

**The Competitive Advantage of Nations: An Exposition of the Limitations of the
Single Nation 'Diamond' Theory in the Case of Zimbabwe's Exports to the OECD
and South Africa Markets.**

**Thesis submitted for the degree of
Doctor of Philosophy
At the University of Leicester**

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December, 1999.

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Signed.....

S.W.Z. M-Mapuranga

Acknowledgements

I am indebted to my Supervisor Professor P. Jackson whose encouraging guidance made the management of this research seem easy. I must also thank the staff members of the High Degrees Office for all their most appreciated patience and assistance. To my parents your inspiration was second to none, and Tendai, Itai and Shorai thank you for giving me reasons to persevere.

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List of Abbreviations Used

ADCs	Africa's Developing Countries as classified in UN Trade Statistical Yearbook
APEC	Asian-Pacific Economic Cooperation
CAP	Common Agriculture Policy
DD	Double-Diamond model
DCs	Developed Countries (as per UN classification)
EC	European Community
EU	European Union
ISIC	International Standard Industrial Classification
ITC	International Trade Centre
LDCs	Least Developed Countries (UN Classification)
OECD	Organisation of Economic Cooperation and Development
MD	Multiple-Diamond Model
MNCs	Multinational Companies
NAFTA	North Atlantic Free Trade Area
NICs	Newly Industrialised Countries
RCA	Revealed Comparative Advantage
SACU	South Africa's Customs Union
SADC	Southern Africa Development Cooperation
SD	Single-Nation Diamond model
SITC	Standard International Trade Classification, (Revision 2)
WTO	World Trade Organisation

Abstract

The Competitive Advantage of Nations: An exposition of the Limitations of the Single Nation Diamond Theory in the Case of Zimbabwe's Exports to the OECD and South African Markets

By

Silencer W. Z. Mzembi-Mapuranga

In searching for explanations to a Nation's export growth studies have been focused on identification of the determining conditions and analysing their relationship with the countries' export competitive advantage. One outstanding framework of such analysis has been the 'Single Diamond' (SD) conditions approach developed by Michael Porter, (1990). However, criticisms of this model range from its limitation in explaining the competitive advantage of small or developing countries, up to and including its exclusion, by definition, of factor conditions that are domiciled outside national borders. Furthermore this model's variables choice is too subjective such that their individual importance to the overall national competitive advantage are deemed country specific. Consequently alternative models that include causal factors that derive from cross-border networking of all kinds of commercial intercourse have been posited in the form of a 'Double' (DD) or 'Multiple' (MD) Diamond framework.

This research's major objective was to test if Porter's Single Nation diamond framework could be used to fully identify and explain the source of 'determining' conditions that give Zimbabwe (an African Developing Country) its international competitive advantage in Developed Countries markets. Thus using local determining conditions alone (SD) and then a combination of local and foreign (DD or MD) conditions it was possible to identify the limitations of the SD framework.

The results of this research are in line with experiences of other small countries and they suggest that the single diamond approach is limited in its explanation of the identity and sources of conditions that determine that country's competitive advantage. The Double-Diamond framework linking Zimbabwe to S. Africa's advanced economy was superior to both the SD and MD alternatives. The conclusion reached was that in the case of Zimbabwe the DD framework of analysis should be the basis for designing economic and trade development policies. However, in the context of this DD approach, further empirical research should focus on the influence of the DC's economic growth on the LDC's development pattern.

Chapter 1

The Diamond Paradigm and the International Competitive Advantage of Nations

1.1 Introduction

The role of the national economy and national policy in international competition has been a focus of attention ever since the meteoric rise of Japan and the newly industrialised countries such as Singapore, Malaysia and Indonesia. To explain that international competitiveness trade, development, marketers and industrial economists focus their analysis on factors that give industries or firms' comparative advantages or international market competitive advantages. Traditional economists in trying to explain that competitive advantage remain hinged to the Adam Smith (1776) theory of specialisation and according to their view countries must perennially concentrate on production of those products in which they have factor endowments¹ and absolute comparative advantages. Those who subscribe to Ricardo's (1817) relative comparative advantage theory also add to the same argument that countries must specialise in those products in which they have relative as opposed to absolute advantage. According to this view a country has comparative advantage in the production of a product if the opportunity cost for producing the product is lower at home than in another country. That low cost element could be in labour cost, technology or capital input.

¹ By factor endowment we mean the amount of relevant factors of production which a country possesses. The level at which these factors will contribute to a nation's competitive advantage is what is important. M Porter classifies these factors into general or specific depending on their degree of functional specificity, and also that they could be classified as basic or advanced depending on their level of sophistication (*Competitive Advantage of Nations*: 1990).

