

**PROJECT**

**AN EVALUATION OF OXYGEN GAS DISTRIBUTION CHANNEL  
STRATEGIES IN ZIMBABWE: A CASE OF VERIFY ENGINEERING**

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## DECLARATION

I, .....do hereby declare that this dissertation is a result of my own investigation and research, except to the extent indicated in the Acknowledgements, References and comments included in the body of the report, and that it has not been submitted in part or in full for any other degree to any other university.

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Student Signature

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Date

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Finally, my profound gratitude also goes to the Graduate school of Management lecturers and staff. May God bless you all.

## **ABSTRACT**

The general conclusion from literature on distribution channel strategies which is focusing mainly on logistics activities showed that logistics strategies have become an important and necessary concept in today's business world., and due to the importance of repeat business, it was particularly important for any kind of business especially in the oxygen sector, to focus on longer-term relationships with its customers through a reputable channel of distribution. However, this literature has been confined to other parts of the world; hence the aim of this research was to attempt to fill the research gap by evaluating oxygen gas distribution channel strategies in Zimbabwe. The research information and its application were aimed at benefiting the corporate world, the country and academic community. This research was based on a single case study design of Verify Engineering (Pvt) Ltd (VE).

Empirical data was obtained through face-to-face interviews with senior managers at the strategic and operational levels of the organization. The respondents were the Chief Executive Officer, General Manager Finance & Administration, Logistics & Supply Chain Manager, the Distribution Officer and the Procurement Managers of top five oxygen customers'. Unstructured questions were used for gathering in-depth information from the respondents. A qualitative research philosophy was used and the data gathered was analysed through Data Displays in the form of content analytic summary tables.

The study found that distribution channel strategies had major impact on the organizational performance at VE. The organization was not benefiting on the distribution channel strategy it had adopted because the distribution company was controlling the product price VE was producing, also the importance of VE oxygen product in the market was compromised by the distributor since the distributor was not giving it full attention, also there were issues of product demand requirement being unsatisfactory, time scheduling conflict and product variances due to coordination problems with the distribution company. In view of these findings this study recommends that VE and the distribution company management personnel to constantly meet and address problems emanating, and also a recommendation was made for VE to adopt direct marking strategy since most oxygen consumers were not satisfied with present distribution company VE was using.

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## **LIST OF ABBREVIATIONS**

CEO	Chief Executive Officer
GMFA	General Manager Finance & Administration
HQ	Head Quarters
MBA	Masters in Business Administration
PESTEL	Political, Economic, Social, Technological, Ecological, Legal
ROI	Return on Investment
SWOT	Strengths, Weaknesses, Opportunities, Threats
VE	Verify Engineering (PVT) Ltd
LOX	Liquid Oxygen
ENR	Empress Nickel Refinery
L&S	Logistics and Supply Chain
ASU	Air Separation Unit
DO	Distribution Officer

# CHAPTER 1: INTRODUCTION AND BACKGROUND

## 1.0 INTRODUCTION

In today's challenging competition in the consumer goods, the manufacturers strive for their products to reach final customers before they turn their heads to the rival's ones. This challenge is influenced by for example globalization, deregulation, new business comers and convergence of the industries.

Retailing is a significant part of economic activities of both developed and developing countries' economies, with wholesaling and retailing value-added. The major goal of the retail industry or retail merchandising system is to influence possible consumers to purchase a particular products assortment at a particular retail store (Risch, 1991). Retail activities turn out to be one of the significant themes playing the role in supply chain management and logistics.

Convenience store is also one part of the store format in retailing business and the word convenience means the least amount level of the financial, physical, and mental expenditure required to conquer the friction of time, space and pecuniary loss inherent in any retail transaction (Risch, 1991). The product assortment consists mainly of goods for daily use and it is offered to customer on a relatively small sale area. Convenience stores need a flexible system with the ability to deliver products rapidly with small volume to diverse locations in an efficient manner (Ishikawa & Nejo, 1998). (<http://www.diva-portal.org>) visited 16 March 2012.

More and more organizations worldwide want to develop products for global markets. At the same time, they need to make their products available in the global market to be competitive. One of today's trends to solve this problem of making products in the global market is by involving logistics to manage complex distribution requirements. Organizations have developed strategic alliances with companies all over the world to manage their logistics operations network. ([www.chrobinson.com](http://www.chrobinson.com)) visited 6 May 2012.

Logistics is all about getting the right product to the right place at the right time to the right person for the least cost. There is no value in a product or service until it is in the hands of the customer (Gottorna & Trost 1990).

Today's logistics service providers face multiple challenges on multiple fronts, including intense competition, price-conscious consumers, time-conscious consumers, and pressure to reduce costs and boost efficiency. Material handling, distribution and transportation management are essential for these logistic firms to meet up with the challenges in their business environment. Material handling is moving the right materials to the right place, at the right amount, in sequence, and in the right condition. Its primary goal is to reduce cost (Meyers, 1993). Effective supply chain Management requires careful coordination of the inbound system of logistics which is frequently, referred to as materials management and outbound system which is usually called physical distribution (Coyle et al., 2003). A major problem with material handling is the lack of integration between the inbound and outbound systems which results in inefficiencies especially with respect to inventory accumulation and lack of appropriate customer service levels. Information flow is often the key ingredient to the coordination of inbound and outbound logistics systems (Coyle et al., 2003).

Physical distribution management is the aspect of the overall logistics concerned with the processing and delivery of customer orders. Physical distribution is primarily concerned with the physical fulfilment activities (Bowersox & Closs, 1986). Effective management of materials, distribution, information flow, and transportation is very in the reduction of logistics cost and the provision of efficient logistics services. Transportation involves moving of goods from one place to another and it assumes all modes from air, land, sea, and railroad. Management of transport involves optimizing freight into multiple facilities and tracking the freight through the supply chain (Coyle et al., 2003)

Terminals are facilities where load units are shifted between links in a transportation network (Lumsden, 2006). Terminals serve the following function; break-bulk, consolidation, Shipment service, Vehicle service, interchange, and pick-up and delivery service (Coyle et al., 2003). The logistics activities mentioned above will form a basis for this study.

Logistics significantly impacts a society's standard of living. Almost every sphere of human activity is affected, directly or indirectly, by the logistics process. How often have you gone to a retail store to buy an advertised product and not found what you wanted on the shelf? Have you ever placed an order through the mail,

over the telephone, or in person, and received the wrong merchandise? Have you ever shipped a package to a customer in the same city or across the country and had the item arrived damaged, or perhaps not arrive at all? Have suppliers in your just-in-time system ever let you down, causing you to curtail or shut down manufacturing operations? When was the last time you were promised delivery of an item within few days and it took a few weeks? We cannot think of the role logistics plays in our lives until a problem occurs (Stock & Lambert, 1987).

The available literature in distribution and logistics is referring to other countries mainly in North America, and is on other industries. There is no literature and if there is, it does not relate to the oxygen gas industry in Zimbabwe. The researcher aims to fill in the research gap by critically evaluating the developments in distribution or logistics strategies particularly in the oxygen gas industry in Zimbabwe. The researcher seeks to establish the applicability of distribution strategies in the oxygen gas industry in Zimbabwe. The researcher will first establish the existence of distribution channel strategies in the oxygen gas industry and to what extent is it being practiced. The research shall be based on a case study of Verify Engineering (Pvt.) Ltd, an oxygen gas manufacturing company in Zimbabwe.

## **1.1 BACKGROUND**

The conditions for conducting business in the retailing industry are changing rapidly, as they are in many other industries. Driven by a complex mix of technological, social, economic and political factors, mergers, acquisitions and internal restructuring have reshaped the competitive environment of retailing industry (Hingley *et al.*, 2006). Changes have occurred in various areas of the business and, in almost all the cases, they have involved an increase in concentration. For most consumers, retailers represent the final and therefore the most visible point of supply chain. Consequently, development at this level consequently has a direct effect on suppliers and consumer choices (Dobson *et al.*, 2003).

### 1.1.1 PESTEL model

**Political** factors are how and to what degree a government intervenes in the economy. Specifically, political factors include areas such as tax policy, labour law, environmental law, trade restrictions, tariffs, and political stability. Political factors may also include goods and services which the government wants to provide or be provided (merit goods) and those that the government does not want to be provided (demerit goods or merit bad). Furthermore, governments have great influence on the health, education, and infrastructure of a nation. In Zimbabwe the government has a strong influence in private business operations with 51% local ownership indigenisation policy already passed, since its sounds to be a great political decision some adverse influence has spanned the growth and closure of foreign direct investments into the country and has affected business growth including the retailing distribution channel growth. (<http://www.puremoneymaking.net>), visited 9 March 2012.

**Economic** factors include economic growth, interest rates, exchange rates and the inflation rate. These factors have major impacts on how businesses operate and make decisions. For example, interest rates affect a firm's cost of capital and therefore to what extent a business grows and expands. Exchange rates affect the costs of exporting goods and the supply and price of imported goods in an economy. In an effort to combat inflation and foster economic growth the Zimbabwean Dollar was suspended indefinitely on 12 April 2009. Zimbabwe now allows trade in the United States Dollar and various other currencies such as the South African rand, euro, Sterling, and Botswana pula. Economic growth remains on course, driven by robust performance of agriculture and mining, riding on booming international commodity prices. Data from the 2010/2011 Second Round Crop & Livestock Assessment Report indicates improvements in tobacco output. The above output improvement in tobacco output together with other slight off setting revisions of value added of other key sectors such as mining, manufacturing, tourism and communication indicates that the GDP growth projection of 9.3% can be achieved by the end of 2012. (<http://www.puremoneymaking.net>), visited 9 March 2012.

**Social** factors include the cultural aspects and include health consciousness, population growth rate, age distribution, career attitudes and emphasis on safety. Trends in social factors affect the demand for a company's products and how that company operates. For example, an aging population may imply a smaller and less-willing workforce (thus increasing the cost of labour). Furthermore, companies may change various management strategies to adapt to these social trends (such as recruiting older workers). Life expectancy at birth for males in Zimbabwe has dramatically declined since 1990 from 60 to 42 years, among the lowest in the world. The amount of time a Zimbabwean citizen is expected to live healthily from birth is 39 years. Concurrently, the infant mortality rate has climbed from 53 to 81 deaths per 1,000 live births in the same period. As of 2009, 1.2 million Zimbabweans live with HIV. Given the statistics social factors have a great impact in the growth and development of business environment, employee turnover in oxygen industry is most likely due to early retirements caused by HIV prevalent in Zimbabwean. (<http://www.puremoneymaking.net>), visited 9 March 2012.

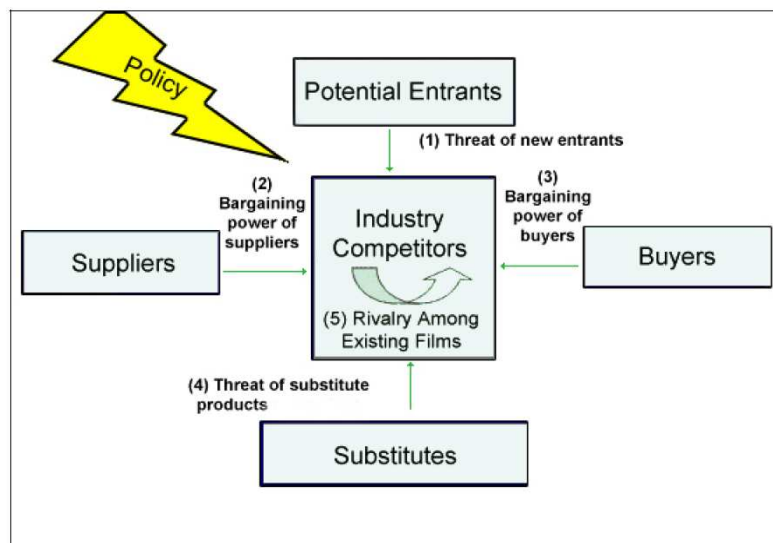
**Technological** factors include technological aspects such as R&D activity, automation, technology incentives and the rate of technological change. They can determine barriers to entry, minimum efficient production level and influence outsourcing decisions. Furthermore, technological shifts can affect costs, quality, and lead to innovation. Current equipment being used in oxygen industry in Zimbabwe is out-dated compared to the ones used in developed countries, cost and knowledge associated on improving the technology needs more investment in research and development. (<http://www.puremoneymaking.net>), visited 9 March 2012.

**Environmental** factors include ecological and environmental aspects such as weather, climate, and climate change, which may especially affect industries such as tourism, farming, and insurance. Furthermore, growing awareness of the potential impacts of climate change is affecting how companies operate and the products they offer, both creating new markets and diminishing or destroying existing ones. In oxygen industry they are few environmental effects caused, although environmental impact assessment is a pre requisite. (<http://www.puremoneymaking.net>), visited 9 March 2012.

**Legal** factors include discrimination law, consumer law, antitrust law, employment law, and health and safety law. These factors can affect how a company operates, its costs, and the demand for its products. In oxygen manufacturing industry general legal issues might arise due to quality, employee labour issues. (<http://www.puremoneymaking.net>), visited 9 March 2012.

### 1.1.2 Industrial Analysis

The Five Forces Model (developed by Dr. Michael Porter of Harvard University) serves as a framework for examining competition that transcends industries, particular technologies, or management approaches. The underlying fundamentals of competition go beyond the specific ways individual companies go about competing (i.e. Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis; the 4P's of marketing: product, price, place, promotion).The underpinning of this framework is the analysis of the five competitive forces acting upon an industry and their strategic implications (Fig. 1)



**Fig. 1.1 Five Forces Model**

The Five Forces Model looks at five areas of competition in the marketplace:

- Threat of new entrants (Barriers to entry)
- Threat of substitute products or services
- Bargaining power of buyers
- Bargaining power of suppliers
- Rivalry among existing firms

In addition to the five forces, a sixth force, governmental policies is added to Porter's model because of its influence on all the other forces.

By understanding the competitive forces within the red cedar industry, participants in the market can develop successful strategies to influence the forces for their own benefit

### **Threat of new competition**

Profitable markets that yield high returns will attract new firms. This results in many new entrants, which eventually will decrease profitability for all firms in the industry. Unless the entry of new firms can be blocked by incumbents, the abnormal profit rate will tend towards zero (perfect competition). In Zimbabwe oxygen industry is dominated by BOC gases, they are the established manufacturer and distributor of Oxygen gas in the country although given other players like Steel Makers in Kwekwe, Air Liquid from South Africa and Milkshame which is a Chinese Zimbabwean company, they also produce oxygen but are yet still small and lack required capacity and expertise to service major customer requirements, given the technology required to produce oxygen; it is difficult for most companies to enter the market due to high initial capital cost requirement and access to its distribution channel.

### **Threat of substitute products or services**

The existence of products outside of the realm of the common product boundaries increases the propensity of customers to switch to alternatives. Note that this should not be confused with competitors' similar products but entirely different ones instead. For example, Pepsi is not considered a substitute for Coke but water, tea, coffee, and milk are. In the oxygen industry for example in Medicals they is no substitute for the product which makes threat of substitute products or services minimum which in turn makes it a more viable investment.

### **Bargaining power of customers (buyers)**

The bargaining power of customers is also described as the market of outputs: the ability of customers to put the firm under pressure, which also affects the customer's sensitivity to price changes.

The main oxygen provider company provide its customers with comprehensive support services and technical equipment, they also produces medical gas solutions; it has oxygen tanks at Zimbabwe major Hospitals that include Parirenyatwa, Harare Hospitals and many more, it is dedicated to providing medical gas products and services that enable healthcare professionals to provide optimal therapy for their patients in hospitals, clinics, intermediate care centres, emergency centres and patients' homes. For VE the bargaining power of customers will be very high due to high logistics costs needed to compete in the market

### **Bargaining power of suppliers**

The bargaining power of suppliers is also described as the market of inputs. Suppliers of raw materials, components, labour, and services (such as expertise) to the firm can be a source of power over the firm, when there are few substitutes. Suppliers may refuse to work with the firm, or, e.g., charge excessively high prices for unique resources.

Atmospheric gases oxygen, nitrogen and argon are available from nature at no cost; the major costs or bargaining challenges are associated distribution costs from suppliers of equipment and services used to produce oxygen.

### **Intensity of competitive rivalry**

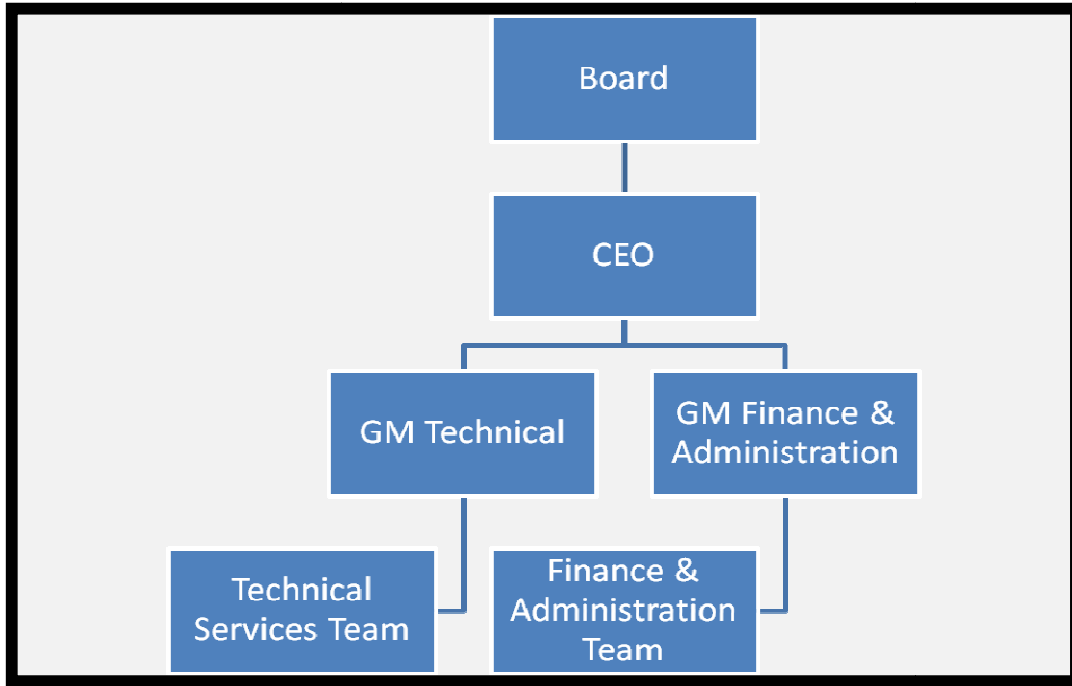
For most industries, the intensity of competitive rivalry is the major determinant of the competitiveness of the industry.

In oxygen industry they are few companies in Zimbabwe particularly there is only BOC gases which is the only major giant player in the market, taking some of its market share may result in a major battle.

## **1.2 VERIFY ENGINEERING**

Verify Engineering (Pvt.) Ltd (VE) was formed in June 2004 and commenced its operations in April 2005. Its mission is to manufacture and distribute oxygen gas to meet the present oxygen market demand in Zimbabwe.

VE was registered in accordance with the Companies Act of Zimbabwe in June 2004. It is a wholly Zimbabwean owned company. See Figure 1.2 which shows VE company structure.



**Figure 1.2 Verify Engineering (Pvt.) Ltd organogram**

**Source: verify company manual (2006)**

As highlighted from the company structure, VE has an eight member board representation from people with different skills and experience in various industries, they is a high degree of cooperate governance practice which result in a more professional way of running the business. To get more information in the internal operations of the company a detailed SWOT analysis was conducted.

### **1.2.1 SWOT Analysis of VE**

#### **Strength**

The Company is equipped with three large ASU plant capable of producing 34 and 16 tonnes of Gaseous and Liquid oxygen per day respectively enough to meet the growing demand in the market. The main raw material required for the process is Air and it comes at no cost. The company is also using proven and tested technology in process. The staffs employed are highly skilled and highly experienced; they have got in-depth knowledge vast industries that include insight to the oxygen production process.

### **Weaknesses**

Limited distribution channel network, marketing and distribution of the product and even pricing are not determined internally.

There isn't a marketing department and even staff with a marketing experience and knowledge.

The company is experiencing delays in accessing Investment required to buy spares and other requirements for its operations

### **Opportunities**

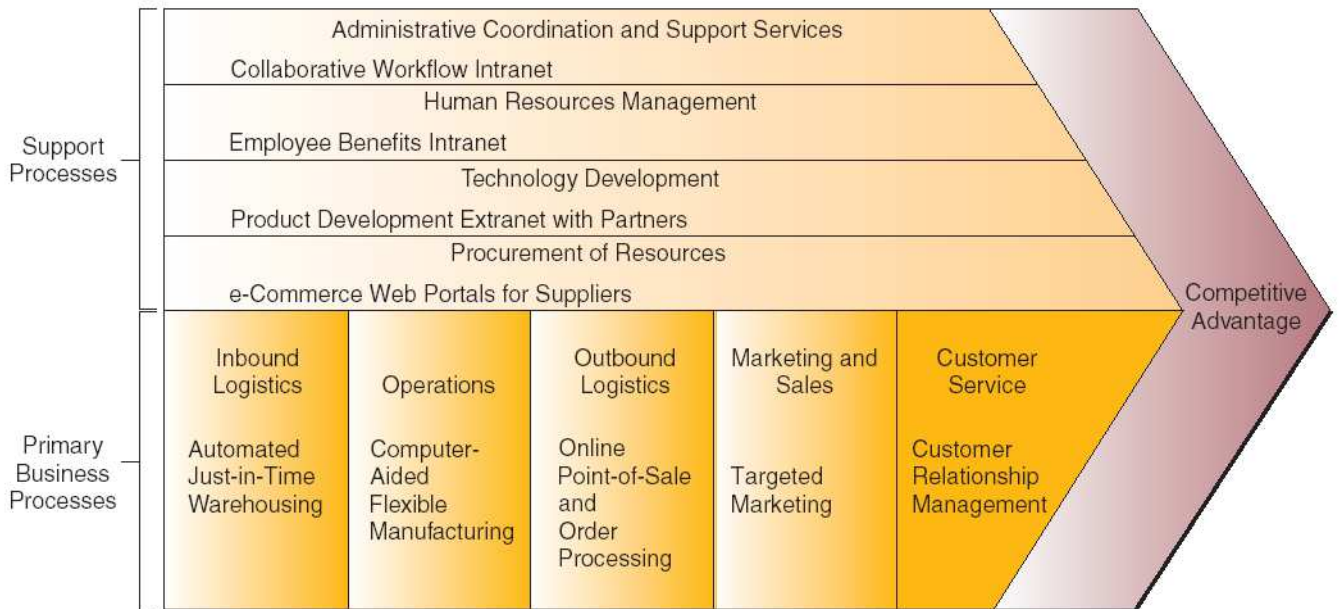
There is potential for development of downstream industries. It will improve local technology and industry capacity building in the following sectors i.e. medical, mining and manufacturing.

