it was possible to get the responses from the individuals who do not directly deal with Air BP in their respective organisations, therefore who could not give reliable information on the questions asked. For instance, the questionnaire could be received by the secretary in the absence of her/his boss and take the initiative to complete it. In order to ensure the reliability of the information received, in the first section of the questionnaire customers were asked to put their names, designations and rate their level of knowledge about aviation fuel and oils.

Findings revealed that in most companies questionnaires were completed by Managers, Procurement Personnel and Engineers. Most of them had average or above average knowledge about aviation fuel and oils, as indicated in Figure 4.1. That strengthens the reliability of the findings discussed in the following sections.

Figure 4.1

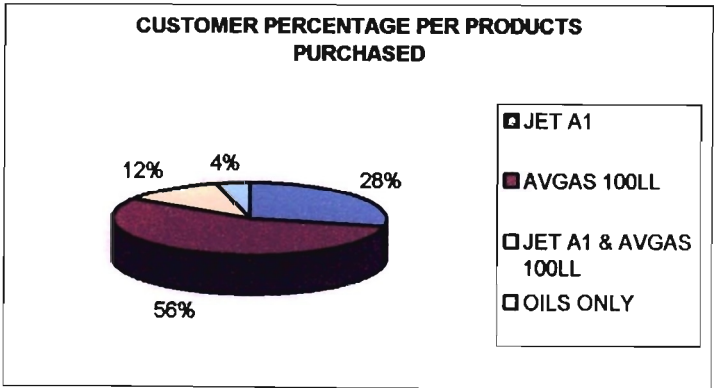


(b) PRODUCTS PURCHASED

Usually airlines have the biggest share of Jet A1, and high volumes of avgas 100LL are for general aviation customers. To verify that information and match the split of volumes between Jet A1 and Avgas 100LL with the representation of each market segment in the study, customers were asked to indicate the products they purchase from Air BP. That also helped to relate some of the opinions on product quality with the products they actually purchase.

Findings are discussed in Figure 4.2. A split between different types of oils was excluded in the chart (Figure 4.2) because it had no significance in the analysis. It is worth mentioning that it is only 4% of customers who indicated that they buy only oils from Air BP, the rest buy oils together with fuel, either Jet A1 or Avgas 100LL. For any interest in the split of customers per oil types, refer to the data matrix (Annexure C).

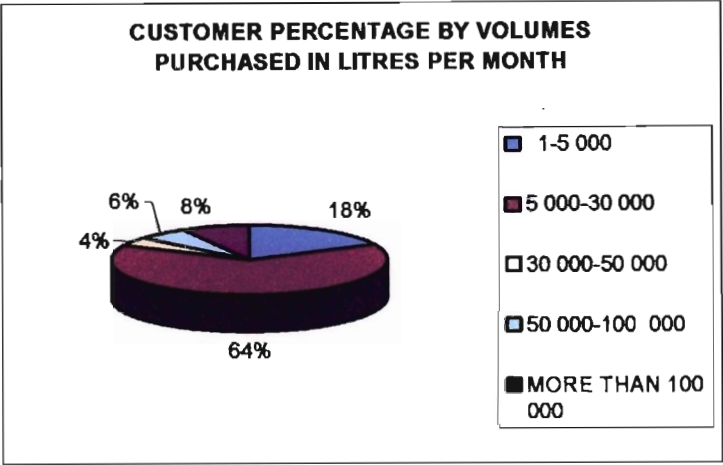
Figure 4.2



© **QUANTITY PURCHASED PER MONTH**

The last section under customer profile looked at the customer size per volumes purchased. Customers were asked to indicate the volumes they purchase from Air BP per month. Knowledge of the volume purchased helped the researcher to relate the findings on some issues with the respective customer sizes. Findings on the volumes purchased are discussed on figure 4.3.

Figure 4.3



According to Figure 4.3, it is obvious that most responses (64%) were received from customers who buy between 5 000 and 30 000 litres per month. That kind of response agrees with the design of this study (as per stratified sampling discussed in Chapter 3 and the nature of aviation market in terms of market segments sizes). This category of volumes (5 000-30 000) is a true reflection of the demand of general aviation customers. Since general aviation customers are the majority in the market and in the study sample, figure 4.3 proves that the division of the market and market segment sizes during sampling was also reflected on the responses.

(d) CUSTOMER EXPERIENCE WITH AIR BP

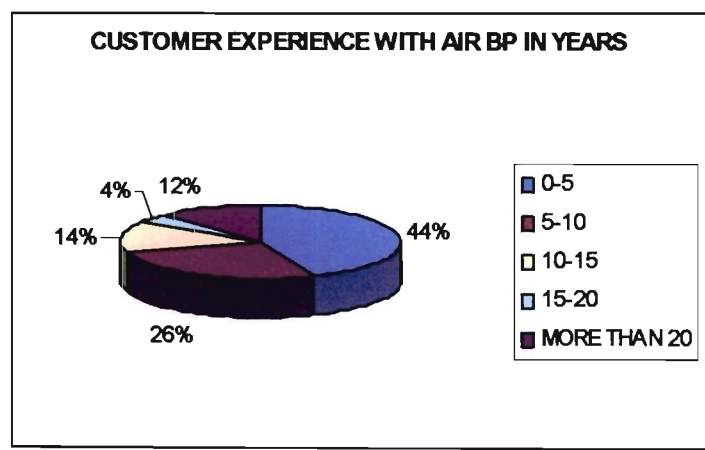
Before drawing conclusions it was important for the researcher to consider the experience (in the number of years) the respondents had with Air BP. This helped to understand the customer’s responses to various questions, when analysing the findings.

For example, it could be difficult for some new customers who do not have much experience with Air BP to give an extreme opinion in various issues. In most cases a new customer would take a neutral view and use terms like “Average”, “Medium” “Neither agree nor disagree” etc.

Old customers on the other hand could be subjective and give biased information in order to protect the long term relationships they have with Air BP. Therefore considering this element of customer details does not necessarily mean that the information collected was interpreted solely on the basis of the customer’s experience with Air BP. However, it was at the benefit of the researcher and the final users of the study conclusions and recommendations to understand more about customers who supplied information. That also shows the representation of both old and new customers in the study.

Therefore in the questionnaire customers were asked to give the year they became Air BP customers. Findings are discussed in Figure 4.4.

Figure 4.4



Most responses were received from customers whose accounts with Air BP are between 0-5 years, however both categories in terms of old and new customers were fairly represented.

4.3.2 PRODUCT QUALITY

The second part of the questionnaire gathered information on product quality. Discussed in the following sections are findings on: the customer view of the concept “quality”, customer perception of the quality of Air BP products , the importance of product quality in comparison to price and service, the customer view of Air BP’s approach to quality management and customer awareness of Air BP quality control procedures.

(a) CUSTOMER PERSPECTIVE OF QUALITY

Different views or dimensions of defining quality were discussed in section 2.2.2. In order to find out if this study would support any of the dimensions outlined by previous authors, or introduce any new view from the market, customers were asked to give their own definition of best quality. Discussed in table 4.1 are findings of the customer’s view of product quality as per customer type.

Table 4.1

CROSS TABULATION OF CUSTOMER TYPE BY QUALITY PERSPECTIVES						
CUSTOMER TYPE		PERSPECTIVE OF QUALITY				TOTAL
		CONFORMANCE TO SPECIFICATION	PERFORMANCE	FEATURES	AESTHETIC	
AIRLINES		3	2			5
DEALERS	% OF THE AIRLINES	60%	40%	0%	0%	100%
	% OF THE TOTAL OPINION	14%	8%	0%	0%	10%
	% OF THE TOTAL SAMPLE	6%	4%	0%	0%	10%
		3	1		1	5
	% OF BULK CUSTOMERS	60%	20%	0%	20%	100%
	% OF THE TOTAL OPINION	14%	4%	0%	33%	10%
GENERAL AVIATION	% OF THE TOTAL SAMPLE	6%	2%	0%	2%	10%
		15	22	1	2	40
	% OF PRIVATE CHARTERS	38%	55%	3%	5%	100%
	% OF THE TOTAL OPINION	71%	88%	100%	67%	80%
	% OF THE TOTAL SAMPLE	30%	44%	2%	4%	80%
	TOTAL	21	25	1	3	50
	%	42%	50%	2%	6%	100%

Out of 50 customers (total sample), 42% defined fuel quality in terms of “conformance to specification” e.g. free of dirt and water, 50% defined it in terms of performance e.g. smooth engine running, 2% defined it in terms of service quality features like ease of fuel acquisition, billing system and account administration.

This perspective highlighted the importance of service as a part and parcel of the product delivered. 6% of the market adopted the aesthetic approach to quality. They took a subjective view and defined it in terms of factors influencing their judgment of fuel quality, for instance they looked at it in relation to the competitors' products, price and other aspects of production and supply of fuel.

Based on these findings, product performance seems to be the most important dimension of the product quality, in view of Air BP customers.

The analysis of these findings per customer type showed that although the product performance appeared to be the most important dimension of quality when looking at the entire sample, that was not the case in the market of dealers and airlines. 60% of airlines defined quality in terms of conformance to specification and 40% defined it in terms of performance. In the market of dealers 60% defined quality in terms of conformance to specification, 20% defined it in terms of performance, and 20% defined it in terms of aesthetic factors.

The overall results were influenced by general aviation customers, 55% of them viewed quality in terms of performance, 38% viewed it in terms of conformance to specification, 3% viewed it in terms of features and 5% viewed it in terms of aesthetic factors.

One reason for the difference in opinions between dealers and general aviation customers is the fact that dealers are not final users of the product, they are to some extent representing the supplier "Air BP" to end users. They are more involved in quality control activities than general aviation customers, since they buy fuel in bulk, store it, and supply end users. Therefore the fuel conformance to specification is more important to them as suppliers to end-users, they are not much concerned about performance since they don't experience the end usage of the product.

Like dealers, 60% of airlines viewed product quality in terms of “conformance to specification”. The reasoning behind that is the fact that although airlines are end users of the product their technical staff which is responsible for refueling operations have sufficient knowledge about aviation fuel and its specification, they get involved in quality control procedures during refueling e.g. checking water in fuel. They also do regular audits at Air BP fuel depots to check if Air BP complies with the standards. Therefore fuel conformance to specification is basically what they look for in fuel before it is actually delivered into the aircraft. In support of the specification view of product quality Kevin Bower (Air BP Fuels and Lubricants Engineer), said “We are contracted to supply on specification fuel, the specifications give all parties protection and benefit” (www.airbp.bpweb.com).

General Aviation customers on the other hand are more concerned about the performance of fuel in their aircrafts. When they were asked to define the best quality of fuel in their opinions, the following were amongst other statements given: “Best engine performance”, “should not damage filters”. These are typical examples of “performance” perspective of quality. Probably, some general aviation customers are not even aware of the actual specification of aviation fuel; they trust the supplier to provide tested fuel (within specification), hence best performance.

Kevin Bower (Air BP Fuels and Lubricants Engineer) defined a good quality of fuel as the one that is handled in a clean manner, traceable, accurately tested and delivered into-plane on-specification and in a safe manner. (www.airbp.bpweb.com). In conclusion, there is no new dimension on quality, identified in this study, but the study showed the importance of some of the already identified quality dimensions like conformance to specification and performance.

(b) CUSTOMER’S VIEW OF AIR BP PRODUCT QUALITY

Having identified what is meant by quality in view of Air BP customers, customers were asked to rate the quality of Air BP products in terms of poor, average/good and best. Findings are discussed in Table 4.2.