However, Wassel Leontief (1950) in his Paradox endorsed Ricardo's theory. Leontief started from the premise that a country will tend to export those commodities that use its abundant factors of production intensively and import those which use its scarce factors intensively. In essence what he was advocating is a version of the Ricardian theory, save for the introduction of factor intensity. However in the modern international trade theory Leontief's approach has been challenged. Literature on international trade flows indicates that countries that accumulated capital and skill over time will proceed to export more labour intensive products that use refined technology. Thus existing comparative advantage in simpler industrial products is eroded as other countries with more abundant and lower unit cost move to take over these export advantages. It is for that reason, among others, that some industrial economists and industrial organisation theorists have abandoned the comparative advantage viewpoint in favour of the theory of competitive advantage as a basis on which to design firms' strategies, industry development strategies or the country's international trade development policies. That departure from seeking explanations using comparative advantage theory to using competitive advantage concepts remains a fundamental problem confronting decision makers of exporting industries in many African nations.

1.2.1 An overview of the Sources of Competitive Advantage of a Nation

There have been some studies, exploratory and longitudinal, focusing on the subject of how some countries have achieved greater competitiveness on the global market. Scholars, notably Michael Porter (1990) and John H. Dunning (1992) have looked at those determinants that are conducive to the creation and sustenance of a nation's competitive advantage². Porter identified existence of certain conditions in the

² By competitive advantage M. Porter (1990) means the ability of a country to use its location-bound resources in a way which will enable it (them) to be competitive in the international markets.

successful countries and called them the *Diamond Model Determinants*. These determinants are country located i.e. indigenous and are endogenously developed. At the same time, in his analysis Dunning (1992) was concerned with the competitive advantages that accrued to firms as a result of their multinational activities, and how such firms significantly affect the competitive advantages of their home nations. The point he stressed was that there is a possibility of competitive advantage that may arise from relocating operations to low cost areas or closer to the external market area.

Other studies focused primarily on different firm level variables that are important in the development of export competitiveness. These studies included behavioural aspects of the firm, managerial experience in international business activities (Ditcti et al 1984); firm structures and industry variables, (Bilkey 1978; Cavusgil, 1984a); the internationalisation process of the firm (Johansen and Vahlne 1977; 1990); buyer-seller relationship characteristics (Koh A.C 1991); exports as an initial step towards FDI, and the influence of multinational companies in international trade (Dunning, 1992). The key focus of these studies has been on the variables or factors that influence or impact on the development of export competitiveness (M. Porter 1990) and what stages the firms go through towards establishing export market commitment (Johansen & Vahlne 1977; 1990).

Majority of these studies and their conclusions are based on firms in the Triad. The triad is defined as the USA, member countries of the European Union, and Japan (Susan Douglas and *et al*: 1995)³. In the case of M. Porter's (1990) studies he analysed firms and industries in thirteen countries but concluded on the basis of the following countries; USA, UK, Sweden, Germany, Switzerland, Singapore, Japan, S. Korea, Italy

³³ Rugman, Alan (1993), defined the Triad as North America, Western Europe and Asia-Pacific, *Business Quarterly Winter 1993*.

and Denmark. The result of this study culminated in the '*Diamond Paradigm*' hereinafter referred to as the 'Single **Diamond**' or 'diamond'. This study omitted coverage of the less developed countries (LDCs) and indeed Africa as a whole does not feature although there has been limited mentioning of South Africa. The author agrees with Brothers, K.E and Brothers, L.E, (1997) that the background to this 'Diamond model' is of large or/and advanced industrial nations and therefore may not be generalised to LDCs or Africa' Developing Countries (ADCs).

Further tests of the applicability of the single national diamond have concluded that there is compelling evidence to suggest extending the model. Varied conclusions range from those that support the Porter Diamond framework in its 'single-nation' form, (Goethart and Hardonk, 1991, Jacobs et al, 1990); to those that insist on the need of either a 'Double Diamond' (Rugman and D'Cruz 1990; 1991), or 'Multiple Diamonds' (Cartwright, 1993), as necessary conceptual frameworks that can serve to improve the explanation of the sources of key variables that form a base for the creation or maintenance of national competitive advantage. The double and multiple diamond concepts are therefore attempts to link such national competitive advantage to the networking of industries in different national boundaries.