### **Threats**

There is a major threat from rival company which has more experience in the industry. Power outage challenges facing the country is hindering progress hence increased cost of production. They will be limited investor confidence due to government policies. Huge turnover of skilled manpower retards production. Furthermore, just like any other company in any industry, HIV/AIDS remains a major threat to the company. The high infection rate had caused low labour productivity, high employee turnover and absenteeism.

### **1.2.2 Value Chain of Verify Engineering**

According to Porter (1985), value chain is a tool for identifying ways to create more customer value. The value chain identifies nine strategically relevant activities (five primary and four support activities) that create value and cost in a specific business. The goal of these activities is to offer the customer a level of value that exceeds the cost of the activities, thereby resulting in a profit margin. The figure 1.3 below shows the generic value chain diagram;



**Figure 1.3 Value Chain**

**Source: Adapted from Porter (1985)**

**Primary Activities**

- Inbound logistics: involves receiving and warehousing of raw materials and their distribution to manufacturing as they are required. At VE the major raw materials is air around us, it comes at no cost, the distribution challenges comes in the form of spares and services which are mostly foreign imports.
- Operations: the process of transforming inputs into finished products and services. At VE it involves separating air into different gases until we get our major product which is oxygen.
- Outbound logistics: involves the warehousing and distribution of finished goods. At VE finished product are stored in the batch tanks awaiting delivery to the customers. This is done by the road and railroad.
- Marketing and Sales: involves the identification of customer needs and the generation of sales. This is done by the distributor using his own resource.

Servicing: this is the support of customers after the products and services are sold to them. It usually involves making follow up to clients and maintains the relationship that last a long time. At VE all these functions are subcontracted to the distributor

## **Secondary Activities**

- Firm infrastructure: this covers the costs of general management, planning, finance, accounting, legal, and government affairs.
- Human Resources: entails employee recruiting, hiring, training development, and compensation

Technology development: refers to the technologies to support value creating activities like use of Logistics and tracking systems to manage the distribution system.

- Procurement: involves purchasing inputs such as raw materials, supplies and equipment. At VE this function falls under the logistics function.

### **1.3 PROBLEM STATEMENT**

As cited in Section 1.1 above, literature says that Logistics is all about getting the right product to the right place at the right time at minimum cost and maximum service delivery. However, when logistics managers neglects the management of the logistics functions of inventory control, transportation, warehousing and storage, packaging, material handling, order fulfilment, demand forecasting, purchasing, customer service levels, return goods handling, plant and warehouse site location, parts and service support, and salvage and scrap disposal its costs and operations invariably get out of hand. On the other hand effective management of these factors enables a logistic firm to meet or exceed customers' expectations of product availability while maximizing net profits or minimizing costs.

The background to the Case Study (Section 1.3) shows that VE despite the overwhelming importance of the logistics functions mentioned above to the success of the businesses, VE still is unable to manage these factors, this result in an adverse effect for the company. Such effects include unnecessary increase in costs, operational inefficiencies, loss of customers and unprofitable investments all of which might lead to the winding up of the business.

This study is, therefore, aimed at evaluating VE distribution system with a view of making recommendations on how the company can benefit from Logistics strategy in line with literature.

## **1.4 RESEARCH OBJECTIVES**

### **Prime objective**

To evaluate distribution channel strategies used by VE

### **Sub objectives**

- To establish how VE distributes product
- To identify specific channel strategies employed
- To ascertain obstacles in implementation of appropriate channel strategies
- To recommend distribution channel strategies VE must adopt

### **Questions**

- What channel distribution strategy is VE employing to distribute its product?
- What distribution channel challenges is VE currently facing
- What distribution channel strategy can VE employ
- What are the expected benefits of recommended strategy

## **1.5 JUSTIFICATION OF RESEARCH**

Most literature on distribution strategy to date relates to mostly Western and Eastern cultural context such as North America, Europe, Australia and Asia. Not much emphasis has been placed on Africa. Furthermore no studies could be located that specifically examined logistics strategies in the oxygen industry's context. This study will therefore, try to fill in the information gap by focusing on Logistics strategies in the oxygen industry in Zimbabwe. Logistics strategies have become an important and necessary concept in today's business world. Due to the importance of repeat business, it is particularly important for any kind of business especially in the oxygen sector, to focus on longer-term relationships with its customers through a reputable channel of distribution. The study will therefore provide literature that will later be referred to in the oxygen Industry.

The study will benefit Verify Engineering (Pvt.) Ltd company as its recommendations, if adopted can help the company achieve a competitive advantage on the market place which can be sustained in the long run. This will enable the company to increase its market share through formulation of good logistics strategy method which will transform into profitability, hence will help the company to invest in its future expansion in and around the region.

Furthermore, the study will benefit the academia as it will provide an insight of Distribution Channel Strategies in the Oxygen Industry in Zimbabwe. This will be additional literature from that of other industries in the world that have been sighted by various authors.

Lastly, this study will help the researcher sharpen his skills and knowledge in the field of marketing. This will also make him feel proud as it is an opportunity for the researcher to put what the theory has said into practice.

## **1.6 SCOPE OF THE RESEARCH**

The research is going to focus on Distribution Channel Strategies in the oxygen industry in Zimbabwe. The major company in the industry is BOC gases. The researcher is going to conduct the research using a single case study on Verify Engineering (Pvt.) Ltd Company. The research is going to be carried out using some information from BOC gases as a retailer which will be Verify Engineering (Pvt.) Ltd main distributor partner. The research is going to be done in 3 months.

## **1.7 STRUCTURE OF THE STUDY**

### **Chapter 1.0**

This chapter covers the introduction of the research. The chapter also gives a background of the study, the problem statement and of the background of the organisation being used as the case study. The objectives and justifications of the research are also indicated in this chapter.

### **.Chapter 2.0**

This chapter focuses on the literature review. It outlines some of the work that has been carried out by other researchers and the theory on the subject matter.

### **Chapter 3.0**

The methodology that will be used in carrying out the research is outlined in this chapter. This chapter outlines the analytical framework of the research design chosen, the justification for a single case study approach, the preparation for data collection, the main sources of data, and the data collection process and data analysis.

## **Chapter 4.0**

The chapter looks at data analysis and discusses the findings. This chapter will apply the theoretical framework from Chapter 2 to the case study, and will see how the selected theory can explain the results obtained from case study. Within this chapter, the posed research questions in chapter 1 will be answered. The findings from the case study are discussed in this chapter

## **Chapter 5**

This chapter will conclude the report by looking at theory and its application and recommendations.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.0 INTRODUCTION**

This chapter focuses on the literature that is relevant to the area of study. This literature will help the researcher answer the objectives of the study. According to Neuman, (1991) literature review is used to learn from others and stimulate new ideas. A review tells what others have found so that a researcher can benefit from the efforts of others. A good review identifies blind alleys and suggests hypotheses for replication. It divulges procedures, techniques, and research designs worth copying so that a researcher can better focus hypotheses and gain new insights.

This chapter presents discussions on Logistic and logistics service providers, customer service, order processing, distribution, collaboration in logistics management, storage and handling of inventory, strategies for reducing logistics costs, principles of logistics costing, Logistics strategies for Improving service, principles for improving logistics process performance, terminals, transportation and competitive advantage . I reviewed the literature in order to have a theoretical framework about logistics firms and this provided tools to understand, analyse and describe terminal flows and how they are related to transport sub-contractors and customers.

### **2.1 LOGISTICS AND LOGISTICS SERVICE PROVIDERS**

The most dominant definition of logistics is the one given by the Council of Logistics management (CLM, 2004). They defined logistics as: Logistics is that part of the supply chain process that plans, implements and controls the efficient and effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customer requirements. Logistics is unique: it never stops! Logistics is happening around the globe, twenty four hours of every day, seven days a week during fifty-two weeks a year. Logistics is concerned with getting products and services where they are needed when they are needed. Logistics involves the integration of information, transportation, inventory, warehousing, material handling, and packaging ([en.wikipedia.org/wiki/Logistics](http://en.wikipedia.org/wiki/Logistics))

From the customer perspective logistics is seen as “Getting the right product, to the right customer, in the right quantity, in the right condition, at the right place, at the right time, and at the right cost (called the” seven Rs of logistics”). (Bowersox et al. 1986).

Coyle et al. (2003) viewed logistics as a part of management and has four sections: business logistics, military logistics, event logistics, and service logistics. A definition of logistics that encompasses the four sub disciplines states that “Logistics is the process of anticipating customer needs and wants, acquiring the capital, materials, people, technologies, and information necessary to meet those needs and wants, optimizing the goods-or service-producing network to fulfil customer requests, and utilizing the network to fulfil customer request in a timely way.

Lambert et al. (1993), identified the following logistics activities: customer service, order processing, distribution communications, inventory control, demand forecasting, traffic and transportation, warehousing and storage, plant and warehouse site selection, material handling, procurement, parts and service support, packing, salvage and scrap disposal, and return goods handling.

## **2.2 CUSTOMER ANALYSIS**

### **2.2.1 Customer Service**

Lambert et al. (1993) defined customer service as a process which takes place between buyer, seller, and third party. The process results in a value added to the product or service exchanged. This value added in exchange process might be short term as in a single transaction or longer term as in a contractual relationship. The value added is also shared, in that each of the parties to the transaction or contract is better off at the completion of the transaction than they were before the transaction took place. Thus, in a process view: Customer service is a process for providing significant value-added benefits to the supply chain in a cost effective way.

Lambert et al. (1993) advanced four methods of establishing a profitable customer service strategy: determining channel service levels based on knowledge of consumer reactions to stock outs, cost/revenue trade-offs, ABC analysis of customer service, and the customer service audit.

### **2.2.2 Ways of Improving Customer Service**

Bowersox and Closs (1986) presented four steps for designing a customer service strategy which includes: Audit customer service, set performance objectives and standards, institute management systems, and institute control and review procedures.

**Audit customer service:** It helps identify the market requirements and the competitive situation. This task is accomplished through a survey which is completed by the customers and potential customers.

**Set performance objectives and standards:** This involves selection of specific measures and establishment of quantitative goals for meeting those measures.

**Institute management system:** In accordance with Bowersox and Closs (1986), we need to design and institute management systems to accomplish and measure the desired customer service activities.

**Institute control and review procedures:** Following Bowersox and Closs (1986), the final task to design a customer service strategy is to institute procedures to monitor and review the system's performance and initiate desired adjustments.

Gustafson (2006) defined Logistics strategy as "the process of developing a more efficient physical-distribution and supply-system". Logistics strategy, It can also be defined as "a pattern of action plans designed for the purpose of achieving logistics goals. Logistics strategy concerns the process of meeting customers' requirements and is constituted by a pattern of decisions regarding the company's main logistics fields of application, in order to achieve sustainable profitability. The logistics strategy is situation specific. The main operational logistics fields of application are; procurement, production, and distribution (Gustafson, 2006)

### 2.2.3 Customer Needs

A fundamental theme of marketing is the expression of customer needs, also known as customer demands. Customers have compound needs that affect purchase decisions (Shiv and Hubber, 2000). Customer needs describe the benefits that a product or service must fulfil (Griffin and Hauser, 1993), which may address several issues, including utility, functionality, aesthetics, prestige, usability and pleasure (Khalid and Helander, 2004). In a business-to-business context, the selling company has a limited number of large customers, each of which must be handled individually (Håkansson *et al.*, 1977). The authors further stated that the relationships with industrial customers are complex, involving several departments and decision makers on both the seller's and buyer's side to solve the buyer's technical, commercial and delivery needs. These three dimensions are explained below:

**Technical needs:** Technical needs are often relate to the technical complexity of the product. The degree of technological complexity is likely to be determined by several factors, such as the required component and subsystem integration and technological newness (Kim and Wilemon, 2003). The customer may need an understanding of the product components and the component integration, by which ensure they understand the value obtained. This mainly concerns quality and functional aspects.

**Commercial needs:** Organizational buyers use various means of competition in their marketing activities. The common used means include advertising, sales promotion, personal selling, technical service, delivery, quality and price (Håkansson *et al.*, 1977). Thus, customers require coordination with their suppliers on purchasing side in order to ensure the delivery of the marketing mix.

**Logistical needs:** Logistical needs describe customers' requirements to get the product from the seller to the buyer physically, legally and on time. The logistical operation must be coordinate with other events, such as production schedules and delivery of other products (Håkansson *et al.*, 1977).

## 2.2.4 Defining Customer Value

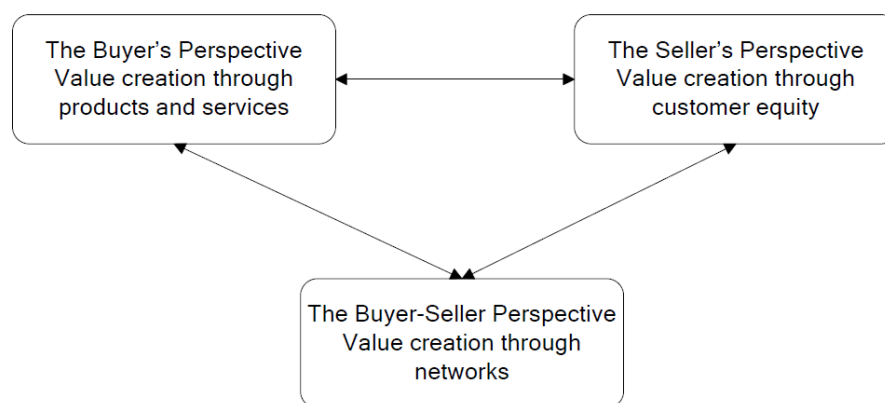
Value is an abstract concept with meanings that vary according to context (Patterson and Spreng, 1997). Professionals in academia and industry have long struggled to clarify the meaning of value (Kummerow, 2002). The diversity of definitions of the term is caused by the way in which the definitions are constructed. They rely on other terms, such as utility, worth, benefits and quality, which are not well defined themselves. Value concepts also differ in terms of the conditions within which customers think about value (Woodruff, 1997). In the past, customers judged the value of a product or service on the basis of some combination of quality and price; the concept of value has expanded, however, to convenience of purchase, after-sales service, dependability and so on (Treacy and Wiersema, 1993). According to Simpson *et al.* (2001), the generally accepted definition for value focuses on the total worth of the benefits received for the price paid. Value in business markets is the monetary worth of the technical, economic, service and social benefits a company receives in exchanges for the price it pays for a market offering (Brandenburger and Stuart, 1996). Bowman and Ambrosini (2000) argued that value has two components: perceived value and exchange value. Perceived value is subjective and is determined by customers, based on their priorities. Exchange value is realised when the product is sold. It is the amount paid by the buyer to the producer for the perceived use value (Bowman and Ambrosini, 2000).

Within the marketing literature, the word “value” has a customer orientation (Woodall, 2003). On many occasions, therefore, the terms of “customer value” (e.g., Woodruff, 1997), “customer perceived value” (e.g. Monroe, 1991) appear as synonyms for value. Value is created by identifying and understanding customers’ benefits and sacrifices (Walters and Lancaster, 2000). Customer value is something perceived by customers rather than objectively determined by a seller (Ulaga, 2001). The benefits provided by customer value can be direct and easily measured or indirect and hard to quantify. The direct value added by a supplier is derived from activities that can be expressed in a monetary sense, and include benefits that lead to decreased costs or increased sales. The indirect value comes from intangible aspects of the relationship (Simpson *et al.*, 2001). A lot of research has been conducted to investigate the construct of value;

however, research in the context of business-to-business markets is limited (Homburg and Rudolph, 1997; Ulaga and Chacour, 2001).

### 2.2.5 Perspectives of Customer Value Creation

Ulaga (2001) summarised a variety of articles included in the special issue of *Industrial Marketing Management* regarding consumer value in business markets and concluded that there are three perspectives of value creation (Figure 2.1). The buyer's perspective looks at how suppliers create value in products or services compared to competition. The seller's perspective deals with attracting, developing and retaining customers. Finally, value creation through relationships, partnering and alliances is considered as the third perspective (Ulaga, 2001).



**Figure 2.1 Three Perspective of Customer Value**

**Source: Ulaga (2001)**

Ulaga's (2001) framework indicates that suppliers can create customer value by providing products and services as well as building and maintaining seller-buyer relationship. The augmented product concept presents four value-adding levels of product: the core product, the expected product, the augmented product and the potential product (Lindgreen *et al.*, 2009). Besides products and services, the relationship between supplier and buyer is another source of customer value. Establishing closer relationship between a supplier and a buyer is increasingly cited as a notable differentiator of high and low performance in distribution channels (Hyvöene and Tuominen, 2007), since practitioners and consultants

recognise that supplier-buyer relationships possess inherent mechanisms that inhabit the development of value (Aastrup *et al.*, 2007). The vital purpose of a supplier and a buyer engaging in a collaborative relationship is to work together in ways that add value for both companies (Anderson, 1995). Following Anders and Narus's (1990) definition of distributor and manufacturer working partnerships, the present dissertation defines the supplier-reseller working partnership as the extent to which there is mutual recognition and understanding that the success of each company depends in part on the other firm, with each firm taking action to provide a coordinated effort that focuses on jointly satisfying the requirements of the customer marketplace.

Customer satisfaction is often regarded as the impact of customer value, because consumers have first-hand experience and familiarity on which to base satisfaction evaluations and satisfaction, which will have an influence on re-purchase intentions (Patterson and Spreng, 1997). Overall satisfaction is the customer's feelings in response to the evaluation of one or more use experiences with a product (Woodruff, 1997).

### **2.3 ORDER PROCESSING AND INFORMATION SYSTEMS**

The order processing system is the nerve of the logistics system. A customer order serves as the communications message that sets the logistics process in motion. The speed and quality of information flows has a direct impact on the cost and efficiency of the entire operation. Slow and erratic communications can lead to loss of customers and/or excessive transportation, inventory, and warehousing costs, as well as possible production inefficiencies caused by frequent line changes. The order processing and information system forms the foundation for the logistics and corporate management information systems (Lambert *et al.*, 1993).

The Customer "Order Cycle or Lead time" is very important in logistics. Coyle *et al.* (2003) defines lead time as "the elapsing from the time when a customer decides to place an order for a product until the time that those goods are actually delivered in a satisfactory condition". A typical order cycle consist of the following components: order preparation and transmittal, order receipt and order

entry, order processing, warehousing picking and packing, order transportation, and customer delivery and unloading (Lambert et al., 1993).

## **2.4 DISTRIBUTION CHANNEL**

Coughlan *et al.* (2006) defined a distribution channel as a set of independent organisations involved in the process of making a product or service available for use or consumption. The ultimate goal of a distribution channel is to bridge the gap between producers and consumers by adding value to products or services (Kim and Frazier, 1996). Typically, manufacturers, intermediaries (wholesaler, retailer, specialized) and end users are perceived as the key actors of a distribution channel (Coughlan *et al.*, 2006). Based on these definitions, it is not easy to determine where the distribution channel actually starts, since there might be multiple producers involved in manufacturing the final products at different levels. Some of these producers are close to the end at which raw material is supplied, while others are closer to the end that deals with final buyers or users.

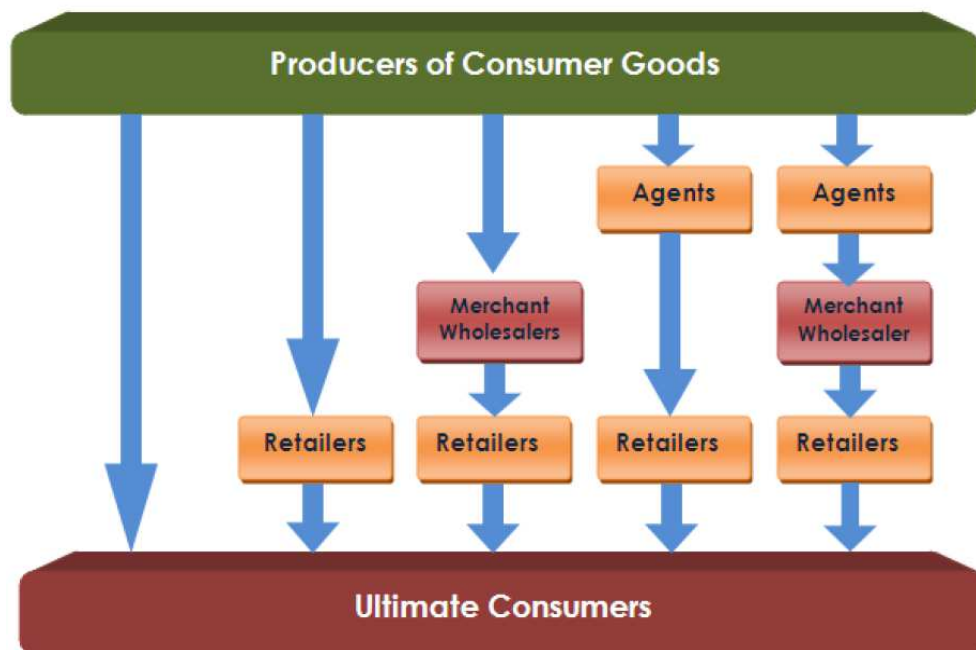
Distribution channel management is very critical for the firms when they decide to enter one or more markets. Distribution channel structures are not difficult to change; however, primary wrong decisions might lead to dreadful results for the organizations. In accordance with Gattorna and Walters (1996), depict that distribution channel management follows a structured approach, using criteria which help to evaluate optional channel structures during which alignment (compatibility), trade-offs and channel relationships are considered.