Table 4.2

CROSS TABULATION OF CUSTOMER TYPE BY CUSTOMER VIEW OF AIR BP QUALITY					
CUSTOMER TYPE		VIEW OF AIR BP QUALITY			
		POOR	AVERAGE /GOOD	BEST	TOTAL
ARLINES			1	4	5
	ROW PERCENTAGE	0%	20%	80%	100%
	COLUMN PERCENTAGE	0%	5%	13%	10%
	TOTAL SAMPLE %	0%	2%	8%	10%
DEALERS	COUNT	0	0	5	5
	ROW PERCENTAGE	0%	0%	100%	100%
	COLUMN PERCENTAGE	0%	0%	17%	10%
	TOTAL SAMPLE %	0%	0%	10%	10%
GENERAL AVIATION	COUNT	0	19	21	40
	ROW PERCENTAGE	0%	47.5%	52.5%	100%
	COLUMN PERCENTAGE	0%	95%	70%	80%
	TOTAL SAMPLE %	0%	38%	42%	80%
	TOTAL	0	20	30	50
	%	0%	40%	60%	100%

None of the customers regarded Air BP products as of poor quality, 60% of customers said they get the best quality and 40% said they get average or good quality of products from Air BP. For the purposes of this study average and good is regarded as the same rating. That is because meanings of these two ratings are closely related. According to the English Oxford Dictionary, “good” means “adequate” and “average” means “of ordinary standard”. In the context of aviation fuel, the ordinary standard is what is adequate for its purpose. Looking at the split of opinions per customer type, in the market of airlines, 80% rated Air BP quality “best” and 20% rated it “average/good”. 100% of dealers rated it “best” and in the general aviation sector, 52.5% rated it “best” and 47.5% rated it “good/average”.

It should be noted that although all sectors have higher scores of “best” than “good”, dealers have the highest score since all of them said Air BP fuel quality is best. That positive view from the dealers is due to the fact that they are involved in quality control and management processes. They know Air BP quality requirements & standards and quality control procedures, since they have to apply them in their respective sites and they are regularly audited to check if they conform to Air BP quality standards. On the other side general aviation customers are not much concerned about quality control procedures (inputs to quality), all they are interested in is whether the product is fit for its purpose.

(c) IMPORTANCE OF QUALITY AS COMPARED TO PRICE AND SERVICE

In order to test the hypothesis that says quality is more important than price and service in the aviation market of Air BP, customers were asked to rate quality, price and service in the order or importance from the scale of 1 to 5. Findings are discussed in table 4.3.

Table 4.3

CROSS TABULATION OF CUSTOMER TYPE BY THE IMPORTANCE OF QUALITY AS COMPARED TO PRICE & SERVICE							
CUSTOMER TYPE		IMPORTANCE OF QUALITY AS COMPARED TO PRICE AND SERVICE					TOTAL
		QUALITY IS MORE IMPORTANT	QUALITY IS EQUALLY IMPORTANT WITH PRICE	QUALITY IS EQUALLY IMPORTANT WITH SERVICE	QUALITY IS RATED EQUALLY WITH BOTH PRICE & SERVICE	QUALITY IS LESS IMPORTANT THAN PRICE AND SERVICE	
AIRLINES	COUNT	1	2	0	2	0	5
	ROW%	20%	40%	0%	40%	0%	100%
	COLUMN %	6%	29%	0%	12%	0%	10%
	SAMPLE%	2%	4%	0%	4%	0%	10%
DEALERS	COUNT	2			3		5
	ROW%	40%	0%	0%	60%	0%	100%
	COLUMN %	11%	0%	0%	18%	0%	10%
	SAMPLE%	4%	0%	0%	6%	0%	10%
GENERAL AVIATION	COUNT	15	5	4	12	4	40
	ROW%	37.5%	12.5%	10%	30%	10%	100%
	COLUMN %	83%	71%	100%	71%	100%	80%
	SAMPLE%	30%	10%	8%	24%	8%	80%
	TOTAL	18	7	4	17	4	50
	%	36%	14%	8%	34%	8%	100%

36% of customers said the product quality is more important than price and service, 34% rated all three product attributes (price, service and quality) as equally important, 14% said quality and price are equally important, and both are more important than service, 8% said quality and service are equally important and more important than price and 8% said quality is less important than price and service.

According to the analyses of the total sample, product quality is more important than price and service to aviation customers. However, a view per customer type gave different results. In the market of dealers 60% said price, quality and service are equally important and 40% said quality is more important than price and service.

In the market of airlines 40% said quality, price and service are equally important, 40% said quality is equally important with price and more important than service and 20% said quality is more important than both price and service. None of the dealers and airlines rated quality below price and service.

The results of the total sample were more influenced by the view of general aviation customers, since they are 80% of the total market. 37.5% of general aviation customers said quality is more important than price and service, 30% rated all three attributes (price, service and quality) equally, 12.5% said quality is equally important with price and more important than service, 10% said quality and service are equally important and more important than price and 10% said quality is less important than both price and service.

As per these findings, hypotheses discussed in section 1.5; that says, "product quality is more important than price and service in the aviation market", proved to be true.

One of the reasons for this difference in opinions between general aviation customers, airlines and dealers is the fact that Dealers are likely to be more concerned about the price they pay Air BP for fuel because selling fuel is their core business, the profit they get depends on the cost price of fuel, the higher the cost price, the lesser the profit margin to them... service is also critical to them because without a good service from Air BP they can't give a good service to their customers (e.g. without timeous delivery of bulk fuel by Air BP, they will run out of stock and unable to supply their customers).

It should be noted that airlines regard price as important because of the quantity of fuel they use and its impact in their overall cost structure. Although they are fewer than general aviation customers in numbers, their purchases are more than 80% of the total volumes sold by Air BP.

According to Mr Andre Viljoen , the CEO of South African Airways, fuel price rise, coupled with the impact of the weak rand, was one of the factors that had a major impact in their costs resulting in 27% costs increase for the year ended March 2001 (Aviation and Allied Business Journal, October 2002, p.17).

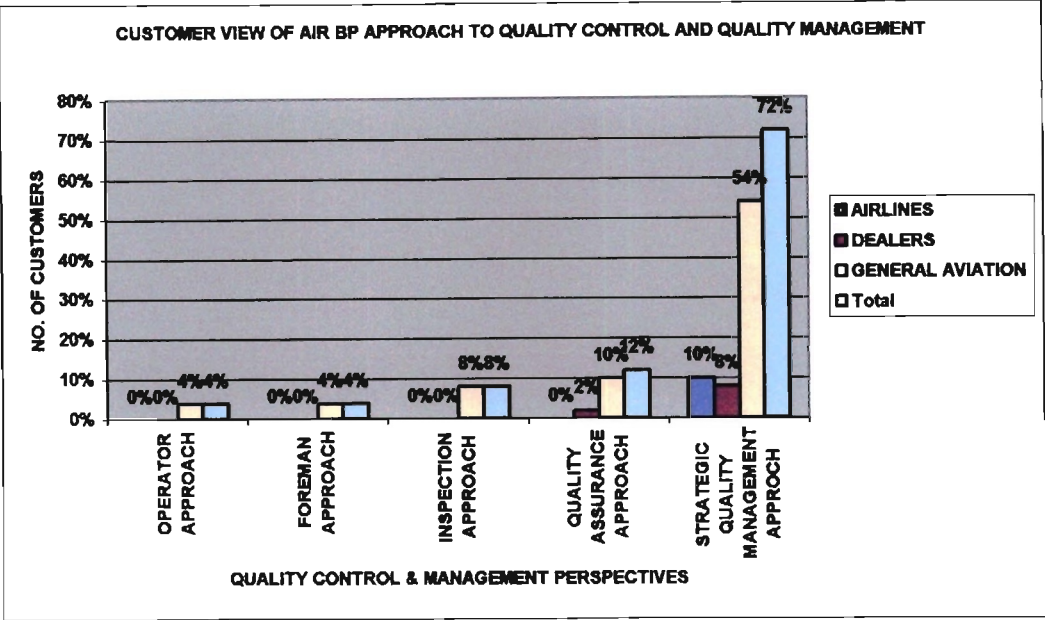
General aviation customers on the other hand do not buy big volumes; therefore they don't feel fuel costs in the same way as airlines. However, it should be noted that 30% of them rated quality equally to price and service. That is close to the score of 37.5%, which rated quality higher than price and service. Therefore , although the overall results highlights the importance of quality; price and service should not be completely ignored since it is also significantly important in all three market segments.

The fact that customers were allowed to rate these product attributes equally made analyses difficult. It would have been easier to analyse the findings if there were no equal ratings, since equal rating can be the best choice for customers who are not sure of what rating to give. On the other hand eliminating equal rating as one of the choices could force customers who really want to rate the three attributes equally, to opt for one, which might not be a really important factor to them. That was taken into consideration during data analyses.

(d) CUSTOMER VIEW OF AIR BP APPROACH TO QUALITY CONTROL AND QUALITY MANAGEMENT

Section 2.2.3 discussed the evolution of quality control and quality management in organisations, and different approaches to quality management were discussed in detail. In order to get the customer's understanding and view on various approaches to quality management, the evolution of quality management in different stages and Air BP's approach to quality management, customers were asked to identify which level in the organisation structure is responsible for quality management, from the refinery operator to the senior management of Air BP. Each answer represented a specific approach or development stage in the concept of quality management. Findings are discussed in Figure 4.5.

Figure 4.5



72% of customers said quality management is the component of the overall business management strategy and it is everyone's responsibility at Air BP (Strategic Approach). 12% said quality management is the responsibility of the senior management of Air BP (Quality Assurance Approach). 8% regarded quality management as the responsibility of the quality assurance auditor or inspector (Inspection Approach), 4% said it is the responsibility of the Production Manager or Supervisor at a refinery level (Foreman Approach) and 4% said it is the responsibility of the Production Operator at a refinery level (Operator Approach)

Findings per market segments studied are in line with the overall findings. Most customers in all three segments said Air BP has adopted a strategic approach to quality management. It is good for Air BP to see that most of its customers are aware that the company has adopted the latest approach to quality control and quality management in which quality is part of the overall business management strategy.

(e) CUSTOMER AWARENESS OF AIR BP QUALITY CONTROL PROCEDURES

The latest approaches to quality management argue that the customer should be part of the organisation's quality management systems and give input where possible.

In order to determine their level of involvement, Air BP customers were asked if they are aware of any Air BP Quality Control Systems and to state them. Results are discussed in Table 4.4.

Table 4.4

CROSS TABULATION OF CUSTOMER TYPE BY CUSTOMER AWARENESS OF AIR BP QUALITY CONTROL PROCEDURES				
CUSTOMER TYPE		AWARENESS OF QUALITY CONTROL PROCEDURES		
		AWARE	NOT AWARE	TOTAL
AIRLINES	COUNT	3	2	5
	ROW PERCENTAGE	60%	40%	100%
	COLUMN PERCENTAGE	19%	6%	10%
	TOTAL SAMPLE %	6%	4%	10%
DEALERS	COUNT	3	2	5
	ROW PERCENTAGE	60%	40%	100%
	COLUMN PERCENTAGE	19%	6%	10%
	TOTAL SAMPLE %	6%	4%	10%
GENERAL AVIATION	COUNT	10	30	40
	ROW PERCENTAGE	25%	75%	100%
	COLUMN PERCENTAGE	63%	88%	80%
	TOTAL SAMPLE %	20%	60%	80%
	TOTAL	16	34	50
	%	32%	68%	100%

68% said they are not aware of any quality control procedures and 32% said they are aware of some quality control procedures and stated them. What is interesting in table 4.4 are different opinions amongst different market segments. It is mainly general aviation customers who are not aware i.e. 75% and only 25% is aware. In contrast, 60% of Airlines are aware and only 40% is not aware. Also in the market of dealers, 60% is aware and 40% is not aware.

Commenting on these findings, James Machete mentioned that Air BP trains dealers on quality control procedures that is why most of them are aware. That is also the case with airlines, although they are not necessarily trained by Air BP, their technicians are trained to observe some basic quality control tests during the aircraft refueling (e.g. water detection and visual inspection of fuel). On the other hand general aviation customers do not really get much involved.

That means there is a challenge for Air BP to raise awareness to general aviation customers, of its efforts towards maintaining the best quality of products. Knowledge of what Air BP does to keep the quality of its products at best levels can change the customer’s perception of the quality of Air BP products.

(f) AIR BP ‘S INVOLVEMENT IN QUALITY CONTROL AFTER SALES

It has been mentioned in section 2.4.3 that according to the current trend in quality management, the supplier’s responsibility towards quality management does not always end at the point of sale. It extends beyond the point of sale, for example it extends to delivery, service, maintenance and repairs. Air BP is not an exception in this approach. Air BP monitors the quality control and management systems in the whole process from the refinery to the depots up to the dealer refueling sites. In other words even when the product has been delivered to the dealer, Air BP still ensures that quality control and management procedures are followed.