At a different level studies have concentrated on efforts to improve the export competitiveness of the LDCs or (ADCs). Some of these analyse the importance of inter-organisational trade co-operation agreements. Others focus on the impact of import substitution, (Greenaway 1987), as a strategic trade policy framework on which a country could internally build and create competitiveness; modalities of trade liberalisation and firm privatisation programmes. Organisations such as International Trade Centre (UNCATD) GATT, European Union (EU), and institutions such as the

World Bank, and International Monetary Fund (IMF), are contributing in the development of a trade framework within which LDC exports can be increased. As a result of their endeavours bilateral trade agreements have been established to the benefit of Africa and some of the Caribbean islands. One example of such bilateral export arrangement is the African and Caribbean Pacific grouping (ACP), a group that has been afforded reduced tariffs in the European Community (EC) markets through the Lome (I-IV) Convention. This arrangement allows these countries export facilities into the EC on favoured nation basis, to an otherwise high entry barrier market area. Thus exports from these ADCs enter the EC market not on their purely product or marketing competitiveness but rather on pre-set quota basis⁴.

However, the above facilities do not mean that the EC countries do not attempt to restrict imports of these mainly agricultural products. As an example, the EC defends its agricultural market through the Common Agricultural Policy (CAP) that artificially sets agricultural prices well below world prices. Considering the lower labour costs that give comparative advantage to the LDCs this CAP prevents ADCs from undercutting EC farmers and as commented by Barbara Ingham (1992) sixty percent (60%) of the EC agricultural budget is spent on the various agricultural protection and support measures.

It is clear from the above that there is limited research on how African Developing Countries (ADCs) can raise their international competitiveness especially when their international trade is already heavily skewed in favour of their advanced trading partners. As an example even in M. Porter's (1990) study he did not project how Canadian companies could raise their international competitive advantage against the

⁴ Example of quotas from three SADC countries to the EU for 1996 are: Zimbabwe beef 2050 tonnes Mauritius sugar 11230 tones. *Source*: ITC Trade Statistics (1997).

background of a stronger national Diamond of a key trading partner, USA. The question which should have been included as part of the Diamond is how can Canada create those Diamond determinants and operationalise them in the background of USA MNCs that are key participants in Canada's industries, (Rugman, A. 1991)⁵. It is simpler to suggest that USA companies can create competitive advantage over Canadian traders' *vis-à-vis* Canada's relative economic weakness. Similarly a developing country (ADC) like Zimbabwe faces a huge task towards competitively developing and operationalising their national Diamond primarily because of the country's economic weakness compared to that of its neighbour and key trading partner, South African (S. Africa).

The dependence of small nations on DC trading partners has brought into focus a search for an alternative framework. Rugman and D'Cruz (1990) suggested that for small economies like Canada an extension of the USA national 'Diamond' could explain better Canada's sources of competitive advantages. By combining the attributes of a home country and those of its largest trading partner the weaker country could improve the competitiveness of its 'Diamond'. However, before delving into alternatives to Porter's 'Diamond' model theory it is pertinent to present its facets as enunciated in *The Competitive Advantage of Nations* thesis.

1.2.2 The Diamond Model Determinants of international competitive advantage

M. Porter's (1990) model is based on the notion that certain conditions must exist in any nation for it to be able to create and sustain international competitive advantage of its products. These determining conditions of the **Diamond** are separated into four

⁵ Rugman, A. (1992) in his critic of Porter's model *The Diamond in the Rough* argues that the existence of USA MNCs in the Canadian industries has benefit to and also indirectly inhibits the development of Canada's domestic diamond.

major and two supportive determinants. The key determining conditions were identified as the *factor conditions; demand conditions; firm strategy, structure and rivalry; and related and support industries*. These form the Four Corners of the diamond and are presumed to work as a system. M. Porter (*ibid.*) added as auxiliary factors two other determinants. These are *role of the government* and *chance* events. According to his arguments Porter (*ibid.*) maintains all these six conditions reinforce and are complimentary to each other (M. Porter 1990; pp 70-72). Below is a description of each of these conditions.

1.2.2.1 Factor conditions: the nation's factors of production, including natural resources, infrastructure and skilled labour. Some of these conditions may be in basic and general form. Those that are basic and general tend to give limited competitive advantages, as they are easy to imitate. Factors may also be specific and advanced such that they are not easy to imitate, for example high technology machines. As correctly summarised by Grant R.M. (1991) these factor endowments also lie at the centre of the traditional theory of international comparative advantage, albeit in this case mobility of such factors is assumed.

Two points must be clarified with respect to these factors and international competitive advantage. Firstly international trade in terms of general and basic factor endowment consigns the international competitiveness debate into a simplistic two-product Heckscher-Ohlin trade model of factor intensity and abundance, and is based on natural resources absolute comparative advantage. Secondly, in modern times increased factor mobility and relocation of production facilities across borders have put the argument for self-dependence based on domestic resources into the shadows of strategies for globalisation.

1.2.2.2 Demand Conditions: the nature of home demand for products or services, its level of sophistication and developmental trends. M. Porter (1990) maintains that the higher the level of customers' sophistication and discernment the stronger would be the pull for firms to upgrade their products, greater R & D etc. Included are relationships that firms establish with down-stream buyers. Demand conditions also include market size and its growth pattern because these are important in developing both economies of scale (low cost advantages) and new technology (differentiation advantages).