Increasingly, the roles of logistics service firms are included in the decision process for distribution channel, especially when they are a dominant element within the supply chain.

As Jobber (2007) mention, all products whether consumer products, industrial products or services require the use of distribution channel. To describe more about distribution channel, Etzel, Walker and Stanton (2004) present that a distribution channel consists of the group of people and firms involved in the transfer of title of products move from producer to final consumer or business user. According to Coelho et al., (2003), most international firms would prefer to run a direct channel distribution however instead the firms themselves are forced

to use intermediaries and most distribution channels consider and consist of middlemen, but some do not (Etzel et al., 2004).

A channel that has only producer and final customer, with no middlemen providing assistance is called “direct distribution”, whereas a channel of producer, final customer, and at least one level of middlemen represents “indirect channel” (Etzel et al., 2004). The most common distribution channels for consumer goods can be seen from figure 2.2 which illustrates major channels of distribution. (See figure 2.2 - Major Channels of Distribution)



**Figure 2.2: Major Channels of Distribution**

**Source: Etzel, Walker and Stanton (2004)**

**Producer**  $\Rightarrow$  **Consumer:**

The shortest, simplest distribution channels for consumer goods involves no middlemen

**Producer**  $\Rightarrow$  **Retailer**  $\Rightarrow$  **Consumer:**

Goods ship directly from manufacturers and agricultural producers to large retailers.

**Producer**  $\Rightarrow$  **Wholesaler**  $\Rightarrow$  **Retailer**  $\Rightarrow$  **Consumer:**

If there is a traditional channel for consumer goods, this is the one normal way. The small retailers and manufacturers by the thousand find this channel the only economically feasible choice.

**Producer**  $\Rightarrow$  **Agent**  $\Rightarrow$  **Retailer**  $\Rightarrow$  **Consumer:**

Instead of using wholesaler, many producers prefer to rely on agent middlemen to reach the retail market, especially in large-scale retailers.

**Producer**  $\Rightarrow$  **Agent**  $\Rightarrow$  **Wholesaler**  $\Rightarrow$  **Retailer**  $\Rightarrow$  **Consumer:**

To reach small retailers, producers often use agent middlemen, who in turn call on wholesalers that sell to large retail chains/or small retail store.

After designing a channel, next thing that firms must consider is, on the intensity of distribution which means how middlemen will be used at the wholesale and retail level in a particular territory (Etzel et al., 2004). In accordance with Etzel et al., (2004), there are three degrees of intensity.



**Figure 2.3: The intensity-of-distribution Continuum**

**Source: Etzel, Walker and Stanton (2004)**

**Intensive distribution:** In intensive distribution producers sell their products or services through each available store in the market where consumers might reasonably look for the products or services by projecting the ultimately consumers demand satisfaction from convenience goods immediately, and they will not adjourn purchases to find a particular brand (Etzel et al., 2004). In the intensive distribution is commonly needed for convenience products and as well Gattorna and Walters (1996) states that it is usual to use intensive distribution with, for instance, everyday use products (such as food, newspaper, basic stationery items, etc.), and it also obtains for consumable industrial products such

as abrasives, lubricants, drill bits, etc. Moreover, they mention that the objective of the vendors are to offer convenient ,which mean local and easily obtainable, availability for the reason that the pattern of purchasing is typically short-term with end user maintaining low (or nil) inventories.

**Selective distribution:** In this kind of distribution, producers sell their products through multiple wholesalers and retailers (but not all possible)in a market, where consumers might reasonable look for it (Etzel et al., 2004).It usually involves a limited number of intermediaries within a limited market area (Gattorna & Walters, 1996). Therefore, with this type of distribution, the firm does not have to dissipate its efforts over too many outlets. This means that selective distribution enables producers to gain adequate market coverage with more control and less cost than intensive one. Examples of consumer goods which are appropriate for selective distribution are, various types of clothing and appliances, office equipment, DVDs, computers and cameras, etc (Etzel et al., 2004, and Kotler, 2000).

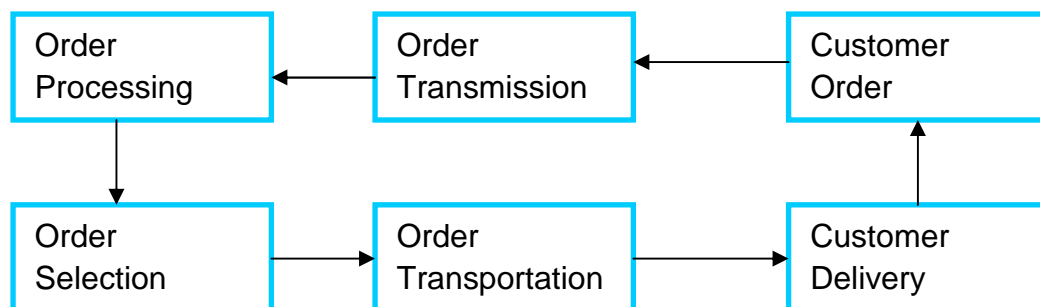
Selective distribution covers the broad and wide area of the market exposure between intensive and exclusive distribution and moreover in the selective distribution is selling through only those middlemen who will give the product special attention (Perreault & McCarthy, 2003).

**Exclusive distribution:** In exclusive distribution, suppliers agree to sell their products only to a single wholesaling middleman and/or retailer in a given market (Etzel et al., 2004) and it is just an extreme case of selective distribution which is the firm is selling through only one middleman in particular geographic area (Perreault & McCarthy, 2003). Gattorna and Walters (1996) state that the partnership requires mutual support in developing sales and supporting services to the final users such as maintenance plan and emergency service requirements. They also mention that exclusive distribution is found for the customer product groups of which large inventories are required to offer consumers a wide selection. This kind of distribution is used when producers be interested in to maintain and control over their service level and service outputs offered by the retailers (Kotler, 2000).

Gattorna and Walters (1996) depict that the nature of the channel intermediaries selected will match the product type with end user or customer expectation.

Moreover firms should decide on the number of intermediaries to use at each channel level (Kotler, 2000).

Bowersox and Closs (1986) maintain that the physical distribution management is the aspect of overall logistics concerned with the processing and delivery of customers' orders. Physical distribution is primarily concerned with the physical-fulfilment activities. The physical distribution cycle consist of five related activities: order transmission, order processing, order selection, order transportation, and customer delivery. The figure below shows the physical distribution performance cycle activities.



**Figure 2.4 Basic Physical Distribution Performance-Cycle Activities**

**Source: Bowersox et al., (1986)**

Channel of distribution are seen as the collection of organisation units, either internal or external to the manufacturer, which performs the functions involved in product marketing. The structure of a distribution channel is determined by which marketing functions are performed by specific organizations. Channel structure affects control of the following: control over the performance of functions, the speed of delivery and communication, and the cost of operations. Most distribution channels are loosely structured networks of vertically aligned firms. Most channels of distribution are not planned. Better management of distribution channels can create many benefits (Lambert et al., 1993)

### **2.4.1 Channel Designs**

Lambert et al. (1993), maintains that a firm must become involved in the channel design process when existing channels are falling short of performance objectives. The channel design process consist of the following steps: Establish channel objectives, formulate a channel strategy, determine channel structure

alternatives, evaluate channel structure alternatives, select channel structure, determine alternatives for individual channel members, evaluate and select individual channel members, measure and evaluate channel performance, evaluate channel alternatives when performance objectives are not met.

#### **2.4.2 Physical Distribution Strategies**

Bowersox and Closs (1986) distinguish two physical distribution strategies, that is, the strategy of postponement and the consolidation strategies.

Postponement: It is a way to reduce the anticipatory nature of physical distribution. With this concept almost all movement and storage in a physical distribution system takes place in anticipation of future transactions.

Consolidation: A significant opportunity exists in all logistical operations to reduce transportation expenditures through shipment consolidation. This brings about quantity discounts for larger volume of shipments. To properly consolidate it is necessary to know both current and planned production.

##### **2.4.2. 1 Distribution Alternatives**

This refers to the basic options of organizing customer deliveries. Holding the whole product assortment in supplier's inventory is the traditional way of organizing distribution (Kärkkäinen, Ala-Risku & Holmström, 2003). To decrease inventory-related costs, many companies have begun to use direct deliveries, i.e. their suppliers deliver the ordered goods directly to the customer. This enables offering a broad product assortment without holding all product variants in inventory. However, the value for the customer is lower when operating with direct deliveries, because of the costs associated with receiving several shipments. Although direct distribution can reduce costs incurred by the supplier, customer value is decreased (Kärkkäinen et al., 2003).

Another way of simultaneously increasing customer value and lowering costs is merge-in-transit distribution. Merge-in-transit is closely related to cross-docking, but it is more flexible in the customer-end of the process. It refers to a process of uniting multiple component-shipments from several suppliers into one final customer delivery to fulfil one customer order (Bradley, 1998).

### **2.4.3 Distribution Channels Co-operation**

- According to Lynn and Robert (1996), a prime basis for channel organization lies in the economic benefits to be gained from specialization. Each channel member specializes in performing certain types of work (functions) in the conveyance of goods from manufacturer to consumer. Specialization in channels creates dependence among participants. No one channel member can perform all of the functions necessary to move a product through the channel, which places all channel members in a state of mutual dependence.

### **2.4.4 Distribution Centres**

According to Tracy (1998), Distribution involves a number of activities. It is possible to distinguish between at least four different ones: collection, distribution, storing and handling, as well as transport. Dawe (1995) stated that main activities of a distribution centre is receiving and shipping. A decentralized distribution system fulfils the customer demand because of shorter transportation distances but the trade-off is that there will be a cost for facilities and equipment used in the decentralized distribution centres.

### **2.4.5 Designing a Distribution Centre**

Gattorna (1990) listed the following five elements as essential for designing a distribution centre; Land and building, management and staff, equipment, computer and its software, operating methods, and procedures. There is little point in considering any one of these elements on its own for its cost may directly affect other costs and, therefore prevent an overall optimum solution. For example, an inexpensive piece of land that results in high building costs may be no saving at all: low equipment costs which increase the number of people required may not be cost-effective, and so on.

Designing a distribution centre is easier if constraints can be identified first. Identifying the constraints is often not easy. Some of the constraints are: Existing land, existing building, available finance, existing equipment that must be re-used, return-on-investment required, existing software, preference of the

management, staff or union objections, government regulations( health and safety, building ordinances, fire protection, parking, plot ratios, street access).

#### **2.4.6 Terminals**

Terminals are facilities where load units are shifted between links in a transportation network. Examples of terminals are ports, crossing points of transport modes (e.g. between road and rail), and facilities specialized in fast throughput of load units which makes cross-docking possible (Lumsden, 2006). The terminal activities can take place in a warehouse or a distribution centre. The terminal function may then be carried out as any other consolidation activity- the only difference is that the arriving goods has known receiver prior to arrival at the warehouse or distribution centre and is not stored there. The goods can go through the terminals on its way from the shipper to receiver where an important distinction is done, the terminal function is a part of the transportation field and not logistic field. Goods that go through the terminals can be characterized by having a dedicated receiver and a stated delivery time, i.e. in cross-docking the shipment has a known address and must be delivered on a specific date and time (Coyle, 2004).

Coyle et. al (2004) maintains that terminals serve the following function in the supply chain: consolidation, break bulk, shipment service, vehicle service, interchange, and pickup and delivery service. Performing these functions requires time and therefore affects the total transit time a carrier provides.

Mc Kinnon et al (2001) outlined the following terminal classes: Bulk terminal, Transfer terminal, Distribution terminal and Hinterland terminal.

Bulk terminal is the main port with large volumes and global freight connections. Larger freight flows arrive at the terminal and they are split into small flows for further transport.

Transfer terminals those almost exclusively aimed at transshipping continental freight. There is almost no collection and distribution in the region where the terminal is located. The freight arrives and departs from the terminal in huge flows.

Distribution terminals are the so called “intelligent terminal”. At this terminal value added is created in the form of an extra service provided by the terminal operator.

From location A, B, and C continental freight arrives at the terminal and is consolidated into shipments for customers X, Y, and Z. One or more terminal services are added by the terminal operator to the shipment at the terminal.

Hinterland terminal are used for small continental cargo shipments that are brought to the hinterland and consolidated into bigger freight flows. These bigger freight flows are further transported by rail or inland water. (<http://www.diva-portal.org>) visited 16 March 2012.

## **2.5 COLLABORATION IN LOGISTICS MANAGEMENT**

Larson and Gammerlgaard (2001) defined a logistic triad as; a cooperative, three-way relationship between a buyer of goods, the supplier of those goods and a logistics service provider moving and/or storing the goods between buyer and supplier. The roles of logistics provider vary according to the level of outsourcing, from transportation service to complete integrated-logistics value-added services and global management of the customers' logistical setups (Cooper, 1993).

## **2.6 STORAGE AND HANDLING OF INVENTORY**

Storage is a very important aspect of economic development. In early times customers performed storage and accepted attendant risks. Meats were stored in smokehouses, and perishable products were produced in underground food cellars. With improved transport capability it became possible to engage in specialisation. Product storage was shifted from households to retailers, wholesalers and manufacturers' early literature indicates that the warehouse was initially viewed as a storage facility that was necessary to match products in a timing sense with consumers. Warehousing provided product storage until market demand requires distribution. Warehouse performs two types of storage: Planned and extended storage. Planned storage is for basic inventory replenishment. Planned storage is duration varies indifferent logistical systems based on replenishment cycles. Planned storage must also provide sufficient inventory to fulfil the reason why the warehouse was established within the logistical system.

### **2.6.1 Plant Layout and Material Handling**

According to Meyers (1993) Material handling is a function of moving the right material to the right place, at the right amount, in sequence, and in the right position or condition to minimize production costs. Material handling involves the handling equipment, the storage facilities, and the control apparatus. Material handling is also an integral part of plant layout.

### **2.6.2 Goals of Material Handling**

In accordance with Meyers (1993), the primary goal of material handling is to reduce costs. All other goals are subordinate to this goal. The following are the sub goals of material handling:

- Maintain or improve product quality, reduce damage, and provide protection of materials.
- Promote safety and improve working conditions.
- Reduce tare weight (dead weight)
- Control inventory
- Promote the effective use of people, equipment, space, and energy
- Provide for employee convenience, employee safety, and employee comfort
- Control project costs
- Achieve the production start date
- Achieve miscellaneous goals

### **2.6.3 The Twenty Principles of Material Handling**

Meyers (1993) adopted twenty principles of material handling which are as follows:

*The Planning principle:* Plan all material handling and storage activities to obtain maximum overall operating efficiency.

*System Principle:* All material handling equipment should work together so that everything fits.

*Material Flow Principle:* It provides an operation sequence and equipment layout optimizing material flow.

*The work simplification Principle:* Simplifying handling by reducing, eliminating, or combining unnecessary movements and/ or equipment.

*Gravity Principle:* Utilize gravity to move material whenever practical.

*Space utilization principle:* Make optimum use of the building cube.

*Unit size principle:* Increase the quantity, size or weight of unit loads or flow rate. A unit load is a load of many parts that move as one.

*Mechanization principle:* Mechanized handling operations. This principle is to add power to eliminate manual moving. Mechanization is on our way to automation.

*Automation principle:* Provide automation to include production, handling, and storage functions.

*Standardization principle:* Standardize handling methods as well as types and sizes of handling equipment. Material handling moving equipment (like fork trucks) is manufactured by many companies.

*Adaptability Principle:* Use methods and equipment that can best perform a variety of tasks and applications where special purpose equipment is not justified.

*Dead weight principle:* Reduce ratio of dead weight of mobile handling equipment to load carried.

*Utilization Principle:* Plan for optimum utilization of handling equipment and manpower. Material handling equipment and operators should be used fully.

*Maintenance principle:* Plan for protective maintenance and scheduled repairs of all handling equipment. A protective maintenance programme including schedules must be developed for each piece of material handling equipment.

*Obsolescence principle:* Replace obsolete handling methods and equipment when more efficient methods or equipment will improve operations.

*Control Principle:* Use material handling activities to improve control of production inventory, and order handling.

*Capacity principle:* Use handling equipment to help achieve the desired production capacity.

*The performance principle:* Determine effectiveness of handling performance in terms of expense per unit handled.

*Safety principle:* Provide suitable methods and equipment for safe handling.

## 2.6.4 Material Handling Devices

Gattorna (1990) asserted that a huge range of new techniques, devices and machines has been introduced, and different methods have been developed for handling different products. These material handling devices include: Manual, trolleys, forklift, conveyors, and roll pallets.

## 2.6.5 Material Handling Productivity Ratios

Bloomberg et al (2002) listed some material handling ratios which help judge the efficiency and productivity of the system. These ratios are crucial to overall operational efficiency and should be tracked. They include the material handling labour ratio (MHL), the handling equipment utilization ratio (HEU), the storage space utilization ratio (SSU), aisle space percentage ratio (ASP), movement/operation ratio (M/O), and the damaged load ratio (DL). These ratios are calculated as follows:

$$MHL = \frac{\text{Personnel assigned to material handling duties}}{\text{Total operating personnel}}$$

$$HEU = \frac{\text{Items or Load weight moved per hour}}{\text{Theoretical capacity}}$$

The main problem with this ratio is to determine the theoretical capacity. Theoretical capacity may be either when machines are carrying a full load or when the machinery is in motion.

$$SSU = \frac{\text{Storage space occupied}}{\text{Total available storage space}}$$
$$ASP = \frac{\text{Space occupied by aisles}}{\text{Total space available}}$$

Aisles are necessary facility and should not be used for storage because of congestion problems. Aisles space ratios should be lower in automated material handling systems than in manual or mechanized systems.

$$M/O = \frac{\text{Number of moves}}{\text{Number of productive operations}}$$

M/O ratio shows the overall efficiency of material handling operations. High ratios (the firm will have to determine what is high) point to potential improvement by reducing handling steps or moving to mechanized or automated handling.

$$DL = \frac{\text{Number of damaged loads}}{\text{Total number of loads}}$$

### **2.6.6 Symptoms of Inefficient Material Handling**

Bloomberg et al(2002) listed the following as symptoms of poor material handling: Aisles are cluttered, over handling of products, dock confusion in loading/unloading, too much manual labour, lack of gravity flow movement, poor use of skilled labour, stock out on parts and supplies, lack of standardization, high loss and damage, excess scrap, flow inefficiencies, confusing products storage, too much walking, excessive indirect and labour cost, idle cube storage, excessive long hauls, dirty facilities and excess amounts of employees.

## **2.7 WAYS OF REDUCING LOGISTICS COSTS**

To reduce cost a 3PL company should not focus only on managing its own logistics cost but also the overall logistics cost for its supply chain partners. A lasting cost reduction solution will come through the management of its upstream and downstream relationships with suppliers and customers. According to Bowersox and Closs (1986), the following five objectives are required to realize effective and efficient logistical performance: minimum variance, minimum inventory commitment, maximum consolidation, quality control and life-cycle support.

*Minimum Variance:* Variance is uncertainty or unexpected event that disrupts system performance.

*Minimum Inventory Commitment:* The idea of minimum inventory involves the level of commitment and velocity.

*Maximum Consolidation:* This means that innovative programs to assist grouping small shipments into consolidated movements must be incorporated in logistical system design.

*Quality Control:* If a product or delivery is defective after a logistic process is complete, no value is added, but all costs are experienced. In fact, the total logistical process often must be recalled and repeated.

*Life-cycle support:* The life cycle support aspects of a logistical system must be carefully designed. The importance of life cycle varies directly with the product and buyer.

The logistic manager should strive to reduce logistics cost and improve the “Returns on Investment (ROI)” in order to improve profits.

## **2.8 PRINCIPLES OF LOGISTICS COSTING**

Christopher (2005), states that one of the basic principle of logistics costing is that the system should mirror the materials flow, i.e. it should be capable of identifying the costs that result from providing customer service in the marketplace. A second principle is that it should be capable of enabling separate cost and revenue analyses to be made by customer type and by market segment or distribution channel. This latter requirement emerges because of the dangers inherent in dealing solely with averages, e.g. the average cost per delivery, since they can often conceal substantial variations either side of the mean.

Harrison and Van Hoek (2002) presented logistics cost into fixed/variable, direct/indirect, and engineered/discretionary cost. The fixed/variable cost are analysed on the basis of the volume of the activity, and they turn to respond differently as volume changes. The direct/indirect cost are analysed based on whether or not they can be directly allocated to a given product. The engineering/discretionary costs are analysed based on the ease of allocating them. Some things are easy to cost, others may require considerable thought and analysis because they are difficult to cost under current methods.

## **2.9 PRINCIPLES FOR IMPROVING LOGISTICS PROCESS PERFORMANCE**

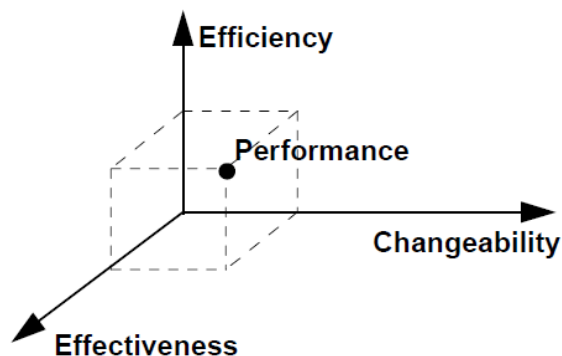
As Persson (1995), The following common principles improve process performance: reduce or redistribute lead times, reduce or adapt to the uncertainties, redistribute or increase frequencies, eliminate or adapt to expected

pattern of demand, simplify structures, systems, and processes, differentiate, postpone, improve the information processing and decision support system, and strengthen the internal and external integration.