In order to determine the customer’s awareness of Air BP’s commitment to quality after sales, customers were asked to indicate if they agree or disagree with the following statement: “ Air BP strives to maintain the best quality of fuel and oils even after sale or product delivery to customers”. Findings are discussed in table 4.5.

Table 4.5

CROSS TABULATION OF SATISFACTION LEVEL BY CUSTOMER VIEW ON AIR BP'S INVOLVEMENT IN QUALITY AFTER SALES						
CUSTOMER TYPE		AIR BP STRIVES TO MAINTAIN PRODUCT QUALITY AFTER SALES				TOTAL
		STRONGLY AGREE	AGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	
AIRLINES	COUNT	1	0	0	4	5
	ROW PERCENTAGE	20%	0%	0%	80%	100%
	COLUMN PERCENTAGE	33%	0%	0%	16%	10%
	TOTAL SAMPLE %	2%	0%	0%	8%	10%
DEALERS	COUNT	1	3	0	1	5
	ROW PERCENTAGE	20%	60%	0%	20%	100%
	COLUMN PERCENTAGE	33%	16%	0%	4%	10%
	TOTAL SAMPLE %	2%	6%	0%	2%	10%
GENERAL AVIATION	COUNT	1	16	3	20	40
	ROW PERCENTAGE	3%	40%	8%	50%	100%
	COLUMN PERCENTAGE	33%	84%	0%	80%	80%
	TOTAL SAMPLE %	2%	32%	6%	40%	80%
TOTAL		3	19	3	25	50
%		6%	38%	6%	50%	100%

Out of 50 customers 50% took a neutral view “neither agree nor disagree”, 38% agreed, 6% strongly agreed and 6% disagreed. Looking at opinions per each market segment, dealers had the highest percentage of customers who agreed with the statement, 60% agreed, 20% strongly agreed and 20% neither agreed nor disagreed. In the general aviation market 40% agreed, 3% strongly agreed, 8% disagreed and 50% neither agreed nor disagreed. In the market of airlines, none of them agreed or disagreed with the statement, 20% strongly agreed and 80% neither agreed nor disagreed.

According to these findings dealers are more aware of Air BP’s involvement in quality after sales. From the interview held it appeared that the reason for that is that dealers work very close with Air BP in their operations and get enough training from Air BP. They get audited and inspected on regular basis, hence they are clear about the extent of Air BP’s involvement in quality control in their sites.

4.3.3 CUSTOMER SATISFACTION

The third section of the questionnaire gathered information on customer satisfaction. Discussed below are findings on: customer view of satisfaction, customer satisfaction with Air BP and customer preference of Air BP over other oil companies.

(a) CUSTOMERS, VIEW OF SATISFACTION

In order to find out what exactly customers regard as satisfaction with the organisation and its products, customers were asked to explain what the concept “customer satisfaction” means to them. With the intention of assisting customers to answer that question easily, they were given various choices based on theoretical perspectives on customer satisfaction, given by different authors. The main focus was on identifying the extent to which customers view satisfaction in terms of the “product quality in relation to the price paid”. Findings are discussed in table 4.6.

Table 4.6

CROSS TABULATION OF CUSTOMER TYPE BY THE DEFINITION OF CUSTOMER SATISFACTION					
CUSTOMER TYPE		CUSTOMERS' VIEW OF SATISFACTION			
		PRODUCT QUALITY IN RELATION TO THE PRICE PAID	OTHER ELEMENTS e.g. relationship and confidence with Air BP	PRODUCT QUALITY AND OTHER ELEMENTS	TOTAL
AIRLINES	COUNT	0	3	2	5
	ROW PERCENTAGE	0%	60%	40%	100%
	COLUMN PERCENTAGE	0%	14%	10%	10%
	TOTAL SAMPLE %	0%	6%	4%	10%
DEALERS	COUNT	0	3	2	5
	ROW PERCENTAGE	0%	60%	40%	100%
	COLUMN PERCENTAGE	0%	14%	10%	10%
	TOTAL SAMPLE %	0%	6%	4%	10%
GENERAL AVIATION	COUNT	9	15	16	40
	ROW PERCENTAGE	23%	38%	40%	100%
	COLUMN PERCENTAGE	100%	71%	80%	80%
	TOTAL SAMPLE %	18%	30%	32%	80%
	TOTAL	9	21	20	50
	%	18%	42%	40%	100%

42% of customers defined satisfaction in terms of various product/service elements, excluding quality i.e. confidence with Air BP and its products, business relationship with Air BP, product performance and benefits received from using the product. 40% defined satisfaction in terms of the above-mentioned factors and quality. 18% defined it specifically in terms of product quality in relation to the price paid.

Looking at opinions per market segment, none of dealers and airlines directly linked customer satisfaction with quality alone. 60% of them did not mention quality in their choices and 40% of them mentioned it together with other factors. In contrast, 40% of general aviation customers defined satisfaction in terms of quality and other factors, 38% defined it in terms of other factors excluding quality and 9% defined it in terms of quality alone.

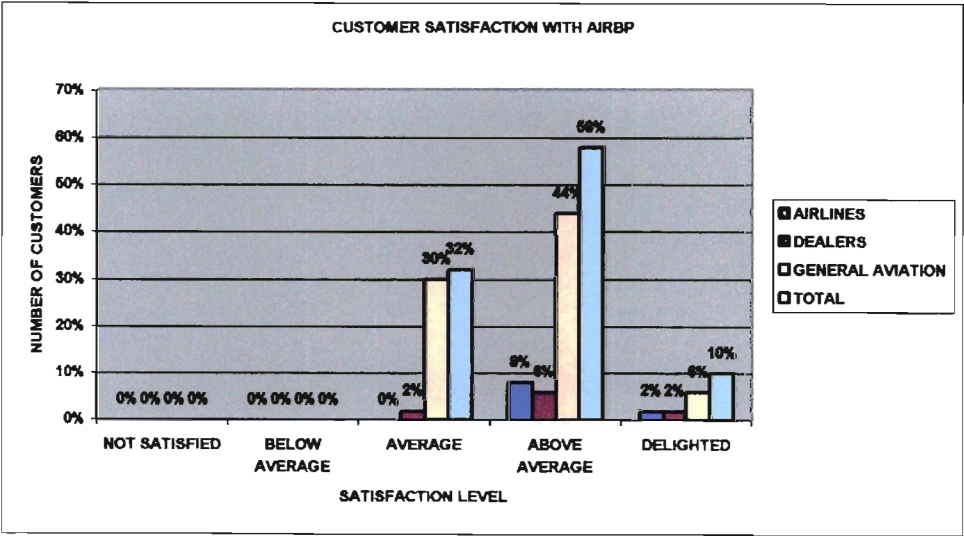
Although 42% of customers viewed satisfaction in terms of other factors (excluding quality), quality is still a significant component in the customer's view of satisfaction since the total percentage of customers who mentioned quality is 58%.

Therefore, quality should be considered as one of the critical elements when building customer value. However, other elements like product benefits, business relationships, confidence with the company etc. should not be completely ignored, since they are equally important with quality to 40% of aviation customers.

(b) CUSTOMER SATISFACTION WITH AIR BP

In order to determine the extent to which customers are satisfied with Air BP as their supplier, customers were asked to rate their level of satisfaction with Air BP in the scale of 5 choices from dissatisfied to delighted. Findings are discussed in figure 4.6

Figure 4.6



58% of customers rated their satisfaction level as “above average”, 32% rated it as “average”, 10% said they are delighted with Air BP and none indicated dissatisfaction. In all three market segments the majority of customers rated their level of satisfaction as above average. These are positive results for Air BP. One could argue that such results could be expected, since the study was conducted with Air BP customers only, not the total aviation market. Dissatisfied customers could be all those who are buying from Air BP competitors. That is not a valid argument because satisfaction is not the only factor that influences the customer’s choice of the supplier; location of the supplier is another factor that plays a major role in the aviation business.

Some customers are compelled to buy from oil companies they are not really satisfied with, because their aircraft fly to airports where it is only those oil companies who operate. That could be the case with Air BP. For instance there could be a dissatisfied customer who is still buying fuel from Air BP, because Air BP is the only supplier in Durban International Airport. According to this study Air BP should be proud that it has given above average satisfaction to 58% of its current market and average satisfaction to 32% of its market.

(c) CUSTOMER PREFERENCE OF AIR BP OVER OTHER OIL COMPANIES

In order to verify and complement the findings in section “(b)” regarding customer satisfaction with Air BP, customers were asked to rate six oil companies in the order of preference in the scale of 1 to 5. Findings are discussed in Table 4.7.

Table 4.7

CROSS TABULATION OF CUSTOMER TYPE BY CUSTOMER PREFERENCE OF AIR BP OVER OTHER OIL COMPANIES				
CUSTOMER TYPE	PREFERENCE OF AIR BP OVER OTHER OIL COMPANIES			
		AIR BP RATED FIRST	AIR BP RATED SECOND	TOTAL
AIRLINES	COUNT	5	0	5
	ROW PERCENTAGE	100%	0%	100%
	COLUMN PERCENTAGE	0%	0%	10%
	TOTAL SAMPLE %	10%	0%	10%
DEALERS	COUNT	4	1	5
	ROW PERCENTAGE	80%	20%	100%
	COLUMN PERCENTAGE	0%	0%	10%
	TOTAL SAMPLE %	8%	2%	10%
GENERAL AVIATION	COUNT	33	7	40
	ROW PERCENTAGE	82.5%	17.5%	100%
	COLUMN PERCENTAGE	0%	0%	80%
	TOTAL SAMPLE %	66%	14%	80%
	TOTAL	42	8	50
	%	84%	16%	100%

84% of customers preferred Air BP over all other oil companies and 16% rated Air BP as their second choice oil company. In all three market segments findings are in line with the overall sample findings. 100% of airlines prefers Air BP to other oil companies, 80% of dealers prefers Air BP and 20% rated Air BP as their second choice oil company. In the market of general aviation 82.5% preferred Air BP to other oil companies and 17.5% regarded Air BP as their second choice.

Although customers were not asked to elaborate on their opinions, some of them mentioned that their preference of Air BP was due to the fact that it is found in many locations around the world, and that makes fuel acquisition easier for them. Some mentioned that they are confident with the quality of products supplied by Air BP. Some mentioned that they found this question difficult because they have no experience of other oil companies, due to the fact that the aviation market is highly concentrated. They normally don't have a choice of which oil company to use when they land at various airports, since they hardly find two or more oil companies operating at the same airport.

4.3.4 PRODUCT QUALITY AND CUSTOMER SATISFACTION

Previous sections have discussed findings on product quality and customer satisfaction as separate concepts. This section focuses on the findings on the core of the research, the relationships between product quality and customer satisfaction. Following are findings on: the impact of quality on customer satisfaction, the impact of quality (as compared to price and service) on customer satisfaction and relationships between product quality and customer satisfaction.

(a) THE IMPACT OF PRODUCT QUALITY ON CUSTOMER SATISFACTION IN COMPARISON WITH VARIOUS OTHER FACTORS

In order to determine what factors mostly impact on customer satisfaction, customers were asked to rate various business and product factors in terms of the extent to which they impact on their satisfaction with Air BP. Those factors are: convenience of product acquisition, competence of Air BP employees, credit facilities and business terms, product quality, delivery terms and methods, product price and Air BP reputation.

The main focus was on determining the extent to which product quality impacts on customer satisfaction as compared to other factors. Findings are discussed in table 4.8.