The structure of demand (representative demand) determines the pattern of manufactured products and also places emphasis on the need for advanced factors of production/processing in order to meet the increased sophistication of demand in any country, (Linder, 1961). The author agrees with both Grant's R.M (1991) and M. Porter's (1990) arguments that characteristics of home demand are important in shaping the differentiation attributes of domestically made products and in creating the pressure for innovation and quality. However, the author takes umbrage to the fact that there is no indication of the importance and influence of foreign demand as a driving force for the production of internationally competitive products. What could be more important is the internationalisation of that local demand, (Brouthers and Brouthers, 1997). Internationalisation refers to whether demand conditions that infuse better quality attributes for an industry's products are restricted to the home nation or that such demand conditions derive from multiple nations.

1.2.2.3 Firm strategy, structure and rivalry: the domestic rivalry of firms and the conditions governing the intensity of their rivalry, organisation and management. This takes into account the industry structure, (inclusive of nature and form of firm ownership), whether competition is inter-firm or intra-industry and the level at which this

is industry specific or general. According to M. Porter (1990) the intensified competition and rivalry creates greater drive for more innovations and industry dynamism.

1.2.2.4 Related and support Industries: the presence or absence of suppliers and related industries that are internationally competitive. According to M. Porter this is a good base for firm/industry clustering and networking. Economies that are external to individual firms and industries are internalised within those clusters.

1.2.2.5 Chance

These are occurrences that have little to do with circumstances in an industry and are often largely outside the power of firms. They are however important in that they create discontinuities that allow shifts in competitive positions of firms or industries. They alter the conditions in the 'Diamond' by either presenting an export opportunity or internal strength that is created from external factors. Examples of such chance occurrences are shifts in exchange rates, or any increased input costs that may create factor disadvantages, thus may induce changes to a firm or industry's competitive advantages.

1.2.2.6 Government

This is the role of the government in creating an enabling environment. Such activities include the creation of and implementation of support programmes, strategic trade policies, exports promotion programmes and fiscal policies designed to create an environment that is conducive to the country's firm or industry's international competitiveness. An example of such interventions is a policy to reduce bank interest rates, i.e. reduce the cost of loan capital; and devaluation of a country's currencies

against those of its trade partners.

The above six determining conditions are linked at firm, industry and national level. However, as per the Diamond theory the extent of their effect on each other is subjective and not directional. Furthermore the treatment of the technology factor in the Diamond determinants by Porter has been decried (Narula, 1993), and so was the absence of MNCs (Dunning, J. 1992; 1993). MNCs play a role as independent forces in developing the ADC's trade pattern (Dunning 1990, 1992, 1993). Therefore in order to fill that gap these two factors were introduced into the research and as part of critical variables in the creation of Zimbabwe's competitive advantage.

1.3 Objectives of the study

The main objective of this study was to establish whether the international competitive advantage of Zimbabwe's exports in the OECD markets could be explained by M. Porter's (1990) 'national Diamond' model. Following arguments projected by Rugman and D'Cruz, (1991) and Rugman and Verbeke, (1993), Dunning, J. (1990, 1993) and Brourthers and Brourthers, (1993), this study further examined two proposed alternatives to the 'Diamond' model. In that respect the study compared M. Porter's (1990) 'Single-Diamond' (**SD**), the Rugman (1991) 'Double Diamond' (**DD**) and 'Multiple-Diamond' (**MD**) models as suggested by Dunning, J. (1992, 1993) and Cartwright (1993).

The second objective was to gain insight into whether Multi-national companies (MNCs) and technology that are introduced into Zimbabwe's diamond are significant variables that merit to be treated as foreign inclusions to the local diamond. That analysis was therefore seeking to reveal if these factors would increase the explanatory level of the SD model. In that regard four models that come close to explaining these

issues were discussed. These are the *Network Paradigm* (Rugman and D'Cruz 1994); *Eclectic Paradigm* (Dunning J.H 1992); *Knowledge Acquisition model* (Johnson and Vahlne 1977; 1990); *Information Utilisation model* (Souchon, A.L. and Diamantopoulos, 1996); and the *Buyer-Seller relationship model* (Johnson and Vahlne, 1990).

1.4 Reasons for the Study

A number of reasons inspired the author to research on the development of product competitiveness of Zimbabwe exports. The main reason was to establish the sources of Zimbabwe's competitive advantage using the SD, DD and MD models. In the process we would expose the strength or limitations of the SD model in respect of its power to explain the country's sources of competitive advantage. Currently there is a perennial hydra of problems stemming from limited research into the country's sources of competitive advantage and what exogenous and endogenous variables are critical for the development of that international competitive advantage. Therefore by this approach the researcher applied a DC based model in an ADC.