### 2.9.1 Performance Measurement

Productivity in a narrow sense has been measured for several years. In 1978 an enlarged method, the POSPAK method, was introduced. This method indicates specific measures in order to improve the overall productivity of an enterprise (Sjøborg, 1984). One of the first approaches to performance measurement was published by Sink and Tuttle (Sink, 1985, Sink and Tuttle, 1989). The model claimed that the performance of an organizational system is a complex interrelationship between seven criteria. In 1993 Hronec published the book “Vital Signs”, where he described how to use quality, time, and cost performance measurements to chart the company’s future. In 1995 Rolstadås edited the book “Performance Management”. It sought to provide the reader with a detailed overview of the modern enterprise by focusing on performance evaluation and measurement and performance improvement techniques. Since 1995 a number of books and papers on performance measurement and management have been published.

One example of a performance measurement system is the TOPP system, which was developed by SINTEF (Moseng, 1996) in Norway in partnership with the Norwegian Institute of Technology (NTH), the Norwegian Federation of Engineering Industries (TBL), and 56 participating enterprises. The TOPP system views performance along three dimensions (Moseng and Bredrup, 1993). These are illustrated in Figure 2.5.



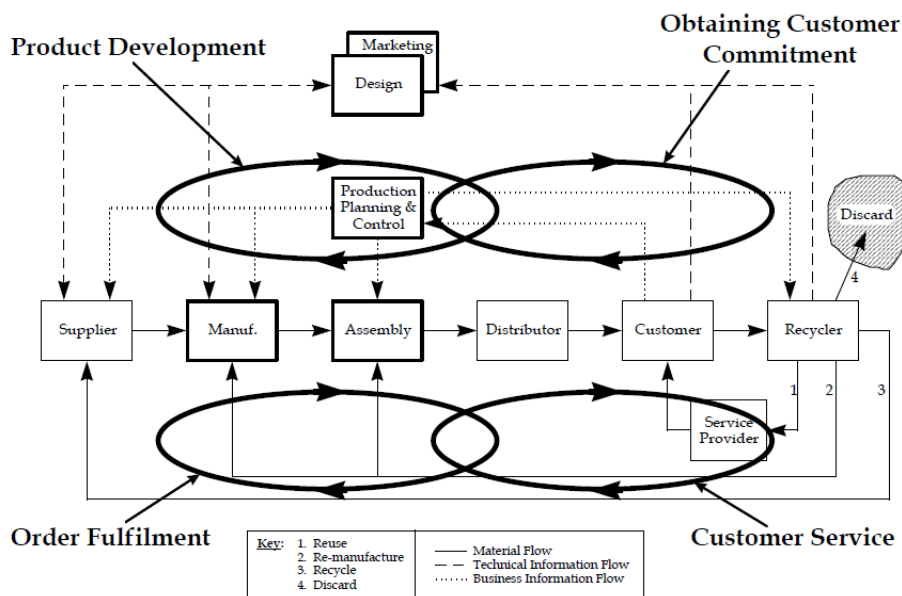
**Figure 2.5 Performance measurements**

**Source Moseng and Bredrup (1993)**

1. Effectiveness - satisfaction of customer needs.
2. Efficiency - economic and optimal use of enterprise resources.
3. Changeability - strategic awareness to handle changes.

In TOPP a number of performance measures were developed based on these dimensions.

One example of a recent performance measurement system is the ENAPS (European Network for Advanced Performance Studies) performance measurement system, developed in the EU financed project ENAPS. This was based on a number of performance measurement systems and recent research. The ENAPS business model is shown in Figure 2.6 and reflects a future view of a manufacturing enterprise as it incorporates the end of life use of products (Andersen, Rolstadås, and Fagerhaug, 1998). Based on this business model, ENAPS has suggested three levels of hierarchy for defining performance indicators. Each performance indicator is a function of two or more performance measures. The three levels of hierarchy for defining performance indicators are: "Enterprise Level", "Process Level" and "Function Level". The performance measures used in calculating these performance indicators are measured from all over the enterprise (Andersen et al., 1998). (<http://www.prestasjonsledelse.net>) visited 26 March 2012.



**Figure 2.6 The extended ENAPS business model**

**Source: Andersen et al., (1998)**

### **2.9.2 A framework for improvement**

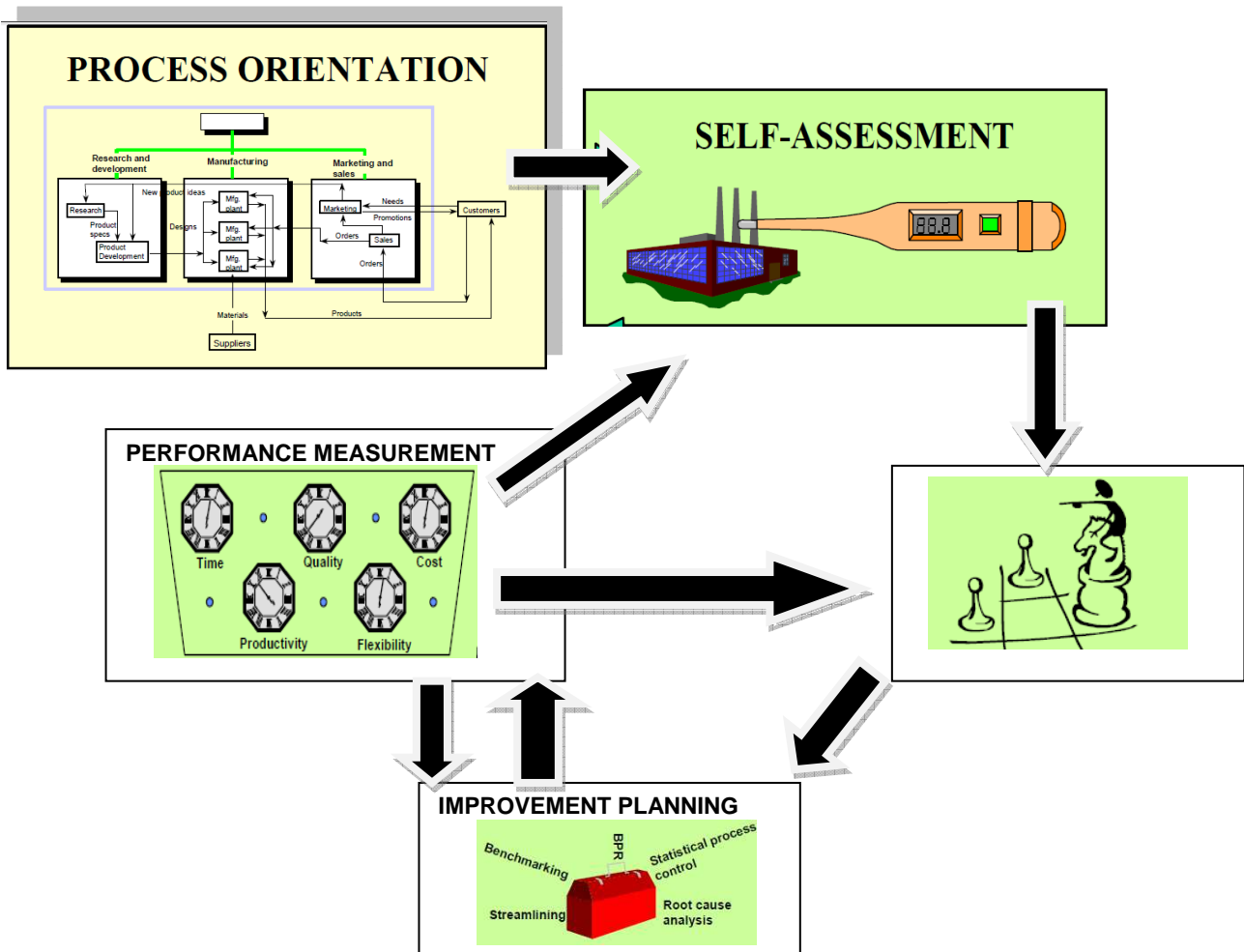
Performance measurement plays an important part in a performance improvement framework. An example of such a framework is illustrated in Figure 2.7. This framework is cyclic, and based on the Plan-Do-Check-Act principle of the Deming wheel.

The first phase in the cycle is self-assessment. The European Foundation for Quality Management – EFQM (1998) has described self-assessment as a comprehensive, systematic and regular review of an organization's activities and results referenced against a model of business excellence. EFQM emphasize that the self-assessment process allows the organization to discern clearly its strengths and areas in which improvements can be made and culminates in planned improvement actions which are then monitored for progress.

Based on the self-assessment, improvement planning should be performed. Then improvements should be initiated. As illustrated, a number of tools can be utilized in order to improve the performance of organizations, e.g., streamlining, benchmarking, business process reengineering (BPR), statistical process control, and root cause analysis.

Through performance measurement, the various performance level of the business should be monitored. As shown in the Figure 2.7, performance measurement provides input for the improvement planning, choice of improvement tools, as well as for the self-assessment process.

(<http://www.prestasjonsledelse.net>) visited 26 March 2012.



**Figure 2.7 a performance improvement framework**

**Source: Andersen, (1998)**

The figure 2.7 also illustrates that process orientation is important input in such a framework. (Andersen (1999) has argued that several issues have stressed the logic of the transition from viewing the company as a number of departments to focusing on the business processes being performed:

- Every process has a customer, and focusing on the process ensures better focus on the customer.
- The value creation with regard to the end product takes place in horizontal processes.

- By defining process boundaries and the customers and suppliers of the processes, better communication and well-understood requirements can be achieved.
- By managing entire processes that run through many departments rather than managing individual departments, the risk of sub optimization is reduced.
- By appointing so-called process owners, who are responsible for the process, the traditional fragmentation of responsibility often seen in a functional organization is avoided.
- Managing processes provides a better foundation for controlling time and resources.

Many of these elements are based on the fact that every single process has both a supplier and a customer. What are then business processes? In this paper Ericsson's (1993) business process definition is chosen:

- A chain of logical connected, repetitive activities that
- utilizes the enterprise's resources to
- Refine an object (physical or mental)
- for the purpose of achieving specified and measurable results/products for
- Internal or external customers.

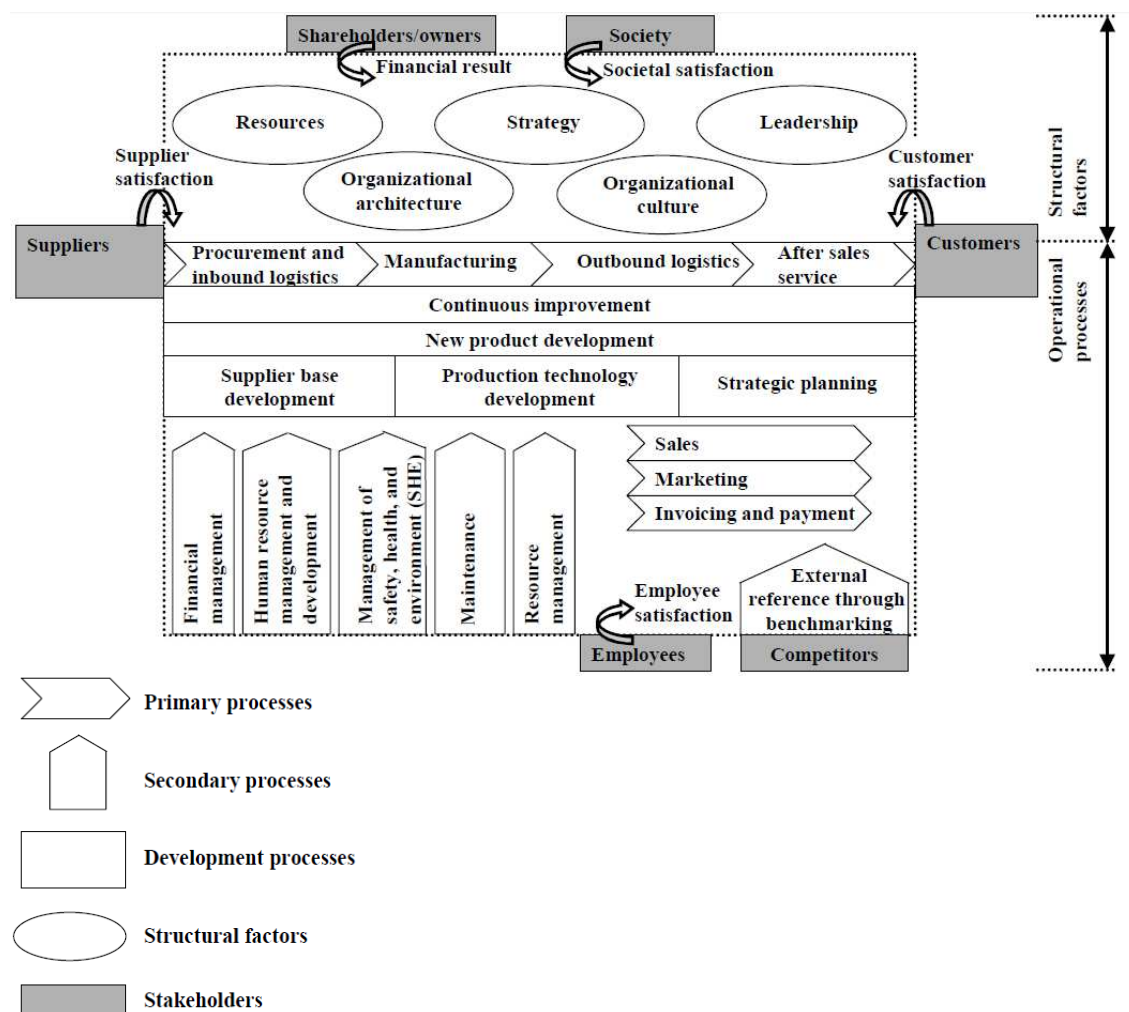
A main point is that any business process has a customer, either external or internal. Based on this definition, almost all activities within a company can be seen as a business process or part of a business process, including the processes related to logistics. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

### **2.9.3 A New Improvement Oriented Model**

There are a number of ways of classifying business. In the current paper it has been chosen to use the classification suggested by Fagerhaug (1999), which is based on a self-assessment approach. He suggested that the following five types of processes/structures could be used when classifying the processes of a business:

- Primary processes. The value-adding processes commonly found in any organization, often labelled main processes.
- Secondary processes. Processes supporting the execution of the primary processes. These are often labelled support processes.
- Development processes. Processes aimed at improving the organization's performance, for instance new product development.
- Structural factors. Innate characteristics of the organization, for instance resources.
- Stakeholders. The stakeholders are the parties that can affect or are affected by the degree of achievement of an organization's purpose.

Figure 2.8 shows a business mode based on the five types of processes/structures (Fagerhaug, 1999). (<http://www.prestasjonsledelse.net>) visited 26 March 2012.



**Figure 2.8 a business model, Source: Fagerhaug (1999)**

When describing and measuring the performance level in a business process, a number of parameters might be used. It is pivotal to employ a balanced set of measures in order to understand the performance of the process and be able to identify improvement areas. Typical dimensions for describing and measuring performance are (Fagerhaug, 1999):

- Qualitative and quantitative measures.
- “Hard” versus “soft” measures.
- Financial versus non-financial measures.
- Result versus process measures.
- Measures defined by their purpose (result, diagnostic, and competence).
- Efficiency, effectiveness, and changeability.
- The six classic measures (cost, time, quality, flexibility, environment, and ethics).

All areas should be considered when developing performance measures. It should be emphasized that these dimensions overlap. In order to diagnose the “health status” of an organization one should ideally employ a balanced combination of measures.

Fagerhaug (1999) divided the criteria for each business process into two main dimensions; measures defined according to purpose (result measure, diagnostic measure, and competence measure), and whether they are qualitative or quantitative. The reason is that the measures defined according to purpose indicate different time periods. The result measures indicate something about the past and partly about the present. The diagnostic measures say something about probable evolution in the short run, as well as something about the present. Competence measures indicate something about possible future development. Three by two categories would add up to six categories. However, qualitative result measures are infrequent, and thus the following five areas are selected:

- Quantitative result measures.
- Qualitative diagnostic measures.
- Quantitative diagnostic measures.
- Qualitative competence measures.
- Quantitative competence measures.

For each of the 28 processes/structures, Fagerhaug (1999) has developed a criteria sheet. The sheet provides the name and a short description of the process/structure, as well as a number of text-based and number-based measures belonging to each of the five categories mentioned above. It should be emphasized that the measures are examples rather than a final set.

The authors of this paper would argue that a number of these processes/structures could be used to enhance the performance of the business' logistics processes. One could argue that the business should keep all five dimensions (types of processes/structures) in mind when seeking to improve their performance, e.g., that stakeholder also should be taken into consideration when focusing on primary processes. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

#### **2.9.4 Comparison**

What are then the differences and similarities between the described approach, which is based on a self-assessment foundation, and tools like performance measurement and balanced scorecard? (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

#### **2.9.5 Comparison of performance measurement and self-assessment for business excellence**

What is the difference between a "traditional" measurement system and self-assessment? Because of the many definitions and meanings of self-assessment, this difference is not altogether evident, but some differences are (Bredrup, 1995):

- When to measure. In the traditional measurement system the measurement is continuous. In self-assessment the measuring is done at certain times, with an interval between the measurements.
- Focus. A traditional measurement system measures in detail within one or more departments or processes. Self-assessment is, however, more focused on a somewhat superior and holistic image of the company.

Use. Data from the traditional measurement system are used in the day-to-day control and measurement of improvements. Self-assessment is, nevertheless, used in a greater degree to define more long-term focus areas for improvement and for strategic decision support. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

### **2.9.6 Philosophy**

Both methods focus on assessing the current state of the organization or parts of it. Both methods are aim at improving the organization.

Self-assessment for business excellence is a method that can be employed at certain intervals, for instance annually, while performance measurement is usually a continuous process. However, one performance measurement may also be used for short periods of time. An example is a group of employees in a travel agency who wants to improve their performance. By measuring key characteristics of their processes for a limited time they might learn enough to initiate minor improvement efforts. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

### **2.9.7 Process or approach**

Traditional performance measurement systems are more focused on the results than the processes. Imai (1986) labelled these Process-Oriented Criteria (P criteria) and Result-Oriented Criteria (R criteria). R criteria are the easiest to measure, and focus on areas that traditionally have been addressed in USA. Here we can draw a parallel to Deming (1986), who had “Management based on highly visible performance measures” as one of his five deadly diseases. Fellers (1992) supported Deming’s work and advocated a process view. In self-assessment for business excellence the focus is both on the results as well as the processes.

A major difference between traditional performance measurement and self-assessment for business excellence is the type of data collected and used: In performance measurement the data are mostly quantitative and focused on operational issues. In self-assessment for business excellence the data are both

qualitative and quantitative, and they have a longer time perspective than those used in performance measurement.

The data collected in a traditional performance measurement system are thus of limited value in the self-assessment process. A similar conclusion is reached if one looks at the performance dimensions from Harrington (1991) and TOPP (Moseng and Bredrup, 1993) illustrated in Figure 2.8.

The traditional performance measurement system is mostly centered on the efficiency part of this cube, while self-assessment for business excellence has to take all dimensions into account, in addition to focus on a higher level.

Many of the same tools can be applied when using both methods, for instance tools for collection, analysing, and presenting data. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

### **2.9.8 Organizational and detailing level**

Both self-assessments for business excellence and performance measurement are holistic-focused methods. Depending on how they are applied, both concepts are more or less focused on improvement.

In self-assessment employee participation is vital. This is not equally important in performance measurement, especially if the performance measurement system is implemented and fully operational. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

### **2.9.9 Comparison of balanced scorecard and self-assessment for business excellence**

#### **Philosophy**

Both methods aim at assessing the current state of the organization or parts of it. Balanced scorecard is, however, monitoring the organization continuously, while self-assessment can be applied at certain intervals, for instance annually. The improvement focus is more evident in self-assessment than in balanced scorecard, as determining areas for improvement is a major part of self-assessment. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

### **2.9.10 Process or approach**

Both methods make use of a reference model, and in self-assessment a business excellence model is used. In balanced scorecard the model which is compared against consists of four areas (Kaplan and Norton, 1996).

Balanced scorecard is a continuous process, as opposed to self-assessment that can be utilized at certain intervals.

The organizations should collect data and analyse them in order to understand their own operations. The data collecting in self-assessment for business excellence consist of both qualitative as well as quantitative data. In balanced scorecard only quantitative data are collected. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

### **2.9.11 Organizational and detailing level**

Both self-assessment and balanced scorecard are holistic-focused methods. The main focus, however, differs. Self-assessment emphasizes improvement, while balanced scorecard is focused on status. One could label it a state-of-the-art performance measurement tool, incorporating both financial and non-financial measures. Employee participation is thus not as pivotal to balanced scorecard as it is to self-assessment. (<http://www.prestasjonsledelse.net>) visited 26 March 2012.

## **2.10 TRANSPORTATION**

Transportation is in general said to be physical movement of people and goods from one place to another. Transport is one of the major activities within logistics, where a creation of time and place utility is performed (Coyle et al., 1996).

According to Lynn and Robert (1996), we can distinguish the following four economies of transportation:

*Principles of transportation costs:* It is less expensive per unit of weight to move a large shipment than it is to move a small shipment and it is less expensive per unit of distance to move a shipment a long distance than a short distance.

*Separation principle:* It is important to separate physical product flow from flow of title (paper). It is cheaper to move paper than it is to move product.

*Unit load principle:* It is more economical to assemble products into unit loads (on pallets, shrink wrapped, in containers, etc.) and to move the unit loads through the channel than it is to move the individual packages through the channel system.

*Weber's location principles:* Depending on weight, types of material and locations where these materials may be found, the production location that minimizes total transportation costs may be determined.

According to Coyle et al (2003) the transport environment has changed and the regulations shackling management decisions are gone. Today's transportation managers must rely on traditional management techniques.

Coyle et al (2003) listed the following five transport management strategies: reducing the number of carriers, negotiating with carriers, contracting with carriers, consolidating shipments, and monitoring service. According to Bloomberg et al (2002) carriers should be chosen based on the following criteria: price, accessibility, responsiveness, claims record, and reliability.