Table 4.8

CROSS TABULATION OF CUSTOMER TYPE BY THE PRODUCT QUALITY IMPACT ON CUSTOMER SATISFACTION					
CUSTOMER TYPE		PRODUCT QUALITY	OTHER ELEMENTS e.g. service, business terms, price, reputation & convenience	QUALITY TOGETHER WITH OTHER ELEMENTS	TOTAL
AIRLINES	COUNT	1	1	3	5
	ROW PERCENTAGE	20%	20%	60%	100%
	COLUMN PERCENTAGE	0%	0%	0%	10%
	TOTAL SAMPLE %	2%	2%	6%	10%
DEALERS	COUNT	0	0	5	5
	ROW PERCENTAGE	0%	0%	100%	100%
	COLUMN PERCENTAGE	0%	0%	0%	10%
	TOTAL SAMPLE %	0%	0%	10%	10%
GENERAL AVIATION	COUNT	8	11	21	40
	ROW PERCENTAGE	20%	27.5%	52.5%	100%
	COLUMN PERCENTAGE	0%	0%	0%	80%
	TOTAL SAMPLE %	16%	22%	42%	80%
	TOTAL	9	12	29	50
	%	18%	24%	58%	100%

58% of customer said quality together with other factors mentioned above, have high impact on their satisfaction with Air BP. 24% did not mention quality as one of the factors that highly impact on their satisfaction and 18% said product quality has more impact on their satisfaction than other factors. In other words 76% of customers regard quality as one of the factors that highly impact on satisfaction and 24% are of the opposite opinion.

Looking at the ratings per market segment, 60% of airlines rated quality equally with other factors in terms of the impact it has on their satisfaction, 20% rated quality lower than other factors and 20% rated quality higher than all other factors. In the market of dealers, all of them rated quality equally with other factors in terms of its impact on satisfaction. In the market of general aviation customers 52.5% rated product quality together with other factors as having high impact on satisfaction, 27.5% rated other factors as having more impact on customer satisfaction than product quality and 20% said quality has the highest impact on customer satisfaction than other factors.

It should be noted that although customers who highly rated quality alone are 18% of the market, when quality is compared with each of other factors (not combined), it has the highest score. In other words out 24% who gave the high rating to other factors, none of those factors got more than 18% or more alone. Based on these findings, product quality has more impact on customer satisfaction than other factors listed in the first paragraph of this section. This answers the main research question, which says: Is there a relationship between the product quality and customer satisfaction in the aviation market of the oil industry?

(b) IMPACT OF PRODUCT QUALITY ON CUSTOMER SATISFACTION AS COMPARED TO PRICE AND SERVICE

Since price and service are some of the important and significant factors of the market offer, it was crucial to determine their impact on customer satisfaction in comparison with quality. That was meant to detail, verify and complement the findings on table 4.8. However, in this case the focus was on determining the impact of only three important factors (quality, price and service) on customer satisfaction. Findings are present in table 4.9.

Table 4.9

CROSS TABULATION OF CUSTOMER TYPE BY THE IMPACT OF PRODUCT QUALITY ON CUSTOMER SATISFACTION IN COMPARISON WITH PRICE AND SERVICE							
CUSTOMER TYPE		IMPACT OF QUALITY ON CUSTOMER SATISFACTION					TOTAL
		QUALITY IS MORE IMPORTANT	QUALITY IS EQUALLY IMPORTANT WITH PRICE	QUALITY IS EQUALLY IMPORTANT WITH SERVICE	QUALITY IS RATED EQUALLY WITH BOTH PRICE & SERVICE	QUALITY IS LESS IMPORTANT THAN PRICE AND SERVICE	
AIRLINES	COUNT	1	1	0	0	3	5
	ROW PERCENTAGE	20%	20%	0%	0%	60%	100%
	COLUMN PERCENTAGE	6%	17%	0%	0%	43%	10%
	TOTAL SAMPLE %	2%	2%	0%	0%	6%	10%
DEALERS	COUNT			1	3	1	5
	ROW PERCENTAGE	0%	0%	20%	60%	20%	100%
	COLUMN PERCENTAGE	0%	0%	14%	21%	14%	10%
	TOTAL SAMPLE %	0%	0%	2%	6%	2%	10%
GENERAL AVIATION	COUNT	15	5	6	11	3	40
	ROW PERCENTAGE	38%	13%	15%	28%	8%	100%
	COLUMN PERCENTAGE	94%	83%	86%	79%	43%	80%
	TOTAL SAMPLE %	30%	10%	12%	22%	6%	80%
	TOTAL	16	6	7	14	7	50
	%	32%	12%	14%	28%	14%	100%

32% of customers said quality has more impact on customer satisfaction when compared with price and service. 28% said it has equal impact with price and service, 14% said it has less impact than price and service. 14% said it has equal impact with service, but more impact than price and 12% said it has equal impact with price, but more impact than service.

According to the findings per market segment, 60% of airlines said quality has less impact than price and service on their satisfaction, 20% said it has more impact and 20% said it has equal impact with price, but more impact than service. When looking at the market of dealers 60% of dealers said quality has equal impact with price and service in their satisfaction, 20% said it has equal impact with service, but more impact than price and 20% said it has less impact than both service and price.

Overall findings were more influenced by general aviation customers since it is the biggest market segment. Amongst general aviation customers, 38% said quality has more impact than price and service, 28% said all three factors have equal impact, 15% said quality has equal impact with service and more impact than price, 13% said it has equal impact with price and more impact than service and 8% said it has less impact than price and service.

As in table 4.3 (section 4.3.2), according to table 4.9 price and service appear to be critical factors in the airlines market. According to the International Air Transport Association (IATA), expenditure on fuel represents a substantial proportion of operating costs and directly affects the airline's bottom line, regardless of its size and location. (www.iata.com). That is one of the reasons why the fuel price is so important to the airlines.

Like price, service is very important to airlines. The service given to the aircraft while it is on the ground (e.g. refueling) is a very important input to the overall efficiency of the flight operations. The quicker the service given, the shorter the turn around time for the aircraft, the higher the performance, hence the airline revenue.

According to the CEO of South African Airways (Andre Viljoen), SAA used to take an hour to turn around an aircraft on the domestic routes. By reducing it to 30 minutes, SAA saved R100 million a year in cost (Aviation and Allied Business Journal, October 2002, p.17). This emphasises the importance of service in the satisfaction of customers.

© RELATIONSHIP BETWEEN CUSTOMER SATISFACTION AND PRODUCT QUALITY

In order to determine correlation between customer satisfaction and product quality, customers were asked to give ratings on their levels of satisfaction with Air BP and the quality of Air BP products. The two variables in question were cross-tabulated for analysis. Findings are discussed in table 4.10.

Table 4.10

CROSS TABULATION OF CUSTOMER SATISFACTION LEVEL BY CUSTOMERS' VIEW OF THE QUALITY OF AIR BP PRODUCT					
		QUALITY RATING OF AIR BP PRODUCTS			
SATISFACTION LEVEL		POOR	AVERAGE / GOOD	BEST	TOTAL
AVERAGE	COUNT		13	3	16
	ROW PERCENTAGE	0%	81%	19%	100%
	COLUMN PERCENTAGE	0%	65%	10%	32%
	TOTAL SAMPLE %	0%	26%	6%	32%
ABOVE AVERAGE	COUNT		6	23	29
	ROW PERCENTAGE	0%	21%	79%	100%
	COLUMN PERCENTAGE	0%	30%	77%	58%
	TOTAL SAMPLE %	0%	12%	46%	58%
DELIGHTED	COUNT		1	4	5
	ROW PERCENTAGE	0%	20%	80%	100%
	COLUMN PERCENTAGE	0%	5%	13%	10%
	TOTAL SAMPLE %	0%	2%	8%	10%
	TOTAL	0	20	30	50
	%	0%	40%	60%	100%

None of the customers indicated that they are dissatisfied with Air BP. On the other hand none of the customers rated Air BP products as of poor quality. 65% of customers who rated the quality of Air BP products as average / good indicated that their satisfaction level with Air BP is average. 77% of customers who rated the quality of Air BP products as best indicated that their satisfaction level with the company is above average.

Taking another view of table 4.10 one will notice that 81% of customers who indicated that their level of satisfaction with Air BP is average rated the quality of Air BP products as average / good. 79% of customers who indicated that their satisfaction level with the company is above average rated the quality of Air BP products as best and 80% of customers who said they are delighted with Air BP rated Air BP products as best.

These findings show a positive correlation between the product quality and customer satisfaction. The lower the rating on product quality, the lower the rating on the level of satisfaction, the higher the rating on product quality, the higher the satisfaction level rating. Based on these findings the hypothesis which says, “there is a positive correlation between product quality and customer satisfaction in the aviation fuel market”, (stated in section 1.5) proved to be correct.

As another way of determining the correlation between customer satisfaction and product quality, customers were asked to rate their levels of satisfaction over a period of time whether it has improved, not changed or worsened. They were also asked to rate the quality of Air BP products over time, whether it has improved, not changed or worsened. Findings are discussed in Table 4.11.

Table 4.11

CROSS TABULATION OF SATISFACTION TRENDS WITH CUSTOMER VIEW OF AIR BP QUALITY TRENDS					
		PAST QUALITY TRENDS			
SATISFACTION LEVEL TRENDS		IMPROVED	WORSENERD	NOT CHANGED	TOTAL
IMPROVED	COUNT	13		6	19
	ROW PERCENTAGE	68%	0%	32%	100%
	COLUMN PERCENTAGE	76%	0%	18%	38%
	TOTAL SAMPLE %	26%	0%	12%	38%
WORSENERD	COUNT			2	2
	ROW PERCENTAGE	0%	0%	100%	100%
	COLUMN PERCENTAGE	0%	0%	6%	4%
	TOTAL SAMPLE %	0%	0%	4%	4%
NOT CHANGED	COUNT	4		25	29
	ROW PERCENTAGE	14%	0%	86%	100%
	COLUMN PERCENTAGE	24%	0%	76%	58%
	TOTAL SAMPLE %	8%	0%	50%	58%
	TOTAL	17	0	33	50
	%	34%	0%	66%	100%

68% of customers who said their levels of satisfaction with Air BP improved also said the quality of Air BP products improved. 86% of customers who said their levels of satisfaction with Air BP had not changed also said that the quality of Air BP products had not changed over time. 76% of customers who said the quality of Air BP products had improved also said their level of satisfaction with Air BP had improved. 76% of customers who said the quality of Air BP products had not changed also indicated that their levels of satisfaction with Air BP had not changed.

These findings also show a positive correlation between customer satisfaction and product quality, in the context of the past trends.

4.3.5 CUSTOMER SATISFACTION AND PRODUCT DEMAND

Findings discussed so far are based on what customers said when they were directly asked to rate their levels of satisfaction. Customer satisfaction is a complex concept, which can be interpreted in various ways as discussed in section 4.3.3 (Customer perspective of satisfaction). It is also an abstract concept, which can be observed through certain customer behaviours and actions. Because of these two reasons the researcher decided to verify the ratings given by customers with regard to their satisfaction levels by studying other variables (which can be indications of customer satisfaction), if they have any correlation with customer satisfaction. i.e. product demand and customer loyalty. That is based on the notion that a satisfied customer is likely to buy more products from the company, should there be a need to increase demand, and become loyal to the company.

Customers were asked if they would consider buying from Air BP should their demand of the same products increase or in case they need new products from the oil industry. That was meant to identify whether customers are willing to increase their future demand from Air BP, should there be a need. Findings are discussed in table 4.12.

Table 4.12

CROSS TABULATION OF CUSTOMER SATISFACTION LEVEL BY FUTURE DEMAND				
		FUTURE DEMAND		
SATISFACTION LEVEL		YES	NO	TOTAL
AVERAGE	COUNT	15	1	16
	ROW PERCENTAGE	94%	6%	100%
	COLUMN PERCENTAGE	31%	50%	32%
	TOTAL SAMPLE %	30%	2%	32%
ABOVE AVERAGE	COUNT	28	1	29
	ROW PERCENTAGE	97%	3%	100%
	COLUMN PERCENTAGE	58%	50%	58%
	TOTAL SAMPLE %	56%	2%	58%
DELIGHTED	COUNT	5		5
	ROW PERCENTAGE	100%	0%	100%
	COLUMN PERCENTAGE	10%	0%	10%
	TOTAL SAMPLE %	10%	0%	10%
	TOTAL	48	2	50
	%	96%	4%	100%

96% of customers said they would consider Air BP for future demand and 4% said they wouldn't. When that is viewed in comparison with customer satisfaction levels, all customers who said they are delighted with Air BP also said they would consider Air BP for their future demand. 97% of customers who rated their satisfaction level as above average said they would consider Air BP for their future demand, 94% of customers who rated satisfaction level as average also said they would consider Air BP when their future demand increases. No customers indicated that they are dissatisfied with Air BP, and on the other hand, it is only 4% who said they would not buy from Air BP in case they have to increase their demand in future.