The second reason for this study was to expose to policy and decision-makers in Zimbabwe the sources of the country's international competitive advantage and the specific factors from which the development of future competitive advantage may be created or sustained. It was the author's view that an inductive and open-system approach based on the SD model's determining conditions would contribute to the discussion of the country's internal strength and weaknesses in creating conditions for international competitive advantages. By using the Diamond framework, developed in advanced countries, as a litmus test, it was hoped the results would reveal the extent to which each variable of the SD or any other formulation could be emphasised.

Management literature points to the difficulties that practitioners confront in the implementation of the principles embodied in the diamond model. Although the diamond theory captures a wide spectrum of industrial economics and international trade issues, problems arise because there is non-confluence of favourable conditions in many national diamonds, and also because of the fact that world class competition and world class demand do not necessarily exist within the national borders of some less industrialised nations.

1.5 Organisation of the study

The study outline is divided into 9 chapters. The first chapter is an overview of the Diamond theory. The second chapter (2) is an outline of Zimbabwe's facets of the diamond conditions and a brief history of the country's export trade development. Chapter three is a discussion and review of literature on the conceptual frameworks of the single nation diamond (SD) theory and the criticism that have led to the development of the double-looped diamond (DD) or the multiple-diamond (MD) formulations. These DD and MD models entail introduction of foreign determinants of competitive advantage into the closed SD system, opening it to external interventions.

Chapter four, Part 4A, proceeds to discuss literature on the role of imported technology and its impact on the export supply capability of the less technologically innovative third world country exporter firms. This largely focused on imported technology, as an immediate substitute of 'own R&D' factor that the SD model asserts should be generated from within the country. Part 4B centres on the discussion of the influence of MNCs on the export capability of the local industries. The literature review focused on those elements of the MNCs ownership, locational and internalised advantages that could spillover and diffuse in the industry. This was based on the presumption that

these factors were also deemed to be catalytic to the local firms' decision to adopt strategies similar those that give the MNC its international competitive advantages. The last part (4C) looks at the direct role of the government in the international competitiveness of local firms. That role being negative, neutral or positive form of interventions, and could have a direct bearing on the export competitiveness of the specific industries.

Chapter 5 is a discussion of firm level factors directly related to export product competitive advantage. Particular emphasis was placed on product differentiation, financial limitations and the significance of the exchange rate variability on the price competitiveness of Zimbabwe's exports. Chapter 6 is also a discussion of micro and macro factors that link domestic to foreign resources. Discussion and analysis was focused on business networks as an extension of the domestic related and support industry facet of the diamond system. The next chapter (7) details the methodology used in this research and operationalisation of the variables used. Chapter 8 contains the data analysis, and the last chapter (9) is a discussion of the results and the conclusion.

Chapter 2

Economic and Export Trade Background of Zimbabwe

2.1 Export Trade Development History

Zimbabwe's main trading partners for over two decades (1970-1996) were UK and South Africa¹. This is a legacy of two historical events. These events are the colonial linkage between Britain and the then Rhodesia (Zimbabwe) and the economic sanctions imposed on the later country between 1963-1979. Prior to that period Britain as the colonial master instituted such an industrial structure and model for development that was designed to provide for the merchantal needs of its home industrial requirements. In his study of trade development between Britain and its colonies Jones, R.A (1988: 44) commented that;

“ Colonies played an important role in the Mercantile system. They were regarded as outposts of the home economy, their *raison d'être* being to strengthen the power of the parent state... . They were subjected to special sets of laws designed to tie their external trade opportunities to the mother country, and pre-empting exchange with the rest of the world unless in a re-export form via the mother country”.

This relationship had such a strong international trade umbilical cord and affected the development of the relevant business culture tenets that up to day, 1999, still feeds raw material, semi-processed goods and agricultural products into the UK industrial and retail markets. Britain exerted a pull pressure on the development of the export business in Zimbabwe. The implied export business knowledge acquisition and

¹ Statistics from the Central Statistics Offices in Harare, Zimbabwe, excludes exports of the services sector. For the purpose of computing traded goods only those products which are produced or manufactured and are classified as originating in Zimbabwe are treated as exports for this study. To avoid complexities arising from different currencies export valuation is based on USA dollars.

resultant developments continued to direct the export activities towards a greater agro-industry business. Such industrial growth was based on natural resources such as cheaper arable land, low cost labour and limited base metal mining and agricultural manufacturing. This pushed Zimbabwe firms into specialisation in agro-industry products, hence the very advanced tobacco and textile business exports from Zimbabwe². Unmanufactured Tobacco is the highest earning export product for Zimbabwe and such companies as British America Tobacco (BAT), still hold the highest investment levels in both raw and manufactured tobacco exports. This has been the case since the late 1890s. In an independent study Da Silver (1962:88), concluded that;

“ the metropolitan countries by means of restrictive commercial practices discouraged the entry of processed or finished goods *into their domestic markets* while giving fiscal inducements to the entry of unprocessed primary products”³.