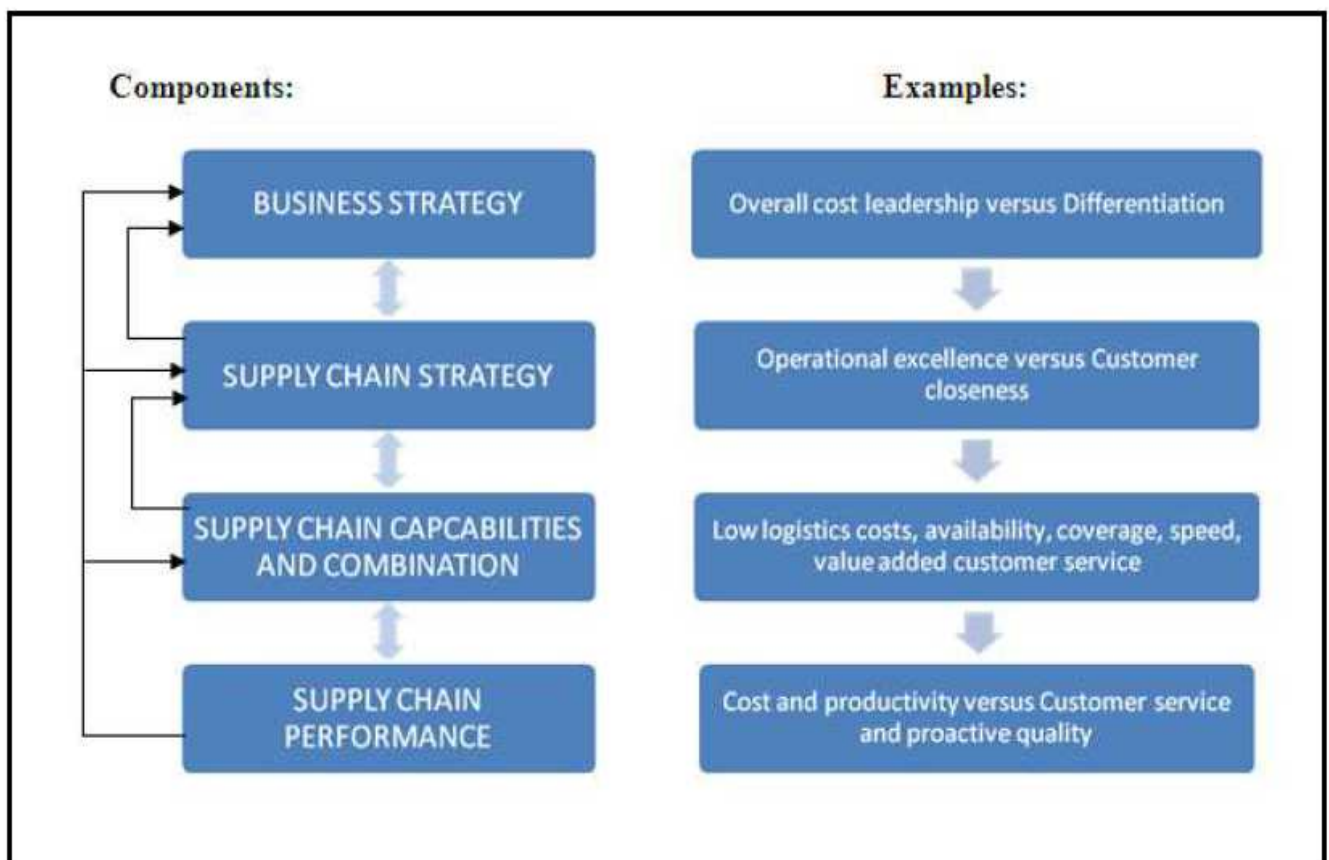
## **2.11 COMPETITIVE ADVANTAGE & STRATEGIC FIT WITHIN SUPPLY CHAIN**

Competitive advantages are the collection of superior competencies that create customer value (Morash, 2001). Firms deliver products and/or services which exceed the customer expectation, have more possibility to sell. According to Holcomb (1994), supply chain management now has emphasis on shaping competitiveness and profitability (cited in Tracey, Lim & Vonderembse, 2005). While some strategies create competitive advantages may be easy to imitate by competitors, the competitive advantages that routed from the chain efforts are harder to copy. Effective supply chain, thus, offer the opportunities to create sustainable competitive advantages (Cooper et al., 1997; Higginson & Alam, 1997 – cited in Tracy et al., 2005).

As firms play along together in the supply chain to achieve competitive advantage and win the orders at the bottom line, all members of the chain need to synchronize their strategies toward the end customers' direction. This means supply chain strategy and competitive advantage must fit together and the consistency between customer priorities and supply chain capabilities must exist (Chopra & Meindl, 2007). In order to achieve the strategic fit, firms should be able

to understand and wisely exercise their customer needs to match their service requirements. Chopra and Meindl (2007) add that firms are able to design supply chain in delegating tasks as to outperforming competitors from other chains by matching the competitive advantages the supply chain have with what of the customers desire. The Council of Supply Chain Management Professionals (CSCMP) defines Supply Chain Management (SCM) as the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities (En.wikipedia.org/wiki/Logistics) visite16/04/12, it also includes coordination and collaboration with channel partners which help to integrate supply and demand management within and across companies. The activities from each point to point of the chain may be counted as the flow of value-added activities.

Morash (2001) pinpoints that not only the matching value consistency between supply chain strategies and capabilities should be prevailed, but also the harmonized performance that foster member firms' success.

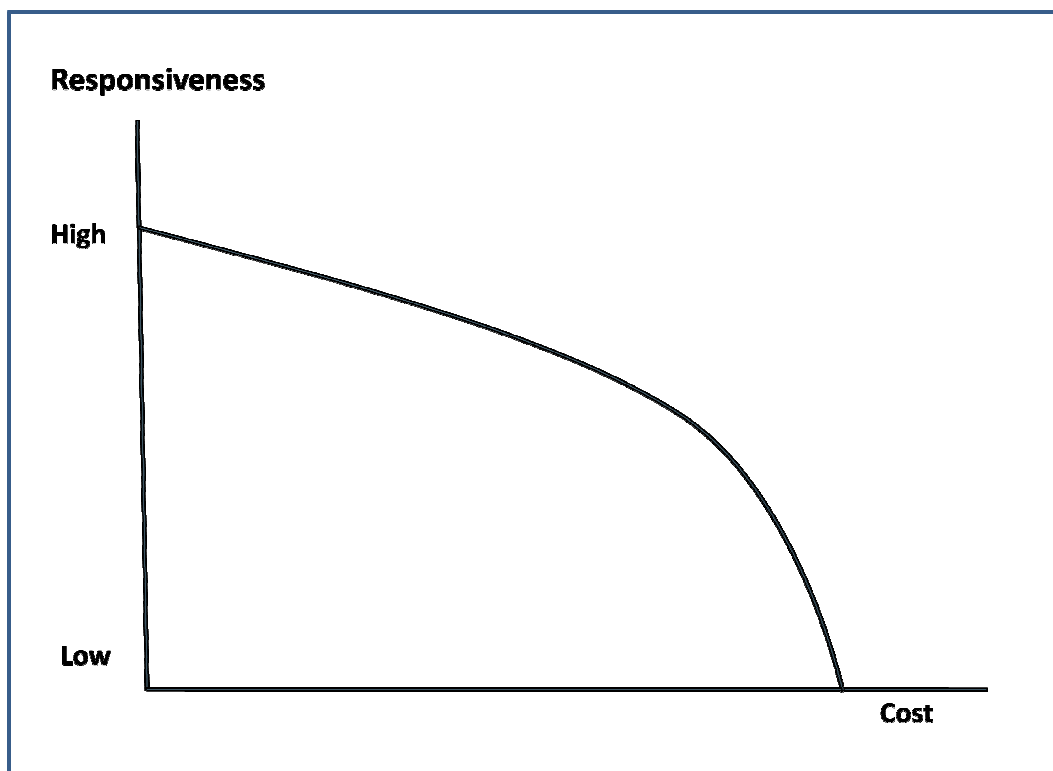


**Figure 2.9: Model of Supply Chain Strategy, Capabilities and Performance.**

**Source: Morash, (2001).**

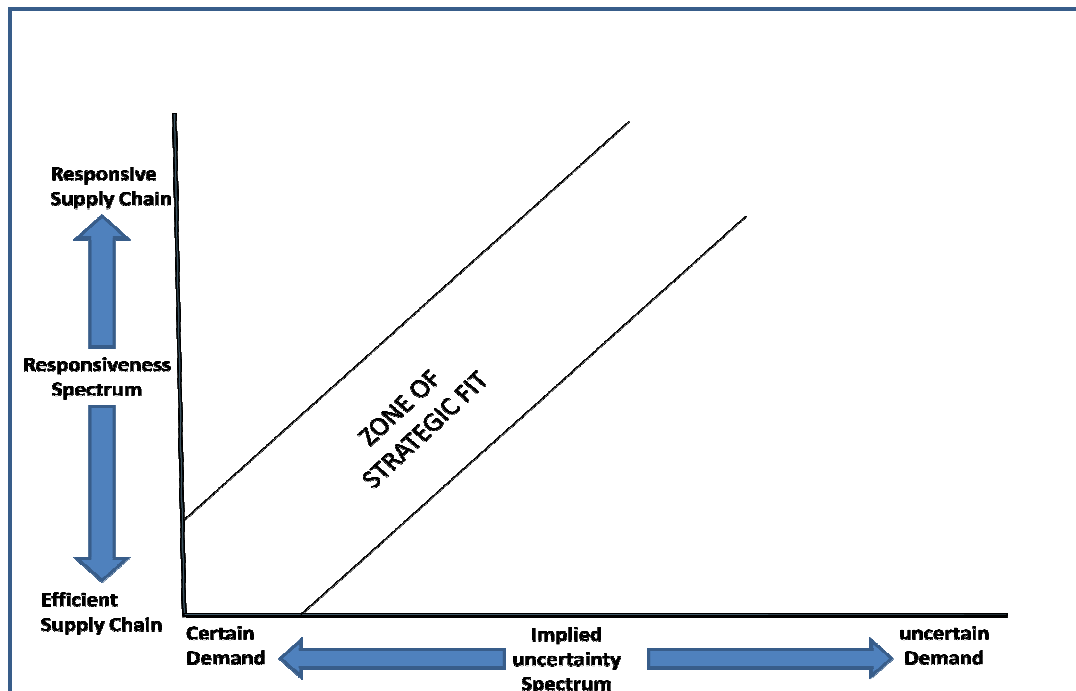
Supply chain strategy is divided loosely into two categories which are 'Operational Excellence' and 'Customer Closeness'. The former focuses on supply side efficiency, dependability, and reliability as they reflect the total supply chain efficient and effective in operation, the total cost reduction. The latter highlights on the agile supply chain to cope with demand on customer side and best meet the requirements (Morash, 2001). The flexibility, proactive quality, value-adding service, and dependability are the main focus, which needed the intensive communication.

Firms should consider where the strategic fit zone is for the supply chain and to the individual members by reflecting upon two dimensions; the responsiveness and the demand from customers. Here the word 'responsiveness' comes across on cost basis as shown in the Cost-Responsiveness Efficient Frontier below;



**Figure 2.10: Cost-Responsiveness Efficient Frontier.**

**Source: Chopra and Meindl (2007)**



**Figure 2.11: Uncertainty/ Responsiveness Map.**

**Source: Chopra and Meindl (2007)**

In Morash, Dröge and Vickery (1996) paper, suggests the responsiveness to the market has a positive performance when comparing to competitors' performance. They also add that the logistics capabilities yield both competitive advantage and the firm success. However, as seen in the responsive and cost relation, responsiveness comes with cost.

While the market channels are brought up by a set of interdependent organizations that together put product and service available for consumption, draws those organizations closer in engaging the distribution of supply to the consumption point (Coughlin, Anderson, Stern & El-Ansary, 2001, and Anderson & Coughlan, 2002). The responsiveness and the demand need to be balanced. This can be supported by the work of Christopher and Towill (2002:10) on Marks and Spencer (M&A), a well-known UK retailer, and its retail strategy which suggests "designing and managing supply chain to deliver just what the customer wants once again appears to be the key to business success." Chopra and Meindl (2007) comment that rather than the implied demand and the responsiveness chain engaged; other elements affect strategic fit as well. These elements are the number of products and customer segments, the product life cycle and, lastly, the changing competitive environment. All functions in the value

chain must support the competitive strategy to attain strategic fit to achieve the position in a strategic fit zone. Tracey et al., (2005) remark on SCM based on the integration across business operations, is essential to customer satisfaction, value creation, exceptional returns, and sustain competitive advantage.

In order to accomplish the effective chain, firms need to work on the collaboration over the firm's boundaries. According to Frankel, Goldsby and Whipple (2002), the successful collaboration factors tested on grocery industry are (1) willing to innovate and change; (2) understanding the other's business; (3) common goals and objectives; (4) appropriate measures and incentives; and (5) information sharing. They explain the understandings of other's business can enhance the mutual value-added activities which are often lie in logistics competencies in matching or complementing the capabilities of others' so as to jointly improve performance. The example here is Efficient Consumer Response (ECR). Needless to say that one element facilitates the success in the collaboration is 'Information Sharing'.

Frankel et al. (2002) indicate the information sharing need not to be sophisticated, rather it should be effective in the speed and accuracy of that information. The concern about information sharing is that it is used to make better decisions especially, in the chain performance. While the information system eases the integration, the success on building competitive advantages in chain is relied upon people and process. Whipple and Russell (2007) state the collaboration level in supply chain has positive correlation with the success of chain members or the 'pay-off' in a collaborative relationship. However, they point out that company must determine the collaborative level of each relationship based on characteristics to best suit the potential of positive outcome. Put in another word, there is no 'right formula for all' continuum; the appropriateness depends on each relationship. The closeness and type affect have implication in information sharing. Firms can design their relationships, shape them and determine the degree of sharing information between each member, to enhance the effectiveness of the performance of the whole chain.

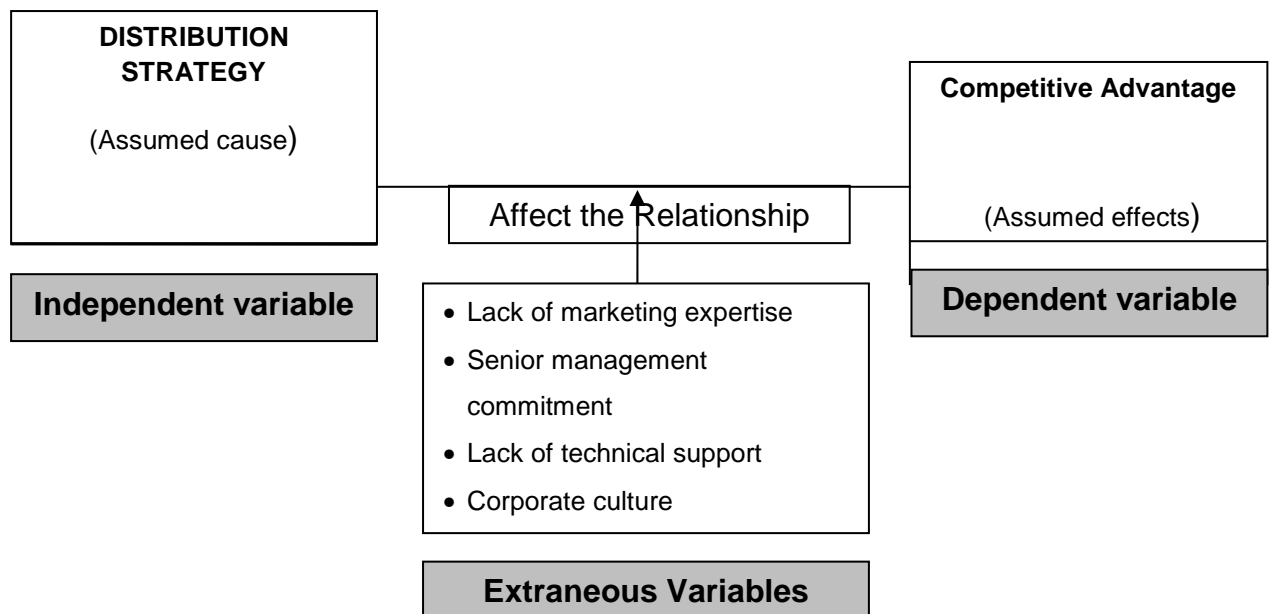
The importance of matching strategy and the success of supply chain give authors understanding of the awareness in supply chain related to logistics activities. The implications regarding to VE has on its supply chain members, and

how it moves logistical strategies to enhance the performance of the firm. The interpretation involved within this framework enables authors to assess the importance VE concerns with its supply chain and logistics management. On top of that, how the firm exerts the fitness to accomplish the competitive advantages. (<http://www.diva-portal.org>) visited 16 March 2012.

## 2.12 CHAPTER CONCLUSION

This chapter has discussed ways of improving customer service, order processing and information systems, physical distribution strategies and alternatives, collaboration in logistics management, plant layout and material handling, material handling principles, material handling productivity ratios, principles of cost reduction, and improving process performance

However, the available literature is weak because it does not answer the research objectives outlined in chapter 1; hence this study aimed at evaluating distribution system with a view of making recommendations on how the Zimbabwean companies can benefit from Logistics strategy in the Oxygen Industry. The study is guided by the conceptual framework in Figure 2.12 below and the research methodology discussed in the next chapter.



**Figure 2.12: Conceptual Framework.**

**Source: Adapted from Kumer (1999)**

## **CHAPTER THREE: METHODOLOGY**

### **3.1 INTRODUCTION**

The previous chapter reviewed the relevant literature on which this study was based. The literature review was aimed at, among other things, demonstrating how the present study fits into prior literature on Logistics Strategies. This chapter covers the methodology used in this research. The selection of the methodology is based on the research problem and stated research questions. According to Nachamius and Frankfort (1996), methodologies are considered to be systems of explicit rules and procedures upon which research is based and against which claims of knowledge are evaluated.

### **3.2 RESEARCH DESIGN**

According to (Yin 2003) research design is a blue print or plan on how data was collected, analysed and interpreted. A single case study design was used in this study. This is appropriate given that Yin (2003) argues that the case is a representative or a typical case. Verify Engineering (Pvt) Ltd is typical of many other manufacturing firms in the industry. The results that will be obtained from the case study of Verify Engineering (Pvt) Ltd will be informative about the experiences of an average company in the Oxygen Industry.

The elements of the research design are given in detail in sections 3.7 to 3.8

### **3.3 RESEARCH PHILOSOPHY**

According to White (2000) research can be carried out by either using the qualitative or quantitative approach. Research can be carried out by using a combination of the two approaches. The process of enquiry in science is the same whatever method is used, and the retreat into paradigms effectively stultifies debate and hampers progress (Hammersley, 1992). Silverman (2000) however argues that these two approaches are often evaluated differently and that quantitative research is more superior because it is value free.

### **3.3.1 Quantitative approach**

Denzin and Lincoln (2005) define quantitative research as a methodology that makes useful descriptions of observed phenomena and explains the possible relationships between descriptive surveys, longitudinal developments, correlational and ex-post factors research designs. Quantitative research is an iterative process through which evidence is evaluated, and theories and hypothesis are refined and tested (White, 2000). In quantitative research measurement is usually regarded as the only means by which observations are numerically expressed in order to investigate casual relations or associations (Denzin and Lincoln, 2005).

### **3.3.2 Qualitative approach**

Wilson (2006) defines the qualitative approach as an unstructured research methodology that is carried out using a small number of carefully selected individuals to produce non quantifiable insights into behaviour, motivations and attitudes. According to Silverman (2000) qualitative research is often treated as a relatively minor methodology. He therefore suggests that it should only be contemplated at early or exploratory stages of a study and can thus be used to familiarise the researcher with a setting before the serious sampling and counting begins.

Qualitative methods use open-ended interviews to explore opinions, behaviours and attitudes of individuals or groups of individuals (White, 2000). The data collected using such methods is usually in the form of descriptions. The advantage of this approach is that it provides a deeper understanding of social phenomena than would be obtained from purely quantitative data (Silverman, 2000).

### **Advantages of qualitative methods**

Qualitative methods are flexible as compared to the quantitative methods. They allow more spontaneity and adaptation of the interaction between the researcher and the respondent (Mark *et al*, 2005). Qualitative methods use open-ended questions which allow the respondents to respond in their own words and can thus provide more detailed information unlike the quantitative methods that are

rigid and require respondents to choose from fixed responses. However, sometimes the responses may be rather complex.

Another advantage of using qualitative methods is that the flexibility of the method allows the researcher to probe the respondents by further asking “how” and “why” questions (Mark *et al*, 2005).

### **3.3.3 Selecting the suitable approach**

The main difference between qualitative and quantitative research is that qualitative research generates rich, detailed and valid data that contributes to in-depth understanding of the context while quantitative research generates reliable population based data that explains cause and effect relationships (Denzin and Lincoln, 2005). When used along with quantitative methods, qualitative research can help us to interpret and better understand the complex reality of a given situation and the implications of quantitative data (Denzin and Lincoln, 2005). According to Yin (2003) the choice of whether to use quantitative or qualitative research depends on:

- The nature of the research
- The type of information required
- The availability of resources such as time, finance and human capital.
- The context of the study.

This research employed the qualitative approach because the case study methodology is qualitative in nature as defined by Silverman (2000). The information required to answer the research questions was obtained through personal interviews which enabled the researcher to gain an in-depth understanding (Silverman, 2000) of the impact of concentric diversification on business performance. The use of the qualitative approach is also justified by time and financial constraints on the researcher’s part. The qualitative approach also allowed the researcher to respond immediately to what the respondents said and subsequently tailored questions to the information they provided (Mark *et al*, 2005).