This shows a positive correlation between customer satisfaction and product demand.

As another way of studying correlations between customer satisfaction and product demand, the trends between these two factors over a period of time were studied. Customers were asked to indicate if their satisfaction levels with Air BP had improved, worsened or not changed over a period of time. They were also asked to indicate if their demand of Air BP products had increased, decreased or not changed over a period of time. The findings are discussed in table 4.13.

Table 4.13

CROSS TABULATION OF SATISFACTION TRENDS BY PAST DEMAND TRENDS					
SATISFACTION LEVEL TRENDS		PAST DEMAND TRENDS			TOTAL
		INCREASED	DECREASED	NOT CHANGED	
IMPROVED	COUNT	10		9	19
	ROW PERCENTAGE	53%	0%	47%	100%
	COLUMN PERCENTAGE	45%	0%	33%	38%
	TOTAL SAMPLE %	20%	0%	18%	38%
WORSENERD	COUNT	2			2
	ROW PERCENTAGE	100%	0%	0%	100%
	COLUMN PERCENTAGE	9%	0%	0%	4%
	TOTAL SAMPLE %	4%	0%	0%	4%
NOT CHANGED	COUNT	10	1	18	29
	ROW PERCENTAGE	34%	3%	62%	100%
	COLUMN PERCENTAGE	45%	100%	67%	58%
	TOTAL SAMPLE %	20%	2%	36%	58%
	TOTAL	22	1	27	50
	%	44%	2%	54%	100%

53% of customers who said their satisfaction level improved also said their product demand increased. 62% of customers who said their satisfaction level had not changed also said their demand level had not changed in the past. This is another evidence of a positive correlation between customer satisfaction and product demand. However, it should be noted that there is no causal relationship studied between these two variables since this is not a causation study. A positive correlation between customer satisfaction and product demand does not necessarily mean that customer satisfaction causes demand to increase. It could, together with other factors, increase demand, but that has not been proven in this study. It is a subject of another research.

4.3.6 PRODUCT QUALITY AND PRODUCT DEMAND

Having identified a positive correlation between product quality and customer satisfaction and between customer satisfaction and product demand, one could easily conclude that there is a positive correlation between product quality and product demand based on the idea that “if A is equal to B and B is equal to C it means A is equal to C”.

In this study the researcher found it necessary to study the relationships between product quality and product demand before any conclusions were drawn. Findings are discussed in table 4.14.

Table 4.14

CROSS TABULATION OF AIR BP PRODUCTS QUALITY BY FUTURE DEMAND				
		FUTURE DEMAND INCREASE		
PRODUCT QUALITY		YES	NO	TOTAL
POOR	COUNT	0	0	0
	ROW PERCENTAGE	0%	0%	0%
	COLUMN PERCENTAGE	0%	0%	0%
	TOTAL SAMPLE %	0%	0%	0%
AVERAGE/GOOD	COUNT	17	1	18
	ROW PERCENTAGE	94%	6%	100%
	COLUMN PERCENTAGE	35%	50%	36%
	TOTAL SAMPLE %	34%	2%	36%
BEST	COUNT	31	1	32
	ROW PERCENTAGE	97%	3%	100%
	COLUMN PERCENTAGE	65%	50%	64%
	TOTAL SAMPLE %	62%	2%	64%
	TOTAL	48	2	50
	%	96%	4%	100%

97% of customers who rated Air BP products quality as best also indicated that they would consider to increase their demand in future, should there be a need, and only 3% said they would not. 94% of customers who rated Air BP products quality as average / good also indicated that they would increase their demand from Air BP, should there be a need and only 6% said they would not. This shows a positive correlation between product quality and product demand.

These two variables, product demand and product quality were also studied in the context of the past trends. Customers were asked to indicate if the quality of Air BP products had improved, worsened or not changed over a period of time. They were also asked to indicate if their demand for Air BP products had increased, decreased or not changed in the past. Findings are discussed in table 4.15.

Table 4.15

CROSS TABULATION OF AIR BP PRODUCTS QUALITY TRENDS BY PAST DEMAND					
PRODUCT QUALITY		PAST DEMAND			
		INCREASE	DECREASE	NOT CHANGED	TOTAL
IMPROVED	COUNT	10	0	7	17
	ROW PERCENTAGE	59%	0%	41%	100%
	COLUMN PERCENTAGE	45%	0%	26%	34%
	TOTAL SAMPLE %	20%	0%	14%	34%
WORSENE	COUNT	0	0	0	0
	ROW PERCENTAGE	0%	0%	0%	0%
	COLUMN PERCENTAGE	0%	0%	0%	0%
	TOTAL SAMPLE %	0%	0%	0%	0%
NOT CHANGED	COUNT	12	1	20	33
	ROW PERCENTAGE	36%	3%	61%	100%
	COLUMN PERCENTAGE	55%	100%	74%	66%
	TOTAL SAMPLE %	24%	2%	40%	66%
TOTAL		22	1	27	50
%		44%	2%	54%	100%

59% of customers who said the quality of Air BP products improved indicated that their demand increased. 61% of customers who said the product quality of Air BP products did not change also said their demand did not change. This is another evidence of a positive correlation between product quality and product demand. However, no causation study was done between these two variables. In other words this does not necessarily mean that an improvement in product quality increased the product demand.

4.3.7 CUSTOMER SATISFACTION AND CUSTOMER LOYALTY

Customer loyalty is another variable that was discussed in section 1.3 as relevant to the study of customer satisfaction since it could be an indication of satisfaction. The following discussion looks at the relationship between customer loyalty and customer satisfaction. In order to determine customer loyalty, customers were asked if there are any situations or conditions that could make them change the supplier and they were asked to elaborate on their answers. Based on the customers' answers and reasoning behind those answers, conclusions were drawn as to whether the customer is loyal to Air BP or not. Findings are discussed in table 4.16.

Table 4.16

CROSS TABULATION OF CUSTOMER SATISFACTION LEVEL BY CUSTOMER LOYALTY				
		LOYAL CUSTOMER		
SATISFACTION LEVEL		YES	NO	TOTAL
AVERAGE	COUNT	10	6	16
	ROW PERCENTAGE	63%	38%	100%
	COLUMN PERCENTAGE	24%	67%	32%
	TOTAL SAMPLE %	20%	12%	32%
ABOVE AVERAGE	COUNT	26	3	29
	ROW PERCENTAGE	90%	10%	100%
	COLUMN PERCENTAGE	63%	33%	58%
	TOTAL SAMPLE %	52%	6%	58%
DELIGHTED	COUNT	5	0	5
	ROW PERCENTAGE	100%	0%	100%
	COLUMN PERCENTAGE	12%	0%	10%
	TOTAL SAMPLE %	10%	0%	10%
	TOTAL	41	9	50
	%	82%	18%	100%

82% of customers appeared to be loyal customers of Air BP and 18% is not loyal. 100% of customers who said they are delighted with Air BP appeared to be loyal customers of Air BP. 90% of customers who said the level of their satisfaction with Air BP is above average also appeared to be loyal customers of Air BP and 10% is not loyal. Amongst customers who said their level of satisfaction with Air BP is average, only 62.5% appeared to be loyal customer, another 37.5% is not loyal.

What is noticeable in these findings is that the higher ratings of customer satisfaction levels (Delighted) entailed the higher percentages of loyal customers (100%). The lower ratings of customer satisfaction levels (e.g. average) entailed the lower percentages of loyal customers (63%).

Another way of interpreting these findings is by saying that the lower ratings of satisfaction level were made up of the high percentage of disloyal customers. Out of 9 customers who appeared to be disloyal, 67% of them rated their satisfaction level as average and only 33% said their satisfaction was above average. None of them appeared to be delighted with Air BP. This proves a positive correlation between customer satisfaction and customer loyalty, however there is no cause-effect relationship proven between these two variables in this study.

4.3.8 PRODUCT QUALITY AND CUSTOMER LOYALTY

As customer loyalty is regarded, in this study, as an indication of customer satisfaction it was crucial to determine the extent to which it relates to product quality, since the core of the study is the relationship between product quality and customer satisfaction. Findings are discussed in table 4.17.

Table 4.17

CROSS TABULATION OF AIR BP PRODUCTS QUALITY BY CUSTOMER LOYALTY				
PRODUCT QUALITY		LOYAL CUSTOMER		
		YES	NO	TOTAL
POOR	COUNT	0	0	0
	ROW PERCENTAGE	0%	0%	0%
	COLUMN PERCENTAGE	0%	0%	0%
	TOTAL SAMPLE %	0%	0%	0%
AVERAGE/GOOD	COUNT	16	4	20
	ROW PERCENTAGE	80%	20%	100%
	COLUMN PERCENTAGE	39%	44%	40%
	TOTAL SAMPLE %	32%	8%	40%
BEST	COUNT	25	5	30
	ROW PERCENTAGE	83%	17%	100%
	COLUMN PERCENTAGE	61%	56%	60%
	TOTAL SAMPLE %	50%	10%	60%
	TOTAL	41	9	50
	%	82%	18%	100%

Out of 41 loyal customers, 61% rated Air BP products as best and 39% rated them as good or average. Out of 30 customers who rated Air BP products as best, 83% are loyal customers and 17% are disloyal customers. Out of 20 customers who rated Air BP products as average/good 80% are loyal customers and 20% are disloyal customers. This shows a positive correlation between product quality and customer loyalty.

The higher the rating of quality (best) the higher the percentage of loyal customers (83%), The lower the rating of quality (average), the lower the percentage of loyal customers (80%). The lower the rating of quality (average) the higher the percentage of disloyal customers (20%), the higher the rating of quality (best) the lower the percentage of disloyal customers (17%)

One of the hypotheses listed in section 1.5 which says there is a positive correlation between the product quality and customer loyalty proves to be correct, according to findings discussed in Table 4.17.

4.3.9 CUSTOMER LOYALTY AND FUTURE DEMAND

According to Ross (1993,p.3) superior quality results in customer satisfaction that results in customer loyalty and repeat business (increased demand). The relationships between product quality and customer satisfaction and between customer satisfaction and customer loyalty have been already discussed. In order to prove the validity of the last part of the above quoted statement, the relationship between the two variables namely customer loyalty and product demand was studied. Findings are discussed in table 4.18.

Table 4.18

CROSS TABULATION OF CUSTOMER LOYALTY BY FUTURE DEMAND				
FUTURE DEMAND		LOYAL CUSTOMER		
		YES	NO	TOTAL
YES	COUNT	40	8	48
	ROW PERCENTAGE	83%	17%	100%
	COLUMN PERCENTAGE	98%	89%	96%
	TOTAL SAMPLE %	80%	16%	96%
NO	COUNT	1	1	2
	ROW PERCENTAGE	50%	50%	100%
	COLUMN PERCENTAGE	2%	11%	4%
	TOTAL SAMPLE %	2%	2%	4%
TOTAL		41	9	50
%		82%	18%	100%

Out of 48 customers who indicated that they would consider Air BP for their future demand, 83% are loyal customers of Air BP and 17% are not. Out of 41 customers who are loyal to Air BP, 98% indicated that they would consider Air BP for future demand and only 2% said they would not. This proves a positive correlation between the customer loyalty and demand. In other words, given an opportunity in the future, loyal customers of Air BP are likely to increase demand from Air BP.

In conclusion all hypotheses discussed by the researcher in section 1.5 have been proven to be correct.

4.4 SUMMARY

This chapter has discussed and analysed the findings of the study. No inferential statistics have been used to draw conclusions. Instead the researcher has used tables and charts to describe and interpret findings. Cross tabulation has been used to describe and analyse correlations between variables.

Findings on customer profiles have re-assured the researcher that responses have been received from the targeted sample elements, without distorting the research design in terms of stratification and representation per stratum.