On the economic sanctions front Rhodesian (Zimbabwe) firms could neither trade with former trade allies in Britain, nor could they openly seek alternative markets for their export products. Evidence of a few foreign countries that violated these sanctions have been documented and in many cases these countries pursued strategic trade policies that served the export interests of their home firms. One such country was S. Africa who was ready to allow for a controlled trade relationship with Rhodesia, (Trade Agreement of 1963). Trade was such that S. Africa literary gave Rhodesia a window for exports in that the former concentrated in exporting into the global market leaving Rhodesia to serve those segments of its domestic market for any quasi-commodity shortages. Therefore only certain products could be exported into S. Africa. However in some cases Rhodesia's 'secret' overseas export sales were effected through pig

² Zimbabwe is regarded as having the largest Tobacco auction floors in the world.

³ Words in italics are the author's own emphasis.

backing on S. African companies. From that perspective industrial and international marketing knowledge and its development followed those in S. Africa. This was particularly evident in the manufacturing, agricultural and financial sector where subsidiaries of S. African MNCs led in product innovations. Thus again the exposure of local managers and policy makers to international trade and marketing was also influenced by and limited to that available in S. Africa.

2.2 Zimbabwe's Trade Relationships with DCs

In as much as some export business management skills of the indigenous entrepreneurs could have been enhanced from the 'learning by doing' or networking with S. African or British counterparts studies done in Africa do not show any such developments. Meier's (1974, pp.123) concluded that;

" In all cases the stimulus from foreign trade produced some positive carry-over. There was no evidence of 'immiserisation through trade'. But the diffusion mechanism was weak, not because limited wants or lack of response to price and income incentives, but because of the absence of market information, high risk, insufficient market opportunities, lack of market facilities...and of integrative market forces".

S. Africa's restricted trade with Rhodesia also limited its degree of influence on the development of Rhodesia's national diamond. The trade interaction process did not improve export orientation and marketing skills of Rhodesian managers or policy makers beyond that of S. Africa. The same could be said about the UK case. Therefore endogenous imitating of foreign methods (production/processing) or developing of local determinant conditions based on information filtering from markets abroad was dismally low. It is thus arguable that both the economic sanctions and the colonial industrial development trend resulted in a deficiency in international business skills. Da Silver (1962: 138,139,140,142) in his analysis of colonial linkages summarises this point as

follows;

“Colonial rule was itself a barrier to the acquisition and diffusion of technical and managerial skills among the colonised people...the technical posts and practically all the executive and professional ones in the administration, plantations, banks and other technical know-how were made irrelevant by the particular role which colonies were expected to play in the world economy, ...as primary producers and markets for manufactured goods”

During this period the competitive advantages enjoyed by UK and S. Africa against Rhodesia (Zimbabwe) continued to improve. At the same time the S. Africa industrial base and economic strength, buoyed by gold and diamonds trade, expanded and solidified. Broader and comparatively diversified multinational investments by corporations such as Anglo American Corporation, Debeers and others injected either foreign advanced skills, capital and technological input or forged strong networks and relationships with buying houses in their home countries. This infused international business and technological spillover into the development of S. Africa's national Diamond. Meanwhile Rhodesia remained locked in a trade quagmire, albeit periodically accessing world markets. At the same time because of the economic sanctions the firms' strategies and government economic and trade policies became domestic market oriented. This was subsequently prolonged by a policy of import substitution that was adopted immediately after independence and maintained between 1984-1990.

The Zimbabwe government (post 1980) perennially intervened in the domestic market with macro and micro policies such as price controls, controlled inflow of foreign investment (FDI) and a number of fiscal measures targeted at export and import control. This was aimed at developing the capabilities of the home industries. These strategic trade policies were hoped could work towards the creation of an economically strong domestic industrial base. According to Brander, J & B. Spencer: (1981) such tactics are implemented on the notion that the local firms and industries respond by upgrading their technology and resource utilisation. That view assumes that the

international trading community would not react to such import substitution policies, thereby giving Zimbabwean firms and industries time to wean away from the infant industry protection.

M. Porter (1990) argued that even if the country is small its domestic market could still provide a source of endogenously created competitive advantage. Although he cites the case of Sweden's Volvo, Scania-Saab and Nestle companies as good examples of such successful companies who developed national competitive advantage from home bases, it is also true that foreign operations in the larger EC markets were significant in the development of their economies of scale. The researcher deliberately mentions this particular point in order to highlight the weakness of the regional markets argument.