### 3.4 RESEARCH STRATEGY

According to Yin (2003) there are several ways of doing research which include case studies, experiments, surveys, histories and the analysis of archival information. He further states that each of these strategies has peculiar advantages and disadvantages, depending on three conditions:

- 1) The type of research question
- 2) The control the investigator has over actual behavioural events
- 3) The focus on contemporary as opposed to historical phenomena

The case base research strategy was the one which was used for the study. To get a clear understanding of the research topic “**an evaluation of oxygen gas distribution channel strategies in Zimbabwe.**” a case study with practical logistics problems was necessary. Making use of a case study approach increased the reliability of information used in the study since there are multiple sources of evidence. The validity of my study was enhanced by use of this study strategy. Given the limited time I had to conduct the study; it is vital to use a strategy with multiple sources of evidence to get vivid and precise information that could broaden the understanding of this research topic. The data collection method employed in this strategy included: Observations, in-depth interviews, company transaction records, and questionnaires. This case study method made it possible for the researcher to have an intensive investigation of Verify Engineering activities. The use of this research strategy emanated from the fact that the study was purely deductive which made use of existing knowledge and theories that eased the analysis. Given the fact that the study was qualitative, I found the case study method very suitable and this was further complimented by the fact that I made use of a single company. The only difficulty faced with this method was in the area of confidentiality of company information, as regard sensitive data. The case study strategy has a considerable ability to generate answers to the questions ‘why?’ as well as ‘what?’ and ‘how?’ questions, which we used in my questionnaires and interviews to gain a rich understanding of the context of the research and the processes being enacted (Yin, 2003), hence the

application of a case study. The table 3.1 below shows three conditions and how each of them is related to the five major strategies used in research.

**Table 3.1: Relevant situations for different research strategies**

Strategy	Form of research question	Requires control of behavioural events	Focuses on contemporary events
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/no
History	How, why?	No	No
Case study	How, why?	No	Yes

Source: Yin, 2003

The three conditions indicated in Table 3.1 consist of the type of research question posed, the extent of control an investigator has over actual behavioural events and the degree of focus on contemporary as opposed to historical events (Yin, 2003).

The following are some of the research strategies stated by Yin (2003).

### **Experiments**

Experiments are done when an investigator can manipulate behaviour directly, precisely and systematically (Yin, 2003). Experiments are conducted in a laboratory or in natural setting in a systematic way in which an experiment may focus on one or two isolated variables (White, 2000). The aim of experiments is to manipulate the independent variable in order to observe the effect on the dependent variable.

### **Survey**

This is a research strategy where a sample of subjects is drawn from a population and studied to make inferences about that population (Wilson, 2006). A survey can be either descriptive or analytical. A descriptive survey involves

identifying and counting the frequency of a specific population, either at one point in time or at various times for comparison. On the other hand analytical surveys are those where the researcher's intention is to determine whether there is any relationship between different variables (White, 2000). According to Wilson (2006) surveys involve the use of structured questions and the recording of subjects' responses.

### **Archival analysis**

According to Yin (2003) archival analysis involve answering who, what, where, how many and how much research questions. Archival strategies describe the incidence or prevalence of a phenomenon.

### **History**

The table 3.1 above shows that this strategy is used to answer how and why research questions which do not focus on contemporary events and the researcher has no little or no control on the events. Histories are the preferred strategy when there is virtually no access or control. The distinctive contribution of the historical method is in dealing with the "dead" past, when no relevant persons are alive to report what happened and the researcher has to rely on primary documents, secondary documents, and cultural and physical artefacts as the main sources of evidence (Yin, 2003).

## **3.5 CASE STUDY STRATEGY**

The case study strategy was the most suitable strategy for the research. According to Yin (2003) the case study answers "how" and "why" questions about a contemporary set of events, over which the investigator has little or no control. The focus of this study was to answer "how" and "why" questions about oxygen gas distribution channel strategies at Verify. Yin also emphasizes that a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. The case study research can take the form of qualitative or quantitative type of research which adopts an interpretive approach to data, studies things within the context and considers the subjective meanings that people bring to their situation (*ibid*).

The case study research strategy enabled the researcher to obtain an in-depth knowledge (Silverman, 2000) of the impact of logistics strategies on the performance of Verify Engineering through qualitative means. The researcher also selected the case study strategy because of the limited time to carry out the research and accessibility to research information (Anderson, 1993).

### **3.5.1 Prejudices against the case study strategy**

The greatest concern about the use of the case study has been the lack of rigor of the strategy (Yin, 2003). Yin (2003) also adds that the lack of rigor is less likely to be present when using other strategies possibly because of the existence of a number of methodological texts that provide researchers with specific procedures to follow. However White (2000) defends the use of case studies by stating that people fail to distinguish a case study research from case studying teaching. Case study teaching may involve making alterations to the research material in order to demonstrate a concept more effectively, which however is not permissible in case study research.

Case studies have also been criticised because they provide little basis for scientific generalisation. However case studies like experiments are generalisable to theoretical propositions and not to populations or universes (Yin, 2003), the case study therefore does not represent a sample but the goal is to expand and generalise theories and not to enumerate frequencies.

## **3.6 DATA COLLECTION**

### **3.6.1 Population**

According to Salant and Dillman (1994) a population is a set of units (usually people, objects, transactions, or events) that we are interested in studying. In this research the sample constituted the Verify Engineering Chief Executive Officer, General Manager Finance & Administration, two Logistic Officers drawn from Verify Engineering population, and five Oxygen customers. In studying a population we focus on one or more characteristics or properties of the units in the population (McClave, Benson and Sincich, 2007). The reason for selecting the senior management was that they are directly involved in the strategic

planning process within the organisation. The sample selected assisted in achieving management perceptions that were relatively homogenous.

### 3.6.2 Sampling procedure

Sampling procedures can be either probability or non-probability sampling. These are indicated in table 3.1. In qualitative research only a sample (a subset) of a population is selected for any given study (Denzin and Lincoln, 2005). The study's research objectives and the characteristics of the study population (such as size and diversity) determine which and how many people to select (Bernard, 1995). Qualitative research methods use non-probability type of sampling. This includes convenience sampling, judgment sampling and quota sampling. Judgment sampling was used in the research. This involved the selection of suitable units of analysis by the researcher (Salant and Dillman, 1994).

**Table 3.2: Sampling procedures**

Non probability procedures	Probability procedures
1. Convenience	1. Simple random
2. Judgemental	2. Cluster
3. Quota	3. Stratified

Source: Moutinho *et al* (1998)

#### Quota sampling

In quota sampling the researcher decides while designing the study how many people with which characteristics to include as participants (Bernard, 1995). The characteristics may include age, place of residence, gender, class, profession, industry, and so on. The criteria selected allow the researcher to focus on people they think would be most likely to experience, know about, or have insights into the research topic (Denzin and Lincoln, 2005).

#### Convenience sampling

This is a sampling method that entails selecting a sample on the basis of convenience to the researcher. The subjects or participants are self-selected or selected on the basis of availability (Denzin and Lincoln, 2005). The sample may thus be biased and may not be a true representative of the population.

### **Judgement or purposive sampling**

The researcher will use judgement sampling. This is one of the most common sampling strategies which involve grouping participants according to preselected criteria relevant to a particular research question (Denzin and Lincoln, 2005). In this research the senior management, logistics personnel and top five possible customers of the organisation were selected because of their strategic role and position in making appropriate strategic distribution channel choices.

### **3.7 DATA SOURCES**

The two types of data sources are primary and secondary. Primary data is gathered directly from the elements of the population. Secondary data is data that is collected from records holding the primary data (Salant and Dillman, 1994). The research used both primary and secondary data. The primary data was collected through interviews and the secondary data was obtained from annual reports.

#### **3.7.1 Questionnaires**

Questionnaires can be used to collect primary data. The questions asked can be structured, semi-structured or unstructured. The use of questionnaires has the following advantages and disadvantages (Salant and Dillman, 1994):

Advantages of using questionnaires

- a) There is anonymity and respondents are comfortable to answer any question without feeling any pressure or bias.
- b) They are inexpensive.

Disadvantages of using questionnaires

- a) The respondent may misread or misunderstand a question and as a result the response given will not be the correct one.
- b) The response rate may be low if the respondent lacks interest.
- c) The respondent may be interested in certain questions and thereby end up partially completing the questionnaire.

According to Miller and Salkind (2001) a well-designed questionnaire can gather information on both the overall performance of the test system as well as information on specific components of the system. Another advantage of using

questionnaires is that the validity of the results is more reliant on the honesty of the respondents since the researcher has limited control over the environment (Miller and Salkind, 2001). These are just but a few of the advantages and disadvantages of using questionnaires as a means of collecting data.

### **3.7.2 Personal interviews**

This is a method of collecting data using an interview guide containing a list of pertinent questions for investigative enquiry (Salant and Dillman, 1994). This data collection has the following advantages:

- a) It provides room for further probing.
- b) Non-verbal responses can be noted by the interviewer.
- c) The responses are immediate.

There are however disadvantages of using personal interview. These include:

- a) Interviewer bias can crop in.
- b) The cost of travelling may be prohibitive in some instances.
- c) It is costly to train interviewer.

The researcher carried out the interviews so that both bias and costs were eliminated. Interviews were conducted with the senior management and the general manager in order to obtain in-depth information at the strategic level of the organisation. The divisional coordinators (heads of department) are involved in the implementation of strategy and thus can give an insight of the success or failure of the strategy implemented.

An interview guide was drafted using both unstructured open-ended questions. The interview guide was pre-tested before use in order to establish if it was useable and the questions were easily answered by the respondents. The interviews were face-to-face and telephonic interviews.

According to Yin (2003) a case study's unique strength is its ability to deal with a full variety of evidence such as documents, observations and artefacts.

### **3.8 DATA ANALYSIS**

There is no standard format in data analysis in qualitative research (Neuman, 2006). The data obtained from the research was therefore analysed through the use data displays. Data collection entails deciding what and which meaning can

be attributed to the words and what are the implications to that effect and how does it relate to the topic under investigation (Miles and Huberman, 1994). The data was analysed by going through all the questions and establishing common themes, patterns and relationships (Miles and Huberman, 1994). All the information gathered was analysed against theory cited in the literature review and the appropriate inferences were made.

### **3.9 CONCLUSION**

Qualitative data was used in this research. The main variables of the research are distribution channel strategies and competitive advantages. The research was therefore carried out by conducting interviews to gather data. The research used non-financial measures of performance which include personal satisfaction of the employees

In the next chapter the researcher discusses and analyses the findings of the research.

## **CHAPTER 4: RESULTS AND DISCUSSION**

### **4.1 INTRODUCTION**

In this chapter, research findings from the in-depth interviews are presented and analysed using content analytic tables. Discussion of the findings is made making reference to literature. The chapter is divided into four sections, part A to D. Part A summarizes the responses that come out of the face to face interview that was done with the Chief Executive Officer (CEO) of Verify Engineering (Private) Limited, (VE). Part B is a summary of the responses that come out of a face to face interview that was carried out with the second respondent type, the General Manager Finance and Administration of VE. Part C summarizes the responses that come out of the face to face and telephone interviews that were done with Logistics and Supply Chain Manager (HQ), and Distribution Officer (DO) Mutare of VE finally, part D, summarizes the responses of the face to face and telephone interviews that was carried out with the procurement managers of the top five Oxygen consumers in Zimbabwe

### **4.2 PART A: CEO, GMFA, L&S Manager and Distribution Officer**

A face-to-face and telephone interview were carried out with the senior members of staff who some are at strategic, managerial and operational level of the organisation. The most senior Chief Executive officer (CEO) has more than seven years of experience at the position, followed by the has been employed by the General Manager Finance and Administration (GMFA) who has five years in the organisation, the other two Logistics & Supply Chain Manager and the Distribution Officer (DO) have at least two years at their present job. The questions poised to the respondent were divided into 5 sections.

- A. Demographic information
- B. Evaluation of the current distribution channel strategies.
- C. Specific distribution channel employed.
- D. Obstacles in implementing appropriate distribution channel strategies.
- E. Benefits of appropriate distribution channel strategies.

## Section A: Demographic information

Table 4.1 summarises the demographic information of the respondents that were interviewed.

**Table 4.1: Demographic information of the respondents**

Respondent	Age of respondent (years)	Professional/academic background	Number of years employed by VE	Number of years in current position
CEO	49	Engineering and business management	7	7
GMFA	7	Finance/ Legal	5	5
L&S Manager	34	Logistic & supply	4	2
Distribution Officer	39	Transport Management	2	4

The respondents were all above the age of thirty three and have each been employed with the organisation for more than two years. The information indicated that the respondents were both mature and had a strong understanding of the operations of the organisation. Two of them were at the strategic, the other on the managerial and the last one on operational level of the organisation during the period covered by the case study (2005-2012) as indicated by the number of years (2-7 years) each has held their current position. The diversity of their professions which encompass a mechanical engineer, chartered secretary, logistics and supply experts enabled the researcher to obtain rich information from the perspectives of individuals with very different backgrounds

## Section B: Evaluation of the current distribution channel strategies

**Question 1:** The Company has ventured into the Oxygen Market Industry. Please explain the distribution strategy your organization is pursuing?

This question was directed to the CEO, L&S Manager and the Distribution Officer to enable the researcher to obtain a perfect response.

**Table 4.2: Distribution strategy pursued by the organisation**

Respondent	Response
Chief Executive Officer	1. We are currently using another company that is acting as an intermediary to distribute and market our product.
GMFA	N/A
Logistics and Supply Chain Manager	1. We are using indirect distribution channel
Distribution Officer	1. Were told that we are using another company to do our distribution

The response of the respondents in Table 4.2 show that all were well aware of the distribution strategy currently the organisation is undertaking accept for the GMFA who was not asked the question. The respondents stated that they were using BOC gases Zimbabwe for the distribution and marketing of its product The CEO further highlighted that BOC gases also is a manufacturer of the same product but is unable to meet the market demand requirements of Zimbabwean industry, a distribution partnership was establish to formulate a win-win strategy All the management were aware of current distribution channel the organisation was pursuing namely **Exclusive distribution**. The findings were in line to literature which says that, in exclusive distribution, suppliers agree to sell their products only to a single wholesaling middleman and/or retailer in a given market (Etzel et al., 2004) and it is just an extreme case of selective distribution which is the firm is selling through only one middleman in particular geographic area (Perreault & McCarthy, 2003). They also mention that exclusive distribution is found for the customer product groups of which large inventories are required to offer consumers a wide selection. This kind of distribution is used when producers be interested in to maintain and control over their service level and service outputs offered by the retailers (Kotler, 2000). However, in contrary literature has identified that exclusivity agreements do not prevent the import of the same products by agents outside the commercialization chain. Nor do they

prevent parallel imports, which occur when an economic agent imports goods and sells them in a territory granted to a distributor through an exclusivity agreement -offering the same products to consumers, but generally at a lower price ([www.internationallawoffice.com](http://www.internationallawoffice.com)) visited 28 July 2012. The impact on this will result in low revenue realisation to VE hence costly in the long run.

**Question 2:** The Company has ventured into the Oxygen Market Industry. Please explain the revenues achieved with this distribution strategy your organization is pursuing?

This question was directed only to GMFA to enable the researcher to obtain a direct response from the head of finance

**Table 4.3.: Revenues achieved with current distribution strategy**

Respondent	Response
CEO	N/A
GMFA	We are currently not achieving any significant revenue through this present distribution arrangement.
L&S Manager	N/A
Distribution Officer	N/A

The response of the respondent in Table 4.3 shows that the company is not achieving recognisable revenue through the current distribution arrangement. He said it was mainly due the product pricing arrangements between VE and our main distributor of which the market price of the liquid oxygen is 0.85 cents United States cent per kg while the distributor is offering us 0.30 cents per kg. this was contrary with literature says that the partnership requires mutual support in developing sales and supporting services to the final users such as maintenance plan and emergency service requirements (Gattorna and Walters, 1996). VE was not benefiting mutual support from BOC gases in the rewards benefited from sale of the product.

**Question 3:** Please describe the existing/core business of your organisation, and explain on its relatedness of the strategy mentioned in question 1 above?

This question was solely directed to the CEO who is the main driver of the organisation strategy and policy

**Table 4.4: Relatedness of distribution strategy**

Respondent	Response
CEO	The core business of VE is to manufacture market and distribute oxygen gas throughout Zimbabwe and beyond. The relatedness or connection with the strategy mentioned in question 1 is that it enables the fulfilment of our marketing and distribution objectives.
GMFA	N/A
L&S Manager	N/A
Distribution Officer	N/A

The respondent in Table 4.4 highlighted that the core business was to manufacture and distribute oxygen gas within Zimbabwe and regions beyond, he believes that the distribution strategy being used is strongly related to the existing or core business of the organisation since it falls within their mandate of operations

The relatedness of the strategy to the core business of the organisation was supported by the respondent, and was also in line with literature which says a high degree of strategic relatedness between two organizational units implies that they have prior related knowledge that allows effective utilization of new knowledge (Cohen and Levinthal, 1990). Hence, strategic relatedness is an important factor that affects an organizational unit's decision to forge a new inter-unit linkage. As Inkpen has noted, 'New knowledge in an area we are familiar with is generally easier to acquire than knowledge about an unfamiliar area. Unrelated knowledge will be difficult to acquire and may, in fact, have limited value because of a lack of common language for understanding the knowledge' (Inkpen, 1998: 76)

**Question 4:** Please describe the major costs associated with the present distribution strategy?

This question was directed only to GMFA to enable the researcher to obtain a direct response from a financial point of view.

**Table 4.5: Costs associated with current distribution Strategy**

Respondent	Response
CEO	N/A
GMFA	Most distribution costs to the final consumer are handled by the distribution company engaged; hence I can say they are no major cost associated
L&S Manager	N/A
Distribution Officer	N/A

The respondent in Table 4.5 believes that the current distribution strategy being used has less impact on the costs. He highlighted that it is because all major distributing expenses are being met by the company engaged for distribution, in contrary with literature which say that there are still distribution costs that are traditionally not that obvious. Examples of such costs can be: suppliers will charge for the additional set ups they have due to changes in schedule, costs of poor quality, cost of poor schedule, inventory carrying costs. All the charges that are paid to store, move, insure, and pay taxes on inventory that is not selling are part of supply chain costs. The financial charges are part of weighted average cost of capital and inventory levels directly affect that (Lewin, 2003).

**Question 5:** Please explain your role in the implementation of the strategy mentioned above?

This question was also directed only to L&S Manager and the Distribution Officer to enable the researcher to obtain a direct response in the actual role played by them.

**Table 4.6: Role in Implementation the current distribution strategy**

Respondent	Response
------------	----------

<b>CEO</b>	1. N/A
<b>GMFA</b>	2. N/A
<b>Logistics and Supply Chain Manager</b>	3. Product availability 4. Authorise release of product 5. Supplies need requirement
<b>Distribution Officer</b>	1. Schedule time table for product collection by distributor 2. Prioritisation of product delivery

The responses of the respondents in Table 4.6 indicates the L&S Manager his main role is to ensure product availability for the distribution company when collecting, and authorisation the release of the product. The Distribution Officer main role is to schedule time table for product collection, and prioritisation of supply demand in line with distributor company requirements

However, in line with literature which says role in implementing channel structure affects control of the following: control over the performance of functions, the speed of delivery and communication, and the cost of operations. Most distribution channels are loosely structured networks of vertically aligned firms. Most channels of distribution are not planned. Better management of distribution channels can create many benefits (Lambert et al., 1993)

**Question 6:** Please explain the challenges that are faced in implementing the distribution channel strategy? These are summarised in Table 4.5.

This question was directed to the CEO, L&S Manager and the Distribution Officer to enable the researcher to obtain a perfect response.

**Table 4.7: Challenges of the current distribution strategy**

<b>Respondent</b>	<b>Response</b>
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<b>CEO</b>	<ol style="list-style-type: none"> <li>1. Price of our product is not determined internally.</li> <li>2. We have no control over the distribution and marketing of our product.</li> <li>3. Not realising value of our product in the market</li> </ol>
<b>GMFA</b>	N/A
<b>Logistics and Supply Chain Manager</b>	<ol style="list-style-type: none"> <li>1. Independency- there is much influence from the distributor</li> <li>2. Demand against product</li> <li>3. Bulk storage tanks</li> </ol>
<b>Distribution Officer</b>	<ol style="list-style-type: none"> <li>1. time scheduling conflict</li> <li>2. product variance with distributor</li> </ol>

The respondents in Table 4.7 highlighted several issues of which the CEO gave three concerns, which were , product pricing constraint- he said the distributor is the one who is in control of pricing of the product because he was in that business for a long time and had already set the pricing model of oxygen in Zimbabwe and beyond, also the CEO said that VE has no control over the marketing and distribution of the product since they is no marketing and distribution department, it is all subcontracted to the partner final he said there was no value realisation- meaning that the distribution company also produce oxygen of its own, hence give more importance to its own product.

The L&S Manager indicated strong influence from the distribution company that is affecting his decision making, he also pointed out demand against product since lack of coordination from the distributor to inform in advance demand increase level. The L&S manager also pointed out limited storage stage due some delays caused by distributor in picking the product.

From the Distribution officer side, he indicated time scheduling conflict with the drivers who come to pick the product, also he indicated some variance problems in the distributor truck tanks and the pump gauge on the loading bay.

The respondents highlighted some degree of challenges instigated by the current distribution strategy. Solomon and Joffe (1984) advocates that exclusive distribution can eliminate rivalry among distributors in the sale of the manufacturer's product, the arrangement has the potential of permitting the distributor himself to exercise some market power. Were the distributor is capable of exercising market power, he could restrict output of the manufacturer's goods

and attempt to reap excess, "monopoly" profits in reselling those goods. Such a restriction would be inefficient and potentially harmful to consumers.

**Question 7:** Please explain the financial challenges that are faced in implementing the distribution channel strategy?

This question was directed only to GMFA to enable the researcher to obtain a direct response from a financial point of view.

**Table 4.8: Financial challenges of current distribution strategy**

Respondent	Response
CEO	N/A
GMFA	<ol style="list-style-type: none"> <li>1. Low gross margin</li> <li>2. High operational cost</li> <li>3. Delays</li> </ol>
L&S Manager	N/A
Distribution Officer	N/A

The GMFA in Table 4.8 indicated that the financial challenges associated with the present strategy was that of low gross profit margin due to the pricing of the product which was determined by the distribution company, he also mentioned high operational cost since the product is highly dependent on electricity for its handling and the distributor is taking long in picking the product resulting in increase of handling costs. These logistics activities are contrary to literature which says logistics is all about getting the right product to the right place at the right time to the right person for the least cost. There is no value in a product or service until it is in the hands of the customer (Gottorna & Trost 1990).