Findings on product quality have shown that product performance followed by product conformance to specification are the two quality dimensions which are mostly valued by customers. However, there are differences between market segments in terms of the most important product quality dimensions. This discussion has also shown that product quality is more important than price and service in the aviation market. However there is a significant number of customers who value these three elements of the market offer equally. When looking at the quality of Air BP products specifically most customers said Air BP offers the best quality of products.

As far as quality control and quality management is concerned this discussion has shown that most customers are aware that Air BP has adopted the latest approach to quality management (Total Quality Management), however the majority of them is not aware of Air BP specific quality control procedures.

This discussion has also shown that most customers related satisfaction with the quality of the product in their view of satisfaction. While showing a number of factors that trigger their satisfaction, product quality was mentioned by the majority of customers as one of those factors. Findings have also shown correlations between customer satisfaction and product demand, product quality and product demand, customer satisfaction and customer loyalty, product quality and customer loyalty and finally customer loyalty and future demand. In conclusion, all hypotheses listed in chapter one have been proven to be correct.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The objective of the study as discussed in section 1.3 was to identify the way in which the product quality relates to customer satisfaction. That includes identifying the impact of product quality on customer satisfaction, in comparison with price and service and studying correlations between product quality, product demand and customer loyalty. The problem lies on the question of whether the emphasis put by Air BP on product quality generates any benefits in terms of customer satisfaction, product demand, customer loyalty and company profitability.

The literature reviewed gave different, but not conflicting definitions to the concept of quality, it highlighted various dimensions of product quality, which have significance in customer satisfaction endeavor, it also gave different quality control and managements systems and also outlined an evolution of the concept of product quality. Having thoroughly defined customer satisfaction, the literature discussed the importance of customer value as a key component in customer satisfaction. Although the researcher could not find any literature that directly discusses relationships between product quality and customer satisfaction, the existing theory revealed inter-relations between the product quality and customer satisfaction through quality management systems and tools that are meant to deliver customer satisfaction.

Findings discussed in chapter four gave answers to the research question and sub-questions. Correlations between various concepts under study were discussed. The following discussion will look at the key features of the study and bind the theory discussed by the existing literature with findings revealed by data collected in this study. It will also revisit hypotheses discussed in chapter one, in order to draw conclusions on those hypotheses. Finally implications of the discovered facts on the business are identified and recommendations made to Air BP.

5.2 PRINCIPAL FEATURES OF THE STUDY

As principal features of the study, discussed below is the aviation market (Air BP customers), the product quality in the aviation market, customer satisfaction in the aviation market and the perception of Air BP by its market. This discussion also highlights the key concepts and theories identified by the study, originating from both the existing literature and data collected.

5.2.1 THE AVIATION MARKET

Section 1.2 of this research gave the background and context of the study. This section discussed the aviation business in general and Air BP specifically. Most of that information came from the secondary sources e.g. Air BP Intranet. Although few things were mentioned about customers in that section, the bulk of information about the market under study was sourced through primary methods and discussed on the findings in chapter 4.3. In addition to the composition and segmentation of the aviation market as discussed in section 4.3.1, discussed below are critical facts revealed by the study about Air BP customers.

About 90% of the market has sufficient knowledge about aviation fuels and oils. According to the business literature it is common to organisational buyers to be knowledgeable about the products they purchase for the organisation, so that purchasing decisions can be taken logically. That applies to the most important organisational products like raw materials, components, supplies (Maintenance, Repairs and Operating items) and installations. Since fuel and oils fall under supplies, aviation customers are no exception to other organisations that make a reasonable effort to gain valuable knowledge about the products they purchase.

Therefore it is recommended that Air BP should put emphasis on the product (and its features) in its marketing communications to customers. Customers who are very well informed about the products they buy usually base their purchasing decisions on the product itself (e.g. quality and features) instead of other elements of the market offer (e.g. price).

The study also showed that about 80% of the market are loyal customers of Air BP. It is less likely that the current Air BP customers will easily consider other suppliers for fuel and oils. Most of them are willing to increase the volumes of the products they purchase from Air BP should their demand increases or should they need to buy new aviation products. Therefore, it is recommended to Air BP to strengthen its market retention strategies in order to secure the current market share or increase it. Although the big percentage of customers who participated in the study are customers who have 1 to 5 years with Air BP, there are customers who have dealt with Air BP for more than twenty years and who are still satisfied with the organisation and its products.

5.2.2 PRODUCT QUALITY IN THE AVIATION MARKET

Business literature introduced various definitions and dimensions of the product quality as discussed in chapter 2 of this dissertation. The study findings indicated that in the aviation market, as well, the concept of quality mean different things to different customers. However, it is interesting to see that although the majority of customers adopted the so called a user-based definition of quality (defined quality in terms of the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs), about 42% of the market adopted the so called a manufacturing-based definition of quality (defined quality as conformance to requirements or freedom from variation)

Looking at the findings on various quality dimensions, product performance appeared to be the most important dimension of quality to the majority of customers. However, when analysing various market segments, it appeared that, that view came from the majority of general aviation customers. The majority of airlines and dealers on the other hand indicated that the product conformance to specification was the most important dimension of quality to them. Commenting on the difference of opinions amongst dealers, airlines and general aviation customers, James Machete (Air BP General Aviation Manager) said: "Airlines and dealers, more specifically Airlines understand that the correct specification will give the required performance – nothing more than what is stipulated by the aircraft manufacturer. You may say that general aviation customers are not as highly technical as Airline customers"

Based on these findings it is recommended that Air BP should emphasise on the performance-enhancing ability of aviation products on the promotions and advertisements, especially to general aviation customers. On the other hand, in addition to other information, technical information about aviation products should be used when marketing to airlines and dealers. That information should be made available to customers in the form of product handbooks, material data sheets etc. However all customers should be made aware that the correct specification is what produces the best performance.

Although other dimensions like features, durability, serviceability etc. did not seem to be important to the aviation market, the literature revealed that conformance to specification is the central dimension of quality that drives performance and other dimensions, in other words all quality dimensions are somehow interrelated.

5.2.3 CUSTOMER SATISFACTION IN THE AVIATION MARKET

The literature reviewed in chapter 2 of this dissertation gave a number of definitions of customer satisfaction. As per the findings in chapter 4.3, aviation customers viewed satisfaction in terms of various product and organisation factors, which affect them. Amongst those factors were business relationship with Air BP, product performance, benefits received from product usage, confidence with Air BP and product quality in relation to the price paid. Although the majority of customers defined their satisfaction in terms of a combination of these factors, customers who put product quality as one of the factors that give the meaning to their satisfaction were 50% of the market.

It is therefore recommended to Air BP to regard product quality as one of the tools for satisfying customers. Other factors listed above should not be ignored since they are also influential on customer satisfaction. Almost all Air BP customers are satisfied with Air BP and there is even a small percentage of delighted customers. Therefore Air BP should not lose sight of the above listed factors, which contribute on customer satisfaction.

5.2.4 THE MARKET PERCEPTION OF AIR BP

In the context of the concepts under study the aviation market perceived Air BP as follows:

The majority of customers regard Air BP as an oil company that supplies the best quality of fuels and oils. As far as the quality management and control systems are concerned, most customers believe that Air BP has adopted the latest approach to quality control, where quality control and management is part of the overall business strategy. In that sense there is no doubt that customers are aware of the efforts put by Air BP in order to maintain the best quality of fuel and oils.

When comparing Air BP with other oil companies 84% regard Air BP as their number one oil company and only 16% regard it as their second choice. However, it should be noted that some customers have no experience of other oil companies, because of geographical locations where they operate and the market concentration level in the aviation market therefore they find it difficult to make comparison. These findings imply that most customers are happy with Air BP products quality. Therefore it is recommended to Air BP not to lower the quality standard, they should continuously improve it.

As far as Air BP's involvement on quality after sale is concerned, 50% of customers are uncertain. They don't know if Air BP makes any efforts to maintain the best quality after delivery or not. Commenting on this, James Machete (General Aviation Manager) said: "Air BP takes amongst other things, product quality as its license to operate and therefore very rarely do we have to recall product from customers due to quality problem. If customers never experienced a product being recalled, they will in most probability neither agree nor disagree with the statement that "Air BP strives to maintain the best quality even after sales".

According to James Machete (Air BP General Aviation Manager), the only reason why half of the market is uncertain is because they have never experienced any quality problems on the products purchased from Air BP, where they could see the extent of Air BP's involvement.

It is recommended to Air BP to be proactive and make customers aware of its efforts to maintain the best product quality even at the customer's premises. That will show that Air BP takes pride of its products and ensures the value delivery to the customer up to the final product usage. That will give Air BP a competitive edge over its competitors.

5.3 HYPOTHESES

In section 1.5 of this dissertation the researcher introduced four hypotheses that would be tested by this study. According to White (2000,p.47), a quantitative research sets up a hypothesis or theory, which is tested and, depending on the results of the test, the hypothesis or theory is either accepted or rejected. The following discussion revisits four hypotheses of the study in order to draw conclusions as to whether they are accepted or rejected in view of the study findings, and recommendations are made, based on the conclusions drawn.

5.3.1 THERE IS A POSITIVE CORRELATION BETWEEN THE PRODUCT QUALITY AND CUSTOMER SATISFACTION IN THE AVIATION MARKET

Section 4.3.4 of this dissertation shows the analysis of relationship between the product quality and customer satisfaction in the aviation market. The analyses indicate that most of the customers who said Air BP supplies the best quality of fuels and oils also indicated that they are highly satisfied with Air BP. Most of the customers who said Air BP supplies the average quality of products also indicated that their satisfaction with Air BP was average. None of the customers viewed Air BP products as of poor quality and none of them indicated a dissatisfaction with Air BP.

These analyses allow the researcher to make the conclusion that there is a positive correlation between the product quality and customer satisfaction. The higher the product quality as perceived by the customer the higher the customer satisfaction, the lower the product quality the lower the customer satisfaction. Based on this conclusion the above mentioned hypothesis is accepted. It is therefore recommended to Air BP to maintain the best quality of products in order to enhance customer satisfaction.

5.3.2 PRODUCT QUALITY IS MORE IMPORTANT THAN PRICE AND SERVICE IN THE AVIATION MARKET OF AIR BP

The analyses of the research findings as discussed in section 4.3.2 show that the majority of Air BP customers value quality more than price and service. The analyses allow the study to reach the conclusion that product quality is more important than price and service to Air BP customers. Therefore the hypothesis discussed by the study is accepted.

However, it is worth mentioning that the difference between the number of customers who value product quality more than price and service and those who regard all three elements (price, quality and service) as equally important is 2%. When James Machete (General Aviation Manager: Air BP) was asked to comment on this, he said, "You cannot separate the three and all are used highly when marketing our products"

It is therefore, recommended to Air BP not to under estimate the importance of price and service to aviation customers, since there is a quite big share of the market that values the three elements equally. In other words while Air BP ensures the supply of best quality fuel and oil, it must also ensure the best service at a competitive price and all this should be incorporated into the overall business and marketing strategies.

5.3.3 THERE IS A POSITIVE CORRELATION BETWEEN THE PRODUCT QUALITY AND PRODUCT DEMAND IN THE AVIATION MARKET OF AIR BP

The research findings revealed that the majority of customers who said Air BP supplies the best quality of products also indicated that they would consider Air BP for their future demand. The majority of customers who said Air BP supplies average quality of products also indicated that they would consider Air BP for their future demand. None of customers actually regarded Air BP products as of poor quality and only two customers indicated that they would not consider Air BP for their future demand.

Based on these findings, the conclusion that there is a positive correlation between the product quality and product demand is reached. The higher the product quality as viewed by the customer, the higher the probability for increased demand. The lower the product quality, the lower the probability for increased demand. In that sense, the hypothesis is accepted. It is therefore recommended to Air BP not to lower the product quality standards. With the high standards of product quality the organisation will retain the current market share and probably increase it in the future. However, for that to happen it is important to make customers aware of the quality standards of Air BP products, so that they will consider future business with Air BP. That means product quality should feature in Air BP marketing efforts.