Firstly Zimbabwe's population and its demand level is small,⁴ and therefore cannot sustain critical mass level to generate acceptable economies of scale. Secondly in the regional markets of Southern African Development Commission (SADC)⁵, excluding S. Africa, Zimbabwe has a stronger economic base and therefore a favourable balance of trade. Consequentially the country tends to have a relatively stronger exchange rate at most of the times. This, *ceteris paribus*, adversely affected the growth of its export trade to these countries. Thirdly as these regional countries base their foreign trade on USA dominated currency it is imperative that somehow they have to generate that currency because only payments dominated in USA currencies are acceptable. This lack of currency convertibility problem may mean either these countries would have to trade with third parties to generate the requisite USA currency or borrowed from the World Bank on Special Drawing rights or such other facilities. That is also a problem

⁴ 1995 population of Zimbabwe was 14.5million and per capita income was US\$ 680 . *Source:* Central Statistics Office of Zimbabwe (CSO).

⁵ SADC is a regional economic integration made up of the following countries Angola, Burundi, Comoros, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Rwanda, Somalia, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. S. Africa joined the organisation in 1995 but is being excluded in this aspect because of its dominance of the regional markets and is considered as the main competitor to Zimbabwe for the SADC regional market.

because these countries sell very limited high earning exports and frequently some of them have had their loan facilities intermittently suspended by World Bank and the International Monetary Fund (IMF).⁶

In the background of a small local and regional market the question is what then can Zimbabwe do to create the relevant and broad-based national competitive advantage? What necessary conditions are missing in its economic jigsaw and thus making that export competitive advantage remain elusive? How can firms and industries in other LDC achieve competitive advantage, which is devoid of the pull factor from the developed countries? Are these critical but unidentified parts of the puzzle the same determinants stipulated by M. Porter as the **Diamond Paradigm**, in his thesis *The Competitive Advantage of Nations* (1990).

2.3 Zimbabwe's Export composition

Prior to 1995 about 70% of the population (10.15 million) depended on agriculture, and that sector contributed 40% of the country's exports. According to World Bank (1983) close to 60% of manufactured value-added related to the agriculture sector, with mining following just behind. This industrial base for manufactured products has been there for a long time as was confirmed by Pontus Brainerhjelm and Gunnar Fors (1995, pp.5.) when they commented that;

" Zimbabwe has a long tradition of manufacturing and has for the last 60 years been one of the most industrialised and diversified countries in the sub-Sahara Africa".

⁶ World Bank withheld financial assistance to Zimbabwe 1997 (*Zimbabwe's Financial Gazette Aug 14. 1997*), and Kenya's political upheavals also forced the WB to withhold assistance and suspended any loans and thus affected the importing capability of the industries in those countries.

However the magnitude of manufactured exports is heavily skewed in favour of low processed products.

2.4 Zimbabwe's Competitive Advantage

To analyse the competitive advantage of Zimbabwe two African countries, South Africa (DC) and Kenya (ADC) can be included as comparators. This is because these countries also export to similar UK and SADC regional markets. Taking their manufactured products as broadly defined by Lall *et al* (1997, pp. 67);

“...to include the whole range from resource based products, primary products that may have undergone even minor degree of processing”,

it is theoretically possible that competitive advantage among these countries could be derived from differences in their technological and labour costs differentials. On such a presumption and following the OECD (1987) classification of export activity intensity Zimbabwe's manufactured exports could be categorised as in Table 2.1 below.

Table 2. 1 Activity Intensity and Source of Competitive advantage					
Activity	Competitive factor	Examples	World Mfd. Trade %		
			1980	1995	Distribution 1995
Resource-intensive	Access to natural resources	Food products.	18.8	15.1	8.5
Labour-intensive	Cost of semi-skilled labour	Garments	17.4	17.9	16.9
Scale intensive	Length of production runs	Steel, paper	27.8	23.7	10.0
Differentiation	Products tailored for niches	High-tech.	24.3	23.4	25.8
Science based	R & D innovations; Upgrades etc.	Electronics etc.	11.4	19.9	38.8
			100	100	100
Source: adapted for illustration from Lall, S <i>et al</i> (1997), Zimbabwe: Enhancing Export Competitiveness					

The above categorisation of activities is however not without weaknesses, because it is fraught with a number of overlaps. Examples of such overlaps are in the varied factor intensity utilisation in production of similar products by different firms; and the problem of separating resource based products that are manufactured under high technology from those processed under low technology. It is also common that resource based products can be processed by different types of technology that can either be high capital or labour intensive. Furthermore labour intensive industries are not necessarily restricted to low technical skills or scales. It is therefore necessary to raise a number of *caveats* in using this classification.