**Question 8:** Please describe the support done for staff to promote the practice of the strategy stated?

The response of the respondents are listed in Table 4.9

**Table 4.9: Support for staff to promote the current strategy**

Respondent	Response
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<b>CEO</b>	<ol style="list-style-type: none"> <li>1. Team building workshops have been done with both members from our organisation and the distribution company.</li> <li>2. Educating and assessing staff through their departmental heads</li> </ol>
<b>GMFA</b>	<ol style="list-style-type: none"> <li>1. A minimum budget provision.</li> </ol>
<b>Logistics and Supply Chain Manager</b>	<ol style="list-style-type: none"> <li>1. Workshops with the distributor company were facilitated</li> <li>2. Some basic training awareness were conducted to staff</li> </ol>
<b>Distribution Officer</b>	<ol style="list-style-type: none"> <li>1. We attended in-house familiarisation training.</li> </ol>

The CEO highlighted that efforts were made to support staff to promote the current distribution strategy, although he was concerned that his staff complement was lacking a sales and marketing team and resulted in lack of correlation to some extent with the strategy support. The GMFA indicates a budget provision was made to aid all employees involved in the strategy implementation, he said that some funds were allocated to cater for basic in-house workshops to promote the current strategy, and so far he said some sessions were conducted with respective departmental staff in line with strategy implemented. The L&S manager and distribution officer responses also indicated that workshops and training awareness were conducted for staff strategy familiarisation.

### **Section C: Specific distribution channel employed**

This section looks at the specific distribution channel that is currently employed.

**Question 1:** Please describe the logistics activities involved for your product success?

This question was directed to the CEO, L&S Manager and the Distribution Officer to enable the researcher to obtain a perfect response.

**Table 4.10: Logistic activities**

<b>Respondent</b>	<b>Response</b>
<b>CEO</b>	<ol style="list-style-type: none"> <li>1. Customer service standards:</li> <li>2. Transportation</li> <li>3. Inventory management</li> </ol>
<b>GMFA</b>	N/A
<b>Logistics and Supply Chain Manager</b>	<ol style="list-style-type: none"> <li>1. Production</li> <li>2. Storage</li> <li>3. Distributer</li> <li>4. Final consumer</li> </ol>
<b>Distribution Officer</b>	<ol style="list-style-type: none"> <li>1 Production</li> <li>2 Storage</li> <li>3 Distributer</li> <li>4 Final consumer</li> </ol>

The responded in Table 4.10 highlighted three activities which are (1) setting customer service standards- the CEO elaborated that BOC gases as also the intermediate to the final consumer expect oxygen purity requirements for different customer wants and needs, customer response to service that include time factors and product quantity levels and also they employ well trained staff to assist with the offloading and decanting. (2) transportation- the CEO indicated requirement of specialist vacuumed tanker vehicles used to transport liquid product however these are for now provided by the distribution company (3) inventory management- the CEO indicated short term oxygen sales forecasting, product stocking policies, and product push strategies.

The L&S manger and Distribution Officer responses was the same they highlighted the process flow, that involve the production of oxygen from three ASU plants, then storage of the product in storage tanks, and the distributer collection of the product to the final consumer.

The respondents explained logics activities being executed at VE, it should be remembered that the activities referred to in this point are exclusively specific to the company managing the Logistics Centre in this case VE.

**Question 2:** Please describe the logistics costs involved for your product to reach the final consumer?

This question was directed only to GMFA to enable the researcher to obtain a direct response from a financial point of view.

**Table 4.11: Logistics cost**

Respondent	Response
CEO	N/A
GMFA	<ol style="list-style-type: none"> <li>1. Product picking delays by the distribution company</li> <li>2. delays in getting spares materials on time is hindering our production targets,</li> <li>3. Freight charges- as VE we import most of our items, hence our freight cost increase significantly the cost of production</li> </ol>
Logistics and Supply Chain Manager	N/A
Distribution Officer	N/A

The respondent in Table 4.11 highlighted only three major logistics costs. The GMFA highlighted chronic delays at the product loading point at the Terminal which is resulting in redundancy in the whole process; these delays have a strong financial implication on VE since it requires pushing more oxygen to achieve better gross margin results. The GMFA also mentioned problems with material requirement delaying factors which resulted in the hindrance of meeting product targets with the machines are down, also he pointed out freight charges as a logistic cost on ordered materials that is increasing cost of production.

**Question 3:** Please describe the customer services that are given by your company?

This question was directed to the CEO, L&S Manager and the Distribution Officer to enable the researcher to obtain a perfect response.

**Table 4.12: Customer services**

Respondent	Response
CEO	1 No direct relationship with the final customers, 2 We treat our distributor company as an intermediary customer 3 We offer convenient access at our storage tanks
GMFA	N/A
Logistics and Supply Chain Manager	1 No direct involvement with the customer
Distribution Officer	1 I'm not very sure about what customer services are in place

The respondents in Table 4.12 all concurred that they have no direct contact with the final consumer however the CEO highlighted that BOC gases was treated like an intermediary customer, who they offer a special service (24 hours seven days a week) of accessing their storage tanks when picking the product at VE warehouses which are strategically situated at VE terminals for distributor convenience when they come to take our product either by road or rail.

The respondents pointed out that they were treating their distribution company as its customer,

In the past, customers judged the value of a product or service on the basis of some combination of quality and price; the concept of value has expanded, however, to convenience of purchase, after-sales service, dependability and so on (Treacy and Wiersema, 1993). According to Simpson *et al.* (2001), the generally accepted definition for value focuses on the total worth of the benefits received for the price paid.

**Question 4:** Please describe how your product or material is handled, taking into count storage, equipment requirement, safety, convenience and costs?

This question was also directed to the CEO, L&S Manager and the Distribution Officer to enable the researcher to obtain a perfect response.

**Table 4.13: Product and Material handling**

<b>Respondent</b>	<b>Response</b>
<b>CEO</b>	<ol style="list-style-type: none"> <li>1 Product is stored mostly in liquid form and a few in gaseous form direct to cylinders</li> <li>2 Requires specialised vacuum tanks of high magnitude which is very costly to maintain.</li> <li>3 Safety in handling the product is of paramount importance.</li> <li>4 Product conveniently stored at terminal points for easy accessibility.</li> <li>5 Energy handling cost are exorbitant</li> </ol>
<b>GMFA</b>	N/A
<b>Logistics and Supply Chain Manager</b>	<ol style="list-style-type: none"> <li>1. Stored in Vacuum tanks</li> <li>2. No flammable and radiation gadgets e.g. cell phone</li> <li>3. No petrol vehicles are allowed near the loading bays</li> </ol>
<b>Distribution Officer</b>	<ol style="list-style-type: none"> <li>1. Special Storage tanks</li> <li>2. Handling gear- Gloves, Face Shield, Safety shoes, work suit, revelatory jackets and Aprons.</li> </ol>

The respondents in Table 4.13 highlighted the following concerning product handling. The CEO said that oxygen product is very delicate; and that it requires special conditions for storage he said the oxygen requires state of the art vacuum tanks equipment that are costly to maintain . The responded also stated the magnitude of hazards produced by the product and the precautions in place. He also pointed out the convenience on the place where the product was stored which is easily accessible either by road or by rail. He said the major constraint is of power cost associated in this entire process.

Both L&S manager and Distribution Officer concurred with the CEO response that of vacuum tanks requirement to keep the oxygen temperature at the required level, they also mentioned the hazards that are associated with the handling of the product and the protective required for handlers.

**Question 5:** Please describe the costs of product handling, taking into count storage, equipment requirement, safety and conveniences?

This question was directed only to GMFA to enable the researcher to obtain a direct response from a financial point of view.

**Table 4.14: Product handling costs**

Respondent	Response
CEO	N/A
GMFA	1. Storage costs. 2. Equipment running cost 3. Safety awareness programmes
Logistics and Supply Chain Manager	N/A
Distribution Officer	N/A

The respondent in Table 4.14 highlighted the following costs- (1) Storage- he said liquid oxygen requires temperatures of -183.0°C that requires specialised vacuum storage tanks that require high maintenance costs. (2) Equipment- Electrical motors and Lighting at loading bays situated at Terminals consume a lot of power which very costly in Zimbabwe, although it facilitates the distribution company loading time when it came to pick the product.

literature say in support that handling is a function of moving the right material to the right place, at the right amount, in sequence, and in the right position or condition to minimize production costs. Material handling involves the handling equipment, the storage facilities, and the control apparatus. Material handling is also an integral part of plant layout (Meyers, 1993). In accordance with Meyers (1993), the primary goal of material handling is to reduce costs.

**Question 4:** Please describe the role of Information System (IS) in the implementation of the specific strategy?

**Table 4.15: Role of IS in logistic operations**

<b>Respondent</b>	<b>Response</b>
<b>CEO</b>	<ol style="list-style-type: none"> <li>1 To give us information of costs involved in the manufacturing process</li> <li>2 Monitor revenue inflows from the uptake of our product by our main distributor through order processing</li> <li>3 Enable us to control the operation of the equipment involved in manufacturing oxygen</li> <li>4 Help us with information to make strategic analysis of the entire operations</li> </ol>
<b>GMFA</b>	<ol style="list-style-type: none"> <li>1 Information Storage and Analysis</li> <li>2 Assist with Making Decisions-</li> <li>3 Assist with Business Processes-.</li> </ol>
<b>L&amp;S Manager</b>	<ol style="list-style-type: none"> <li>1. We use to confirm orders</li> <li>2. Office communication</li> </ol>
<b>Distribution Officer</b>	<ol style="list-style-type: none"> <li>1. Email communication</li> <li>2. Order processing</li> <li>3. Time Scheduling</li> </ol>

The respondents in Table 4.15 highlighted that the CEO and GMFA showed an excellent general ideal of IS roles VE must adopt and benefit. However at VE that information system is yet fully functional due to infrastructure and financial challenges emanating from financial constraints, hence most of the things that have been said above are yet achieved.

The L&S Manager just highlighted how the present was operating. He said the system package was pastel accounting and was using it to confirm orders. However, the system is very small to use for the operation of this magnitude

The Distribution Officer was using excel program to design Time schedules programmes for picking the product

Most of the respondents understood the application of information systems on logistics although not fully utilised. This was in line with literature which says the order processing and information system forms the foundation for the logistics and corporate management information systems (Lambert et al., 1993).

**Question 5:** Please describe training activities including performance management programmes in place for your logistics personnel to improve the service delivery?

**Table 4.16: Training activities**

Respondent	Response
<b>CEO</b>	<ol style="list-style-type: none"> <li>1. Currently due to constraint within our budgets we have yet allocated any amount for staff training</li> <li>2. Performance management activities as management we have yet to decide on the approach to take since external consultations are a major requirement.</li> </ol>
<b>GMFA</b>	<ol style="list-style-type: none"> <li>1. No training budget</li> </ol>
<b>Logistics and Supply Chain Manager</b>	<ol style="list-style-type: none"> <li>1. No training service is being offered</li> </ol>
<b>Distribution Officer</b>	<ol style="list-style-type: none"> <li>1. Have not attended any training</li> </ol>

The CEO indicated that his organisation was unable to provide funds for training and more expertise from outside is required for the implementation of performance management exercise.

The GMFA indicated no training budget provisions were done, and said the company only recruits well trained individual as part of mitigating training requirements

Both L&S manager and Distribution officer confirmed that there was no training being offered. The L&S Manager was more worried by this present stunt the organisation is currently taking, since in his department more staff are need to undergo continuous training development in testing, and handling the oxygen product.

Literature supports performance measurement; it says it provides input for the improvement planning, choice of improvement tools, as well as for the self-assessment process (Andersen (1999)

**Question 6:** please describe the competitive strategy you have adopted to maximise profits and minimise costs?

This question was directed only to CEO to enable the researcher to obtain a direct response from a strategic point of view

**Table 4.17: Competitive strategy adopted**

Respondent	Response
CEO	1. cost advantage
GMFA	N/A
Logistics and Supply Chain Manager	N/A
Distribution Officer	N/A

The responded in Table 4.17 said that they have adopted a comparative advantage, or cost advantage, he said that they able to produce their product at a much lower cost than their main competitor. The CEO highlighted this is because they have new and very large high-tech equipment that produces large quantities of oxygen compared to our competitor.

The respondent indicated that the organisation is pursuing a comparative advantage, or cost advantage, he said that they able to produce their product at a much lower cost than their main competitor. Literature says Competitive advantages are the collection of superior competencies that create customer value (Morash, 2001). Firms deliver products and/or services which exceed the customer expectation, have more possibility to sell. According to Holcomb (1994), supply chain management now has emphasis on shaping competitiveness and profitability (cited in Tracey, Lim & Vonderembse, 2005). While some strategies create competitive advantages may be easy to imitate by competitors, the competitive advantages that routed from the chain efforts are harder to copy. Effective supply chain, thus, offer the opportunities to create sustainable competitive advantages (Cooper et al., 1997; Higginson & Alam, 1997 – cited in Tracy et al., 2005). (<http://www.diva-portal.org>) visited 16 March 2012.

**Question 7:** What measures are there in place to maximise profits and minimise costs?

This question was directed to the CEO, L&S Manager and the Distribution Officer to enable the researcher to obtain a perfect response.

**Table 4.18 cost cut measures**

Respondent	Response
CEO	N/A
GMFA	<ol style="list-style-type: none"> <li>1. Partnerships</li> <li>2. Leasing out</li> <li>3. Attachment students</li> </ol>
Logistics and Supply Chain Manager	<ol style="list-style-type: none"> <li>1. Negotiating ZESA bills</li> <li>2. Ensuring continuous running of the plant</li> <li>3. Employee close monitoring of plant performance</li> </ol>
Distribution Officer	1 Have no idea of cost cut measures in place

The respondents in Table 4.18 pointed out ways of cost cutting measures currently VE is adopting. The GMFA said that with the current distribution strategy partnership VE has with BOC gases has in a way achieved reductions in logistics cost associated with distribution and marketing. He also mentioned an extra warehouses in Mutare that is not being utilised by VE and have considered leasing it out to gain extra revenue, the GMFA said the also recommended engaging attachment students to reduce employment cost.

The Distribution Officer has no idea of any cost cut measure that are in place, while the L&S Manager indicated some negation with power company on special electricity levy to minimise internal cost, and also ensuring the continuous running of the plant by making sure no break downs take place since they cost a lot to the company. He mentioned also strong supervision of staff so that errors are minimised during work process.

**Question 8** With this current strategy is your organisation achieving a better competitive edge against similar industries? Please explain

This question was directed to the CEO and GMFA to enable the researcher to obtain a perfect response

**Table 4.19: Achievement of better competitive advantage**

Respondent	Response
CEO	1. Not at the moment
GMFA	In terms of distribution and marketing cost reduction I say yes.
Logistics and Supply Chain Manager	N/A
Distribution Officer	N/A

The CEO indicated that they were using their main competitor BOC gases in the industry for product distribution and are determining the oxygen price; he said this at the moment is adversely resulting in low achievement of a better competitive advantage. However, the GMFA highlighted that they are achieving less to zero operational cost associated with distribution and marketing, he also concurred with the CEO on the gross and profit marginal being low due to pricing agreement from the distributor.

**Question 9:** With this current work situation in place is your department accomplishing its targets? Please explain

This question was directed to the L&S Manager and the DO to enable the researcher to obtain a perfect response

**Table 4.20: Target accomplishment**

Respondent	Response
CEO	N/A
GMFA	N/A
Logistics and Supply Chain Manager	Production level demands are being met
Distribution Officer	We have accomplished our daily target

Both responses of the respondents in Table 4.20 indicated that in terms of their targets accomplishment regardless of challenges faced in their department there are able met them.

**Question 10** Please explain if you would opt to change the distribution channel strategy VE is using?

**Table 4.21: Changing the current distribution strategy**

Respondent	Response
CEO	We might change if we are able to come with a better option.
GMFA	As long as it will give us a better results the we have at present
L&S Manager	1. It depends on my role during the transition period,
Distribution Officer	1. I'm not comfortable with new ways

The respondents in Table 4.21 indicated mixed feelings regarding changing the current strategy. The CEO said that they may consider changing their current strategy if a better option arises. The GMFA agreed also stating a condition that as long as the option gives a better revenue output than the present. The L&S Manager was more worried about transition effects on his current job activities while the Distribution Officer exclusively pointed out his disagreement with any change. This was mainly attributed to the number of junior skilled staff currently in the logistics department, who by chance might get better posts than the Distribution Officer, that's why the Distribution Officer was very uncomfortable about the change.

#### **Section D: Obstacles in implementing appropriate distribution channel strategies**

**Question 1:** Please describe the challenges that are likely to be faced on implementing the appropriate distribution channel strategy?

**Table 4.22: Challenges in implementing new strategy**

Respondent	Response
CEO	<ol style="list-style-type: none"> <li>1. Funding of the new strategy</li> <li>2. Employee resistance to change</li> <li>3. Expertise requirements</li> </ol>
GMFA	1. Investment sourcing

	2. Employee costs
<b>L&amp;S Manager</b>	1. Staff Collaboration 2. Resources
<b>Distribution Officer (DO)</b>	1. Adapting

The respondents in Table 4.22 highlighted their responses according to their position level. The CEO indicated three major challenges (1) funding- which he highlighted external political factors that are hindering direct foreign investment, (2) he also indicated a possibility of resistance from employees to adapt to new ways of doing things (3) he finally pointed out that with his current staff complement the expertise that was required to execute the new strategy was not available.

The GMFA highlighted funds as major inhibitor to implement any new strategy, he said finding an investor was a challenge at the moment given the few years the project is in operation. He also pointed out employment cost were likely to increase due to implementation of the new strategy.

The L&S Manager was more concerned with resistance from his team members, and the Distribution Officer was worried about learning new things since he was now used to do the things he currently does.

**Question 2:** Please describe the support that will be there for staff to promote the practice of the new strategy stated?

This question was directed to the CEO and GMFA to enable the researcher to obtain a perfect response

**Table 4.23: Staff promotion of new strategy**

<b>Respondent</b>	<b>Response</b>
<b>CEO</b>	1. Currently we have yet to strategies what support that we will provide for staff to implement the new strategy.
<b>GMFA</b>	1. Not at the moment

<b>L&amp;S Manager</b>	N/A
<b>Distribution Officer</b>	N/A

The respondents in Table 4.23 both indicated that there are yet to put in place any staff promotional support activities for the possible new strategy.

**Question 2:** Please describe the support you will need for you to promote the practice of the new strategy stated?

This question was directed to the L&S Manager and the DO to enable the researcher to obtain a perfect response

**Table 4.24 Support requirement for new strategy**

<b>Respondent</b>	<b>Response</b>
<b>CEO</b>	N/A
<b>GMFA</b>	N/A
<b>L&amp;S Manager</b>	1. More resources 2. Training
<b>Distribution Officer</b>	1. Training

Both responses of the respondents in Table 4.24 highlighted that training in support of the new strategy will be paramount. The L&S Manger also added that he will require more resource to help personal in movement, staff bus to improve punctuality to work.

### **Section E: Benefits of appropriate distribution channel strategies**

**Question 1:** Please describe the intended benefits that your company will derive through implementation of the appropriate distribution strategy?

**Table 4.25: Anticipated Benefits of new strategy**

<b>Respondent</b>	<b>Response</b>
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<b>CEO</b>	<ol style="list-style-type: none"> <li>1. Revenue increase</li> <li>2. Cost minimisation</li> <li>3. Market share growth through customer service</li> </ol>
<b>GMFA</b>	<ol style="list-style-type: none"> <li>1. Enough revenue to increase gross margin</li> </ol>
<b>L&amp;S Manager</b>	<ol style="list-style-type: none"> <li>1. Increased efficiency and effectiveness</li> </ol>
<b>Distribution Officer</b>	<ol style="list-style-type: none"> <li>1. Motivational if properly implemented</li> </ol>

All the respondents in Table 4.25 highlighted numerous anticipated benefits. The CEO anticipated the possibility in increase of revenue, cost minimisation and market growth by implementation of appropriate distribution strategy. While the GMFA anticipated increase in financial benefits since he indicated possibility of more revenue derivation from the new strategy

The LES Manager anticipated increase in both efficiency and effectiveness when an appropriate strategy is employed while the Distribution Officer highlighted the possibility of increase motivation.

#### **4.3 PART B: CUSTOMERS**

This information was sourced through drivers of the distribution company. This information enabled the researcher to go further and approach the companies directly to gather information of their current service they are getting from our distributor and the anticipated service they would want from oxygen companies. The main aim of this is that the researcher wanted to come with better recommendation to help VE on what distribution channel they can employ.

**Table 4.26 Top five oxygen consumers**

<b>Respondent</b>	<b>Customer Name</b>
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1	Rio Zimbabwe ( ENR) Empress Nickel Refinery
2	Mimosa Mine
3	Metallon Gold Group (Shamwa, Arcturus, Mazowe, Howmine and Redwing mine)
4	Ashanti Gold Mine in Bindura
5	Zimplats

Table 4.26 highlighted above are top five companies that consume oxygen in Zimbabwe the other that were not mention are Government Hospitals in likes of Parirenyatwa, Harare Hospital, Chitungwiza Hospital, Mpilo in Bulawayo and Chinhoyi. All these have large oxygen storage tanks on their premises to carter for medical requirements.

**The following questions were asked to these companies that were as follows:**

1. Who supplies you with your oxygen?
2. Please explain your major uses of oxygen?
3. Please describe the attributes you consider when buying oxygen from your supplier?
4. Please describe the challenges you are facing in terms of distribution with your current supplier?
5. Please explain if you would accommodate a new supplier of oxygen?
6. Please describe the recommendations you can give to the suppliers of oxygen gas?

**Question 1:** Who supplies you with your oxygen?

**Table 4.27: Main oxygen supplier**

Respondent	Response
Rio Zimbabwe	BOC gases
Mimosa Mine	BOC gases
Metallon Gold	BOC gases
Ashanti Gold Mine	BOC gases
Zimplats	BOC gases

All the companies are being supplied by BOC gases although they mentioned other companies like Steel Makers in Kwekwe, Air Liquid from South Africa and Milkshame which is a Chinese Zimbabwean company. The respondents said all these other companies are still small and lack required capacity and expertise to service their requirements. However at Rio Zimbabwe's Empress Nickel Refinery and Ashanti Gold mine they said BOC gases placed an ASU plant direct on their premises to meet their huge daily demand that is about 18tonnes of oxygen per day.