5.3.4 THERE IS A POSITIVE CORRELATION BETWEEN THE PRODUCT QUALITY AND CUSTOMER LOYALTY IN THE AVIATION MARKET OF AIR BP

Customer loyalty is one of the concept that cannot be easily observed, therefore a conclusion of whether the customer is loyal to Air BP or not was based on the answers given by customers on some questions as explained in section 4.3.7. Findings revealed that 82% of the market is loyal to Air BP. When relating the product quality to customer loyalty, it appeared that most of the loyal customers had indicated that the quality of Air BP products is best. That allows the researcher to draw the conclusion that the higher the product quality the higher the customer loyalty, in that sense the hypothesis is accepted.

In addition to product quality, other concepts that were tested against customer loyalty although there were no hypotheses drawn are customer satisfaction and future demand. According to the literature on customer satisfaction, as discussed in chapter two of this paper, superior quality results in customer satisfaction that results in customer loyalty and repeat business. The findings supported the literature and revealed the positive relationship between the customer loyalty and both customer satisfaction and product demand. Therefore Air BP should continuously improve the quality of products supplied, in order to satisfy its customers, get repeat business and gain customer loyalty.

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1. *Aviation and Allied Business Journal*, October 2002
2. Bhengu, T.A. (1998) *Appropriate Management & Development Framework for Transitional Rural Settlements: A Comparative Study within Ngqolosi Tribal Authority*, University of Natal : Durban

INTERNET

1. www.airbp.bpweb.com / technical & operations / training / induction
2. www.iata.co.za/newsletters/marketing brief

APPENDIX A

Air BP
Durban International Airport
P.O. Box 57735
DURBAN
4029

Cell No. : 083 636 6732
Tel. No. 031-489 2100
Fax: 031-408 1730
E-mail Address: nonhlanhla.bhengu@za.bp.com

05 May 2003

To Whom It may Concern

RESEARCH QUESTIONNAIRE

You are hereby requested to complete the attached questionnaire. This questionnaire has been designed by N.R. Bhengu and approved by the Graduate School of Business, University of Natal, Durban.

The intention of the questionnaire is to collect data in order to complete a study or research on "Product Quality and Customer Satisfaction in the aviation market of the oil industry". This dissertation is a requirement for the fulfillment of the degree of Master of Business Administration.

The information to be provided by this research will benefit the researcher (student), the university and its community at large, by providing useful information and customer views on the subject that is researched. It will therefore enrich their pool of knowledge in business management and related concepts. It will also benefit Air BP and its customers since recommendations will be presented to Air BP as per the findings revealed by the study and conclusions drawn from that information. However, the details of the individuals or companies who completed the questionnaire will remain confidential.

In case you need more information please don't hesitate to contact the researcher on the above-mentioned contact details or her supervisor, her contact details are as follows:

Name: Prof. E. Thomson
Tel No.: 031-204 5045 (w)
E-mail Address: pet@icon.co.za

Please return the questionnaire by latest **30 May 2003**. Your contribution in the study will be highly appreciated.

Yours sincerely

N.R. Bhengu
Student : Master of Business Administration
UNIVERSITY OF NATAL, DURBAN

APPENDIX B

1. CUSTOMER DETAILS

1.1 Contact Details

Company Name :

Department:

Address:

.....

.....

Telephone No.:

Fax No.

Contact Person:

Designation:

1.2 Rate your level of knowledge about aviation Fuel and Oils
(Tick the Appropriate Box)

None	Below Average	Average	Above Average	Expert
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.3 When did you become an Air BP customer? Give the year
.....

1.4 Customer Type
(Tick the Appropriate Box)

(a) Airline	<input type="checkbox"/>	(d) Air BP Dealer	<input type="checkbox"/>
(b) Military	<input type="checkbox"/>	(e) Other (Specify)	
(c) Private Charter	<input type="checkbox"/>		

1.5 Products Purchased
(Tick the Appropriate Box)

(a) Aviation Oil 100	<input type="checkbox"/>	(d) Jet A1	<input type="checkbox"/>
(b) Aero Oil D100	<input type="checkbox"/>	(e) Avgas 100LL	<input type="checkbox"/>
(c) Turbine Oil 2380	<input type="checkbox"/>	(f) Turbine Oil 2197	<input type="checkbox"/>

1.6 Quantity purchased per month in litres (both oils and fuel)
(Tick the Appropriate Box)

(a) Less than 5 000	<input type="checkbox"/>	50 000 – 100 000	<input type="checkbox"/>
(b) 5 000 - 30 000	<input type="checkbox"/>	More than 100 000	<input type="checkbox"/>
(c) 30 000 – 50 000	<input type="checkbox"/>		

2. PRODUCT QUALITY

2.1 In your opinion, how can you define the “acceptable or best quality of aviation fuel or oil”?

.....

.....

.....

.....

.....

2.2 Rate the quality of fuel or oils you buy from Air BP:
(Tick the appropriate box)

Poor ☐

Average ☐

Best ☐

2.3 Rate the following dimensions of fuel or oils quality in the order of importance to you
(Circle the correct answer: 1 = not at all important and 5=Extremely important)

(a) Conformance to the Specification	1	2	3	4	5
(b) Cleanliness (Free of dirt & Water)	1	2	3	4	5
(c) Performance	1	2	3	4	5
(d) Appearance / Colour of fuel / oil	1	2	3	4	5
(e) Packaging or Delivery Method	1	2	3	4	5

2.4 Rate the following attributes in the order of importance to you
(Circle the correct answer: 1 = not at all important and 5=Extremely important)

(a) Price of fuel or oil	1	2	3	4	5
(b) Service given by Air BP	1	2	3	4	5
(c) Quality of fuel or oil	1	2	3	4	5

2.5 The concept of quality control and management has developed into different stages and forms over time.
What do you think is Air BP's approach to Quality Control and Management ?
(Tick the appropriate box)

(a) The Refinery Production Operator is in charge of Quality Control and Management ☐

(b) The Refinery Supervisor or Production Manager is fully responsible for Quality Control ☐

(c) Quality Control / Management is the responsibility of the Regional Quality Assurance Auditor ☐

(d) Quality Control / Management is the responsibility of the Senior Management of Air BP ☐

(e) Quality Control / Management is the component of the overall business management strategy and it is everyone's responsibility in the organisation ☐

2.6 Are you aware of any of the Quality Control Procedures / Systems / Tools used by Air BP?
(Tick the appropriate box)

Yes ☐ No ☐

If yes, Please specify the Procedure/ System / Tool and give your opinion about it

.....
.....
.....

2.7 Do you play any role to maintain or improve the quality of the products purchased from Air BP?

Yes ☐ No ☐

If yes, Please elaborate:

.....
.....
.....
.....
.....

2.8 “Air BP strives to maintain the best quality of fuel and oils even after sales (after fuel delivery to the customer)” Do you agree with this statement?
(Tick the appropriate box)

Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.9 Has the quality of fuel and oils supplied by Air BP:
(Tick the appropriate box)

(a) Improved	(b) Became worse	not changed over time?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3 CUSTOMER SATISFACTION

3.1 What does satisfaction mean to you as Air BP customer?

- (a) Confidence with Air BP and its products

☐
- (b) Benefits received when using Air BP products

☐
- © Business Relationship with Air BP

☐
- (d) Your feeling about fuel or oil performance when used

☐
- (e) Quality of fuel or oil in relation to the price paid

☐
- (f) Other (please specify)

.....
.....

3.2 Rate your level of overall satisfaction with Air BP as your supplier of aviation fuel and oils
(Tick the appropriate box)

- Not Satisfied

☐
- Below Average

☐
- Average

☐
- Above Average

☐
- Delighted

☐

3.3 Rate the following Oil Companies in the order of preference:
(Circle the appropriate number: 1= Not preferred and 5 = Most Preferred)

BP	1	2	3	4	5
Shell	1	2	3	4	5
Engen	1	2	3	4	5
Caltex	1	2	3	4	5
Total	1	2	3	4	5
Exel	1	2	3	4	5

3.4 Which of the following impacts mostly on your overall satisfaction with Air BP as your supplier
(Circle the appropriate number: 1 = no impact and 5 = most impact)

(a) Convenience of fuel or oil acquisition	1	2	3	4	5
(b) Competence of Air BP Employees	1	2	3	4	5
© Credit facilities & other business terms	1	2	3	4	5
(d) The quality of fuel and oil supplied	1	2	3	4	5
(e) Delivery time and methods	1	2	3	4	5
(f) The price of fuel and oil supplied	1	2	3	4	5
(g) Air BP Reputation	1	2	3	4	5
(h) Other (Specify)	1	2	3	4	5

3.5 Rate your level of satisfaction with Air BP Products (Fuel and Oils)
(Tick the appropriate box)

Not Satisfied	Below Average	Average	Above Average	Delighted
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.6 Does any of the following affects your level of satisfaction with Air BP fuel and oils:
(Tick the appropriate box)

	Yes	No
(a) Quality of the Product	<input type="checkbox"/>	<input type="checkbox"/>
(b) Service given by Air BP	<input type="checkbox"/>	<input type="checkbox"/>
(c) Price of Fuel or Oils	<input type="checkbox"/>	<input type="checkbox"/>
(d) Other (Specify)	<input type="checkbox"/>	<input type="checkbox"/>

3.7 If you have chosen “Yes” to any of the choices in question No. 3.6 above, rate the extent to which the following affect your level of satisfaction with Air BP fuel and oils
(Tick the appropriate box)

	High	Medium	Low
(a) Quality of the Product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Service given by Air BP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Price of the Fuel or oils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Other (Specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.8 Has your level of satisfaction with Air BP and its oils and fuels:
(Tick the appropriate box)

(g) Improved	(b) Became Worse	Not changed over time?
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.9 Do you intend buying more new products from Air BP, should your needs change or increase?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

Please explain why:

.....

.....

.....

.....

.....

3.10 Do you intend increasing the quantity of products you buy from Air BP, should your demand increase?

Yes ☐ No ☐

Please explain why:

.....

.....

.....

.....

.....

3.11 Are there any conditions or situations that can make you consider changing your supplier of fuels and oils in the near future?

Yes ☐ No ☐

If yes, please elaborate :

.....

.....

.....

.....

.....

3.12 Did you increase or decrease the quantity of fuel or oil purchased from Air BP in the last 2 years?

(a) Increase: Yes ☐ No ☐

(b) Decrease: Yes ☐ No ☐

If yes, with what percentage approximately?.....

APPENDIX C: DATA MATRIX

1.1	1.4	1.3	1.6	1.5	1.2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
Customer No.	Customer Type	Account age	Size	Products	Knowledge about Fuel	View of Quality	Quality of Air BP Fuel	Quality Dimension	Product Attributes	Air BP's Approach to Quality Control	Knowledge of QC Systems	Involvement on Air BP QC	Air BP on Quality After Sales
1	C	3	S	A/PO	A	P	B	CP	Q	SQM	N	N	A
2	C	17	S	J	A	C	A	A	Q	F	N	N	NAD
3	C	8	BA	A/PO	A	C	B	CP	P	SQM	N	Y	D
4	C	5	BA	A/PO	AA	P	B	CPA	QSP	O	N	N	A
5	C	1	BA	A/PO/TO	AA	A	B	CPA	QSP	SQM	Y	Y	NAD
6	C	1	BA	A/PO	BA	C	A	C	Q	SQM	N	N	NAD
7	C	23	S	A/PO	A	P	A	CP	QSP	SQM	Y	N	NAD
8	C	7	S	J	A	C	A	CP	QSP	SQM	N	N	NAD
9	C	5	S	A	A	F	A	CA	S	SQM	Y	N	D
10	C	26	BA	A/J	AA	C	G	CP	QSP	QA	N	Y	NAD
11	C	2	BA	A	AA	C	B	CP	QP	SQM	N	N	A
12	A	30	B	J	A	P	A	CP	QSP	SQM	N	N	NAD
13	A	50	B	J	E	C	B	C	QSP	SQM	Y	N	SA
14	D	26	BA	A/J	AA	P	B	CA	Q	SQM	Y	Y	A
15	C	3	BA	A/J	AA	C	B	C	Q	SQM	N	N	NAD
16	C	3	BA	J	AA	C	B	C	QS	SQM	N	Y	A
17	D	30	BA	A/PO	AA	C	B	CPA	QSP	SQM	Y	N	A
18	A	1	B	J	A	C	B	CA	QP	SQM	N	N	NAD
19	C	12	BA	A/PO	A	C	A	CP	Q	SQM	N	N	NAD
20	D	5	AA	A	A	C	B	CPA	Q	SQM	N	N	SA
21	C	10	BA	A/J/PO	A	C	A	CPA	QSP	SQM	N	N	A
22	C	4	BA	J/TO	A	C	B	CA	QP	SQM	Y	N	NAD
23	C	14	BA	A/PO	A	P	B	P	Q	SQM	Y	N	A
24	C	6	BA	A	A	C	B	CP	Q	SQM	N	N	NAD
25	C	5	BA	A	A	P	B	P	QSP	SQM	N	N	A
26	C	2	BA	J	A	P	A	CPA	QSP	SQM	N	N	D
27	C	2	BA	PO	A	P	A	C	SP	I	N	N	A
28	C	1	BA	A/PO	A	P	A	PA	QS	QA	N	N	A

1.1	1.4	1.3	1.6	1.5	1.2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8
Customer No.	Customer Type	Account age	Size	Products	Knowledge about Fuel	View of Quality	Quality of Air BP Fuel	Quality Dimension	Product Attributes	Air BP's Approach to Quality Control	Knowledge of QC Systems	Involvement on Air BP QC	Air BP on Quality After Sales
29	C	5	BA	A	A	P	B	CP	Q	SQM	N	Y	A
30	C	3	BA	A	A	P	A	CPA	QSP	SQM	N	N	SA
31	C	11	BA	A	A	C	B	CP	Q	F	N	N	NAD
32	C	3	BA	A/PO	AA	C	B	C	Q	SQM	Y	N	A
33	C	10	BA	A/PO	AA	p	B	CP	QP	QA	N	N	NAD
34	C	2	S	J	N	P	A	CPA	Q	SQM	N	N	NAD
35	C	4	S	A	A	P	A	CP	QS	QA	N	N	NAD
36	C	10	BA	J/TO	A	P	B	CPA	QSP	SQM	N	N	A
37	C	9	BA	J/TO	AA	P	A	C	QP	SQM	Y	N	NAD
38	D	17	AA	A/J/PO	AA	C	B	CPA	QSP	QA	Y	Y	A
39	C	12	S	A	A	P	B	CP	QS	O	N	N	A
40	C	2	BA	A/PO	A	P	A	P	Q	SQM	Y	Y	A
41	C	4	BA	A/PO	A	P	A	P	Q	SQM	Y	Y	NAD
42	C	9	BA	A	AA	P	B	CP	QP	I	N	N	NAD
43	A	7	AA	J	E	C	B	CP	Q	SQM	Y	Y	NAD
44	C	8	BA	A	AA	P	B	CP	Q	QA	N	N	NAD
45	A	12	B	J	E	P	B	CP	QP	SQM	Y	N	NAD
46	C	7	BA	A/J	E	P	A	CPA	SP	O/F/I	N	N	NAD
47	C	6	BA	A/PO	AA	P	B	C	Q	SQM	N	N	NAD
48	C	10	A	J/PO/TO	A	A	B	CPA	QSP	I	Y	N	A
49	D	4	A	A	AA	A	B	CP	QSP	SQM	N	N	NAD
50	C	2	S	PO	A	C	G	CP	QSP	SQM	N	N	A

1.1	2.9	3.1	3.2	3.3	3.4	3.5	3.6	3.8	3.9	3.11	3.12
Customer No.	BP's Quality over time	View of Satisfaction	Satisfaction with Air BP	Air BP Compared to OOC	Factors Impacting on satisfaction	Satisfaction with Air BP Products	Quality, Price or Service Impact on Satisfaction	Customer Satisfaction over time	Future Demand	Customer Loyalty	Demand Past trends
1	NC	C	AA		1 Q	AA		NC	Y	Y	I
2	I	CS	A		2 Q	A	PQS	I	Y	Y	I
3	NC	QCR	A		1 C/BT/P	A	S	NC	Y	N	I
4	NC	QCB	A		1 BT	A	PQS	NC	Y	N	NC
5	NC	Q	AA		1 Q/S/P	AA	PQS	I	Y	N	NC
6	NC	Q	AA		1 C/BT	AA	PQ	NC	Y	Y	NC
7	I	QC	A		1 Q/C/BT/P/S	A	PQS	I	Y	Y	NC
8	NC	C	A		1 Q/C/BT/S	A	QS	NC	Y	Y	NC
9	NC	QCBRP	AA		1 C/BT/S/O	AA	S	NC	Y	Y	NC
10	NC	QR	A		2 Q/BT	AA	S	NC	Y	N	D
11	I	QCR	AA		1 Q/C/P	AA	Q	I	Y	Y	I
12	NC	C	D		1 C/BT/S/P/R	D	PS	NC	Y	Y	I
13	I	CBR	AA		Q/C/BT/P/S/ 1 R	AA	PS	I	Y	Y	I
14	NC	C	AA		1 Q/BT/R	AA	QS	I	Y	Y	I
15	I	C	AA		1 Q/BT	AA	Q	I	N	Y	NC
16	NC	QCP	D		1 C/S	AA	QS	NC	Y	Y	NC
17	NC	Q	AA		Q/C/BT/P/S/ 1 R	AA	PQS	I	Y	Y	NC
18	I	R	AA		1 Q/BT/P/S	AA	P	I	Y	Y	I
19	NC	Q	A		1 Q	AA	Q	NC	Y	Y	I
20	I	R	D		2 Q/C/S/R	D	PQS	I	Y	Y	I
21	NC	QCBRP	A		1 C/P/S	A	PQS	NC	Y	Y	NC
22	NC	QCR	AA		1 S	A	Q	I	Y	Y	NC
23	NC	Q	AA		1 Q	AA	Q	NC	Y	Y	I
24	NC	C	D		1 Q/P/S	AA	QS	I	Y	Y	I
25	NC	P	AA		2 C/S	A	QS	NC	Y	Y	NC
26	I	QCBRP	A		2 Q/C/BT/P/S	A	PQS	I	Y	Y	
27	I	Q	A		1 Q	A	PQS	NC	Y	Y	NC
28	I	C	AA		1 BT/S/P	AA	PQS	I	Y	Y	I

1.1	2.9	3.1	3.2	3.3	3.4	3.5	3.6	3.8	3.9	3.11	3.12
Customer No.	BP's Quality over time	View of Satisfaction	Satisfaction with Air BP	Air BP Compared to OOC	Factors impacting on satisfaction	Satisfaction with Air BP Products	Quality, Price or Service impact on Satisfaction	Customer Satisfaction over time	Future Demand	Customer Loyalty	Demand Past trends
29 I		P	AA	1	Q/BT/S	AA	Q	I	Y	Y	I
30 I		Q	A	1	Q	AA	PQ	I	Y	N	NC
31 NC		P	AA	1	Q/P	AA	Q	NC	Y	Y	NC
32 NC		Q	AA	1	Q	AA	Q	NC	Y	Y	NC
33 NC		QR	AA	1	Q/P	AA	Q	NC	Y	Y	NC
34 NC		C	AA	1	C/BT/R	AA	Q	NC	Y	Y	I
35 NC		P	A	2	Q	A	QS	NC	N	N	NC
36 NC		QCBRP	AA	1	Q/C/BT	AA	PQS	NC	Y	N	NC
37 I		QC	AA	1	Q/C/BT/P	AA	PQ	NC	Y	Y	I
38 NC		C	AA	1	Q/C/P/S/R	AA	PQS	I	Y	Y	NC
39 I		C	D	1	Q/C/R	AA	QS	I	Y	Y	I
40 I		Q	A	1	Q/P	A	PQ	NC	Y	Y	I
41 NC		Q	A	1	Q/BT	A	Q	NC	Y	Y	NC
42 NC		QR	AA	1	Q/BT	AA	Q	NC	Y	Y	I
43 I		QC	AA	1	QP	AA	Q	NC	Y	Y	NC
44 NC		QR	AA	1	QP	A	Q	NC	Y	Y	I
45 NC		QP	AA	1	Q	AA	QP	NC	Y	Y	NC
46 NC		CR	A	2	C/P/S/R	A	Q	W	Y	N	I
47 NC		QC	AA	1	QP	AA	QP	NC	Y	Y	NC
48 NC		C	AA	1	Q/C/P/S/R	AA	Q	NC	Y	N	NC
49 NC		QCBR	A	1	Q/P/S	AA	PS	W	Y	Y	I
50 I		C	AA	2	Q/C/P/S/R	AA	PQS	I	Y	Y	NC

APPENDIX D

DEFINITION OF CODES

QUESTIONNAIRE REFERENCE	1.2	1.3	1.4	1.5	1.6	2.1	2.2
INFORMATION REQUIRED	KNOWLEDGE ABOUT AIR BP PRODUCTS	CUSTOMER EXPERIENCE WITH AIR BP IN YEARS (ACCOUNT AGE)	CUSTOMER TYPE	PRODUCTS PURCHASED	CUSTOMER SIZE	VIEW OF QUALITY	QUALITY OF AIR BP PRODUCTS
CHOICES GIVEN	N: None	Number of years put in numerical form	A: Airline	J: Jet A1	S: Small	C: Conformance to Specification	P: Poor
	BA: Below Av.		C: General Aviation	A: Avgas	BA: Below Average	P: Performance	A: Average
	A: Average		D: Dealer	TO: Turbo Oils	A: Average	F: Features	G: Good
	AA: Above Av.			PO: Piston Oils	AA: Above Average	A: Aesthetic	B: Best
	E: Expert				B: Big		

2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.1
QUALITY DIMENSIONS	IMPORTANT PRODUCT ATTRIBUTES	AIR BP'S APPROACH TO QUALITY CONTROL	CUSTOMER AWARENESS OF AIR BP QUALITY CONTROL PROCEDURES	CUSTOMER INVOLVEMENT IN AIR BP QUALITY CONTROL	AIR BP'S INVOLVEMENT IN QUALITY AFTER SALES	AIR BP'S QUALITY OVERTIME	CUSTOMER VIEW OF SATISFACTION
C: Conformance to Specification	Q: Quality	O: Operator Approach	Y: Yes	Y: Yes	SA: Strongly Agree	I: Improved	C: Confidence with Air BP
F: Features	S: Service	F: Foreman Approach	N: No	N: No	A: Agree	W: worsened	B: Benefits for using Air BP
P: Performance	P: Price	QA: Quality Assurance			NAD: Neither Agree Nor Disagree	NC: Not Changed	R: Business Relationship with Air BP
A: Aesthetic		I: Inspection			D: Disagree		P: Product Performance
		SQM: Strategic Quality Management			SD: Strongly Disagree		Q: Quality of product in relation to price paid

3.2	3.3	3.4	3.5	3.6 & 3.7	3.8	3.9 & 3.10	3.11	3.12
CUSTOMER SATISFACTION WITH AIR BP AS A COMPANY	AIR BP RATED WITH OTHER OIL COMPANIES	FACTORS IMPACTING MOST ON CUSTOMER SATISFACTION	CUSTOMER SATISFACTION WITH AIR BP PRODUCTS	PRODUCT ATTRIBUTES IMPACT ON CUSTOMER SATISFACTION	LEVEL OF SATISFACTION WITH AIR BP PRODUCTS OVER TIME	POSSIBILITY OF FUTURE DEMAND INCREASE	LOYAL CUSTOMER	PAST DEMAND TRENDS
NS: Not Satisfied	1- First choice	C: Convenience of product acquisition	NS: Not Satisfied	Q: Quality	I: Improved	Y: Yes	Y: Yes	I: Increased
BA: Below Average	2- 2nd choice	BT: Credit facilities & other Business Terms	BA: Below Average	P: Price	W: Worsened	N: No	N: No	D: Decreased
A: Average		Q: Quality	A: Average	S: Service	NC: Not Changed			NC: Not Changed
AA: Above Average		S: Service	AA: Above Average					
D: Delighted		R: Air BP Reputation	D: Delighted					
		P: Price						