**Question 2:** Please explain your major uses of oxygen?

**Table 4.28: Major uses of oxygen**

Respondent	Response
Rio Zimbabwe	Nickel Refinery
Mimosa Mine	Platinum Refinery
Metallon Gold	Gold Refinery
Ashanti Gold Mine	Platinum Refinery
Zimplats	Platinum Refinery

The responses from the above Table 4.28 highlight that oxygen is mostly being used for refinery in mines who mine Platinum, Gold and Nickel.

**Question 3:** Please describe the attributes you consider when buying oxygen from your supplier?

**Table 4.29: Oxygen supplier attributes**

Respondent	Response
<b>Rio Zimbabwe</b>	<ol style="list-style-type: none"> <li>1. Product Convenience-</li> <li>2. technical advice and service</li> <li>3. Product yields - Nickel output quantity</li> </ol>
<b>Mimosa Mine</b>	<ol style="list-style-type: none"> <li>1. Cost</li> <li>2. Oxygen quantity needed for the process</li> <li>3. After sales technical advice and service</li> </ol>
<b>Metallon Gold</b>	<ol style="list-style-type: none"> <li>1. Costs of oxygen visa vie the production output</li> <li>2. After sales technical advice and service</li> </ol>
<b>Ashanti Gold Mine</b>	<ol style="list-style-type: none"> <li>1. Product Convenience</li> <li>2. After sales technical advice and service</li> <li>3. Cost</li> </ol>
<b>Zimplats</b>	<ol style="list-style-type: none"> <li>1. After sales technical advice and service</li> <li>2. Cost</li> <li>3. Convenience</li> </ol>

The responses from the above Table 4.53 highlight that all the companies mentioned three major attributes namely quantity, costs and yield effect. Most gold mines highlighted that in place of oxygen sometime they use hydrogen peroxide in gold recovery. However, in terms of better yield they said oxygen is much idle hence a major requirement in their processes than hydrogen peroxide. However this was in line with literature which says customers have compound needs that affect purchase decisions (Shiv and Hubber, 2000). Customer needs describe the benefits that a product or service must fulfil (Griffin and Hauser, 1993), which may address several issues, including utility, functionality, aesthetics, prestige, usability and pleasure (Khalid and Helander, 2004).

**Question 4:** Please describe the challenges you are facing in terms of distribution with your current supplier?

**Table 4.30: Problems with current supplier**

Respondent	Response
<b>Rio Zimbabwe</b>	<ol style="list-style-type: none"> <li>1. Plant break down</li> <li>2. Customer after sale service</li> </ol>
<b>Mimosa Mine</b>	<ol style="list-style-type: none"> <li>1 Delays – due to shortage of trucks and driver</li> <li>2 Product shortage from the supplier</li> <li>3 Sometime given less quantities than anticipated</li> <li>4 Stop supply</li> </ol>
<b>Metallon Gold</b>	<ol style="list-style-type: none"> <li>1. Delays</li> <li>2. Product shortage</li> <li>3. Less quantities than anticipated</li> <li>4. Stop supply</li> </ol>
<b>Ashanti Gold Mine</b>	<ol style="list-style-type: none"> <li>1 Delays</li> <li>2 Product shortage</li> <li>3 less quantities than anticipated</li> <li>4 Stop supply</li> </ol>
<b>Zimplats</b>	<ol style="list-style-type: none"> <li>1 Delays</li> <li>2 Product shortage from the supplier</li> <li>3 less quantities than anticipated</li> <li>4 Stop supply</li> </ol>

The responses from the above Table 4.30 highlight and major challenge of Stop supply from the distributor when customer account is not paid up; it is normally happens when product is needed from the supplier. There are no remainders of invoice or statements sent to customers. Other challenges faced where delays in product delivery due to mostly trucks breakdown and driver shortages. They were also some mention of product shortage from the supplier due to unknown reasons. In case of Rio Zimbabwe and Ashanti gold mine they also highlighted delays by BOC gases technicians in attending problems when its ASU Plant situated on their premises breaks down.

**Question 5:** Please explain if you would accommodate a new supplier of oxygen?

**Table 4.31: Accommodation of new supplier**

Respondent	Response
Rio Zimbabwe	It's difficult because of the ASU plant established by BOC gases at our mine
Mimosa Mine	It's possible
Metallon Gold	It's possible- we have also substitute product
Ashanti Gold Mine	It's difficult because of the ASU plant established by BOC gases at our mine
Zimplats	It's possible

The responses from the above Table 4.31 highlight that two companies Rio Zimbabwe and Ashanti Gold mine said BOC gases built ASU plants on their premises and are offering them free technical service and also the product is priced way below the market value due to the electricity charge that is not factored on the pricing of the product to them. However the other remaining companies said BOC gases have placed storage tanks on their site for convenience, but said if another company with better service and cost approached them they might give it a chance.

**Question 6:** Please describe the recommendations you can give to the suppliers of oxygen gas?

**Table 4.32 Recommendations to suppliers**

Respondent	Response
Rio Zimbabwe	<ol style="list-style-type: none"> <li>1. Timeous delivery</li> <li>2. Extension of service delivery</li> <li>3. Stocking spare parts</li> </ol>
Mimosa Mine	<ol style="list-style-type: none"> <li>4. Timeous delivery</li> <li>5. Extension of service delivery</li> </ol>
Metallon Gold	<ol style="list-style-type: none"> <li>6. Timeous delivery</li> <li>7. Extension of service delivery</li> </ol>
Ashanti Gold Mine	<ol style="list-style-type: none"> <li>8. Timeous delivery</li> <li>9. Extension of service delivery</li> </ol>
Zimplats	<ol style="list-style-type: none"> <li>1. Timeous delivery</li> <li>2. Extension of service delivery</li> </ol>

The responses from the above Table 4.32 highlight that all the companies recommended timeous product delivery due to their production target demand that are much important in mining sectors. They also mention extension of service delivery particularly assistant the handling of oxygen and also advised in continuous communication from account to constantly remind on outstanding account balances to avoid stop supply. These requirement were in line with literature which says the customer may need an understanding of the product components and the component integration, by which ensure they understand the value obtained. This mainly concerns quality and functional aspects (Kim and Wilemon, 2003).

#### **4.4 SUMMARY OF FINDINGS**

##### **4.4.1 Evaluation of the current distribution channel strategies**

According to Coughlan *et al.* (2006) a distribution channel as a set of independent organisations involved in the process of making a product or service available for use or consumption. VE is using exclusively BOC gases Zimbabwe for the distribution and marketing of its product as indicated by the respondents in Table 4.2 this was in line with literature which say. exclusive distribution, suppliers agree to sell their products only to a single wholesaling middleman and/or retailer in a given market (Etzel et al., 2004) and it is just an extreme case of selective distribution which is the firm is selling through only one middleman in particular geographic area (Perreault & McCarthy, 2003) The ultimate goal of a distribution channel is to bridge the gap between producers and consumers by adding value to products or services (Kim and Frazier, 1996). Typically, manufacturers, intermediaries (wholesaler, retailer, specialized) and end users are perceived as the key actors of a distribution channel (Coughlan *et al.*, 2006).

##### **4.4.2 Challenges of the current distribution strategy**

Lambert et al. (1993), maintains that a firm must become involved in the channel design process when existing channels are falling short of performance objectives. This seemed to be contrary in case of VE. The finding showed that VE was not involved in the channel design process, since the CEO indicated some pricing challenges between VE and the distribution company citing that the

distributor is the one who is in control of pricing of the product because he was in that business for a long time and had already set the pricing model of oxygen in Zimbabwe and beyond. The GMFA gave the financial implications associated with the present strategy that of low gross profit margin as indicated by the respondents in table 4.7 and 4.8.

#### **4.4.3 Specific distribution channel employed**

The specific distribution channel employed was focusing on Logistics strategies which forms part of the supply chain process that plans, implements and controls the efficient and effective flow and storage of goods, services, and related information from the point of origin to the point of consumption in order to meet customer requirements and achieve competitive advantage ([en.wikipedia.org/wiki/Logistics](http://en.wikipedia.org/wiki/Logistics)) visited 16 April 2012 however at VE the findings indicated numerous logistics problems which were product delivery delays, product handling costs, time scheduling and conflict among the players involved in the logistics of the oxygen product and all this had negative impacts to the final consumer. This is contrary to literature which say customer perspective in logistics is seen as “Getting the right product, to the right customer, in the right quantity, in the right condition, at the right place, at the right time, and at the right cost (called the” seven Rs of logistics”) (Bowersox et al. 1986).

#### **4.4.4 Obstacles in implementing appropriate distribution channel strategies.**

Political factors in Zimbabwe were cited as a major inhibitor that is affecting VE to access direct foreign investment required to implement appropriate strategies. These factors play both negative and positive influence in the success of any business, and their influences are beyond any company control. This is in line with literature which says political environment can affect a business either positively or negatively depending on the prevailing situation in a country. It mainly forms the external factors which are part of the macro-environment and whose control is beyond the ability of human beings (<http://environment.blurtit.com>) visited 28 July 2012. Another obstacle found was that VE management were yet to come with better options for implementation

appropriate channel due to lack of appropriate expertise in VE since the CEO highlighted absence of sales and marketing department., also another obstacle cited was that most employees showed some degree of resistance when suggestions were raised to change the current strategy.

#### **4.4.5 Benefits of appropriate distribution channel strategies**

The respondents outlined different benefits that were likely to be achieved in implementing appropriate strategies. Also major oxygen company indicated the following considering when buying oxygen product, he tries to access its value by looking at various factors which surround it. Factors like its delivery, availability, which is directly influenced by channel members. Similarly, a marketer too while choosing his distribution members must access what value is this member adding to the product. He must compare the benefits received to the amount paid for using the services of this intermediary. These benefits were supported by literature that listed the following benefits: - Cost Saving, Time Saving and Customer Convenience ([www.tutorsonnet.com](http://www.tutorsonnet.com)), visited 19 July 2012.

#### **4.5 CONCLUSION**

This chapter was mainly concerned with reporting the research findings and discussing these findings, their implications and link to literature. The following chapter covers the conclusions made through the research, recommendations, the study limitations and areas for further research.

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 INTRODUCTION**

In this chapter the researcher makes inferences and conclusions of the research using the information obtained from the findings as discussed in chapter four. Recommendations and areas of further study will also be given in this chapter.

### **5.2 RESTATING THE OBJECTIVES**

The prime objective of this research was to evaluate distribution channel strategies used by VE specifically looking at these sub objectives:-

- i. to establish how VE distributes product
- ii. to identify specific channel strategies employed,
- iii. to ascertain obstacles in implementation of appropriate channel strategies
- iv. to recommend distribution channel strategies VE must adopt

### **5.3 CONCLUSION**

#### **5.3.1 Establishing how VE distributes product**

The first major finding of this study was that Verify Engineering was not directly selling its product to customers; it was using an intermediary company to do the marketing and distribution, Verify Engineering was using exclusive distribution strategy. Although all the necessary conditions as stipulated above are ideal and literature existed to support the strategy at VE, the organization could not successfully implement the distribution strategy because of the challenges explained in 5.3.2 and 5.3.3 below.

#### **5.3.2 Product pricing**

The research found that VE was not determining the price of its oxygen product and this resulted on the company achieving low gross margin because the price set by the distribution company were too low.

### **5.3.3 Control over distribution channel**

VE also had no control over the distribution and marketing of its product hence had no personal customer feel required to produce a perfect product in line with consumer needs.

### **5.3.4 Identifying specific channel strategies employed**

VE was failing to achieve better desired results with the specific channel strategies it was employing. Time schedule conflicts with the drivers were identified and it was causing numerous delays in product delivery to customers. Wastages in product handling were also identified which resulted in costs rise that affected the companies achieving a better gross margin.

### **5.3.5 Ascertaining obstacles in the implementation of appropriate channel strategies**

External and internal challenges were discovered that were obstructing the implementation of appropriate channel strategies, political factors instigated by government policy were hindering direct foreign investment that was needed by the company, on the internal part there following obstacles- current **structure at VE** did not support the sales and distribution department, - **staff**, most employees at VE indicated a possibility of resistance to adapt to new ways of doing things. **Skill**- the findings also showed that the required skills need for implementation of appropriate strategy was not present at VE. **Shared values**- employees at VE had mixed feelings when adaptation of current strategy was raised indicating lack of shared values.

### **5.3.6 Recommendation of distribution channel strategies VE must adopt**

Another major finding was that customers in the Zimbabwe market who daily require oxygen on production process were not completely satisfied by the way their main supplier is treating them. They cited problems like product delivery delays, in case of Rio Zimbabwe it was Plant break down problems some indicated customer services and stop supply issues. These findings can aid VE on what better channel strategy they can employ.

## **5.4 RECOMMENDATIONS**

In view of the findings cited above this study makes the following recommendations for policy and management practice.

### **5.4.1 Improve logistics coordination of activities**

The study recommends that VE and the BOC gases the distributor company management personnel to constantly meet and address problems emanating from current logistics activities – a better information system will be ideal to improve order processing and information flow between the two companies, collaboration in product and material handling is adverse since BOC gases the distribution company has more than 20 years of experience in oxygen handling and that could benefit VE. Synchronised time schedules of drivers who pick the product and the loading bay personnel to mitigate delays.

### **5.4.2 Environmental Adaption**

VE should constantly monitor and respond to changes in the operating environment so as to take advantage of the opportunities and minimize the threats. This will enable the organization to identify the type of environmental factors that have influenced its development and previous performance, and arrive at a conclusion of the likely important future influences.

### **5.4.3 Improving current logistics operation activities**

Another recommendation is that with the present investigation of specific channel employed, there was great attention required in the management of the logistics functions of inventory control, transportation coordination with the distribution company, warehousing and storage of the oxygen product, packaging, material handling, order fulfilment, demand forecasting, purchasing, customer service levels requirements, plant and warehouse site location and the terminal, parts and service, as the costs associated with all these activities are exorbitant and since revenue inflow from sale of product were not adequate due to the product pricing challenges.

#### **5.4.4 Quality and Service Delivery**

It is recommended that when VE ventures into a direct marketing strategy option it should keep on improving its quality of oxygen and maintain good service delivery and not use price as a competing factor as most of the respondents indicated. Most customers highlighted service delivery as a major aspect with considering supplies of oxygen. Long term customer satisfaction is derived through delivering superior product quality and service

#### **5.5 Study limitations and areas of further research**

This study was a single case analysis. Only one company in the oxygen industry was studied and the results might not be conclusive. Also the sample chosen was small and it might be difficult to make generalizations. Another major limitation was the time frame in which the research had to be carried out. Also other limitation was the difficulty in obtaining confidential information. Some of the respondent's special the Drivers from the Distribution Company felt that they could not divulge some information for confidentiality reasons and fear of their contract terminated.

The results may be inconclusive since more solid inferences may be made by looking at a number of other organizations to determine distribution channel strategies evaluations.

From the research it can be seen that there are other factors that can affect the success of ideal distribution channel strategy such as the business environment, channel conflict and the organizational culture. There is limited literature in this area and there is no literature particularly for the Zimbabwean scenario. The interactions and impact of these factors can therefore be studied to assist organizations operating in dynamic business environments.

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**Appendices**

**INTERVIEW GUIDE FOR CEO**

**SECTION A: BACKGROUND OF RESPONDENT**

What is your position in the organization?

.....

Please state your age

25-35years  36-45years  46-55  above 56

Please state your professional/academic background.

.....

1. How many years have you been employed by the organization?

.....

2. How long have you been in your current position?

.....

**SECTION B: EVALUATION OF THE CURRENT DISTRIBUTION CHANNEL STRATEGIES**

1. The Company has ventured into the Oxygen Market Industry. Please explain the distribution strategy your organization is pursuing?

.....

.....

.....

2. Please describe the existing/core business of your organisation, and explain on its relatedness of the strategy mentioned in question 1 above?

.....  
.....

3. Please explain the challenges that are faced in implementing the distribution channel strategy?

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

4. Please describe the performance management for staff to promote the practice of the strategy stated?

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

**SECTION C: SPECIFIC DISTRIBUTION STRATEGY EMPLOYED**

1. Please describe the logistics activities involved for your product success?

.....  
.....

2. Please describe the customer services that are given by your company?

.....  
.....

3. Please describe how your product is handled, taking into count storage, equipment requirement, safety, convenience and costs?

.....  
.....

4. Please describe the role of Information System (IS) in the implementation of the specific strategy.

.....  
.....

5. Please describe training activities including performance management programmes in place for your logistics personnel to improve the service delivery?

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

6. Please describe the competitive strategy you have adopted to maximise profits and minimise costs?

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

7. With current strategy is your organisation achieving a better competitive edge against similar industries? Please explain

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

8. Please explain if you would opt to change the distribution channel strategy VE is using?

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

**SECTION D: OBSTACLES IN IMPLEMENTING APPROPRIATE DISTRIBUTION CHANNEL STRATEGIES**

1. Please describe the challenges that are likely to be faced on implementing the appropriate distribution channel strategy?

- .....  
.....
2. Please describe the support that will be there for staff to promote the practice of the new strategy stated?

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

**SECTION E: BENEFITS OF APPROPRIATE DISTRIBUTION CHANNEL STRATEGIES**

1. Please describe the intended benefits that your company will derive through implementation of the appropriate distribution strategy?

.....  
.....

2. Please describe the challenges that VE may encounter in adopting the new strategy.

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

-END-

Thank you

**INTERVIEW GUIDE FOR GENERAL MANAGER FINANCE &  
ADMINISTRATION**

**SECTION A: BACKGROUND OF RESPONDENT**

1. What is your position in the organization?

.....

.....

2. Please state your age

25-35years  36-45years  46-55  above 56

3. Please state your professional/academic background?

.....

4. How many years have you been employed by the organization?

.....

**SECTION B: EVALUATION OF THE CURRENT DISTRIBUTION CHANNEL  
STRATEGIES**

1. The Company has ventured into the Oxygen Market Industry. Please explain the revenues achieved with this distribution strategy your organization is pursuing?

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2. Please describe the major costs associated with the present distribution strategy?

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3. Please explain the financial challenges that are faced in implementing the distribution channel strategy?

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4. Please describe the financial support that is there for staff to promote the practice of the strategy stated?

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**SECTION C: SPECIFIC DISTRIBUTION CHANNEL EMPLOYED**

1. Please describe the logistics costs involved for your product to reach the final consumer?

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2. Please describe the customer service costs that are given by your company?

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3. Please describe the costs of product handling, taking into count storage, equipment requirement, safety and conveniences?

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4. Please describe the role of Information System (IS) in the implementation of the specific strategy.

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5. Please describe costs over benefits associated with training activities including performance management programmes in place for your logistics personnel to improve the service delivery?

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6. What measures are there in place to maximise profits and minimise costs?

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7. With this current strategy in place is your organisation achieving a better competitive edge against similar industries, please explain?

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8. Please explain if you would opt to change the distribution channel strategy VE is using?

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**SECTION D: OBSTACLES IN IMPLEMENTING APPROPRIATE DISTRIBUTION CHANNEL STRATEGIES**

1. Please describe the financial challenges that are likely to be faced on implementing the appropriate distribution channel strategy?

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2. Please describe the financial support that is there for staff to promote the practice of the strategy stated?

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**SECTION E: BENEFITS OF APPROPRIATE DISTRIBUTION CHANNEL STRATEGIES**

1. Please describe the intended financial benefits that your company might derive through implementation of the appropriate distribution strategy?

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2. Please describe the financial challenges that VE might encounter in adopting the new strategy.

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-END-

Thank you

**INTERVIEW GUIDE FOR LOGISTICS AND SUPPLY CHAIN MANAGER (HQ),  
AND DISTRIBUTION OFFICER MUTARE**

**SECTION A: BACKGROUND OF RESPONDENT**

1. What is your position in the organization?

.....

2. Please state your age

25-35years  36-45years  46-55  above 56

3. Please state your professional/academic background.

.....

4. How many years have you been employed by the organization?

.....

**SECTION B: EVALUATION OF THE CURRENT DISTRIBUTION CHANNEL STRATEGIES**

1. Please explain the distribution strategy that your organisation is pursuing?

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2. Please explain your role in the implementation of the strategy mentioned above?

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3. Please explain the challenges that you facing in implementing the strategy?

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4. Please explain if there is support from management to promote the practice of the strategy stated?

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**SECTION C: SPECIFIC DISTRIBUTION CHANNEL EMPLOYED**

1. Please describe the logistics activities involved for your product to reach the final consumer?

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.....  
.....

2. Please describe the customer services that are given by your department?

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.....

3. Please describe how you handle your product, taking into count storage, equipment requirement, safety, convenience and costs?

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4. Please describe the role of Information System (IS) in the implementation of your daily activities?

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5. Please describe training activities including performance management programmes that you have received?

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6. What measures are there in place to maximise profits and minimise costs?

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7. With this current work situation in place is your department accomplishing its targets?

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8. Please explain how you would take it if your current job activities are changed?

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**SECTION D: OBSTACLES IN IMPLEMENTING APPROPRIATE DISTRIBUTION CHANNEL STRATEGIES**

1. Please describe the challenges you likely to face on implementing the new distribution channel strategy?

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2. Please describe the support you will need for you to promote the practice of the new strategy stated?

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**SECTION E: BENEFITS OF APPROPRIATE DISTRIBUTION CHANNEL STRATEGIES**

1. Please describe the intended benefits that your department may derive through implementation of the appropriate distribution strategy?

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2. Please describe the possible challenges that your department may encounter in adopting the new strategy?

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-END-

Thank you

## CUSTOMERS

Company name: \_\_\_\_\_

1. Who supplies you with your oxygen?

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2. Please explain your major uses of oxygen?

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3. Please describe the attributes you consider when buying oxygen from your supplier?

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4. Please describe the challenges you are facing in terms of distribution with your current supplier?

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5. Please explain if you would accommodate a new supplier of oxygen?

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6. Please describe the recommendations you can give to the suppliers of oxygen gas?

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-END-

Thank you