However notwithstanding these limitations the researcher agrees with Lall *et al.* (1997) that this approach is an appropriate classification because it reveals a country's factor intensity and its relationship with the various facets of the 'national' diamond. Using this method the distribution of manufactured exports from Zimbabwe, Kenya and S. Africa are as shown on table 2.2 below.

Table 2. 2 Distribution of Exports by Technological Categories (%)							
	Zimbabwe		South Africa		Kenya		World
	1990	1995	1990	1995	1990	1995	1995
Resource-intensive	11.3	19.7	44.3	35.3	51.5	51.0	8.5
Labour-intensive	26.4	35.2	11.2	10.7	14.7	27.7	16.9
Scale intensive	56.0	39.0	34.9	40.6	22.7	18.2	10.0
Differentiation	5.9	5.6	6.9	10.2	8.9	1.0	25.8
Science based	0.4	0.5	2.6	3.2	2.1	2.0	38.8
	100	100	100	100	100	100	100
Technologically complex	62.3	45.1	44.4	54.1	33.8	21.3	
High-technology	6.3	6.0	9.6	13.4	11.1	3.0	
Other	31.4	48.9	46.0	32.5	55.1	75.7	

Source; Adapted from Lall *et al* (1997) Zimbabwe: Enhancing Export Competitiveness

The above statistics indicate that between 1990-95 there were mixed changes in manufactured export activity intensity in the three countries. A casual observation shows that between 1990 and 1995 Zimbabwe increased its export composition towards resource and labour intensity activities. During the same time scale intensity activities of manufactured exports drastically reduced from 56% to 39 %. Furthermore a reduction in technologically complex products of these exports (62.5 to 45.1 %) was compensated by an increase in non-technical activities (*other*). Kenya, another ADC shows a similar picture although with marked decreases in both scale intensity and differentiated product categories. Contrary to these two their DC counterpart had a reduction in resource-based activities and instead increased its scale and differentiated product activities. In comparative terms the world statistics show a heavier

concentration in the differentiated products and science based activities⁷, a complete opposite movement compared to the two ADC countries.

Given the indication that by 1995 the technology intensity of Zimbabwe's exports seemed to be declining this could be interpreted in two ways. Firstly it could be an attempt by the manufacturing sector in the ADCs to utilise resources that are available in the domestic diamond (*Import substitution*). Alternatively as a result of lack of technologically advanced assets they have focused on use of abundant basic factors. These changes in activity intensity and the resultant export market positioning of the export product impacts on the overall competitive advantage of Zimbabwe.

Export product's market positioning could be defined as 'rising stars'; 'falling stars'; 'lost opportunities'; and 'retreats', (Lall, *ibid.*). Rising stars are those "exports with strong competitiveness in dynamic products" (Zimbabwe's *fresh red roses*); and falling stars are "those exports with rising market share in a non-dynamic product", (*metal and steel products*). Meanwhile 'lost opportunities' are exports with "falling market shares in dynamic products", (high technology *engineering machines*); and 'retreats' are those that are "losing market shares in a non-dynamic products" (*high street designer clothes*). Using such a four-fold classification it is easier to assess the strategic fit between an industry's product intensity and the revealed comparative advantage (RCA) of Zimbabwe's products. However it must be emphasised that changes in factor intensity *per se* is not conclusive evidence of a declining or improving competitive advantage. Other factors such as the nature of the manufactured products determines the type of factor intensity that is adopted. What is critical in the present analysis is the type of intensity that provides basis for cost competitiveness in the OECD markets, viz, technology.

⁷ Appendix B gives details of Zimbabwe's 25 of the 50 largest Manufactured exports in 1995, classified by technological Categories.

2.5 Zimbabwe's Revealed Comparative Advantage

RCA is of two forms. There is the 'static' comparative advantage, which is embedded in the notion that a country's natural resources gives it the comparative advantage in the Ricardo sense. This aspect of RCA is related to factor endowment and their availability to a country or industry at a particular time. Static comparative advantage includes the existence of physical capital, telecommunications, and natural resources that are superior to those of competitors. On the other hand there is the 'dynamic' type of comparative advantage. This is an advantage that is associated with upgrading of skills, innovations, emergence of technological systems and includes a Schumpeterian type of industrial development. The dynamic comparative advantage results in the introduction of new products, processes and enhanced *modus operandi*. This type of RCA is linked to sophisticated, high technology and high added-value production.

As indicated earlier the researcher substituted the world's market size with that of the OECD market because Zimbabwe's exports are insignificantly small by world levels. The OECD is also the main export destination of Zimbabwe's manufactured products. From a theoretical perspective products traded within that OECD market reflect a market's demand for such imports. The researcher used the OECD in measuring Zimbabwe's RCA. Following Balassa (1977) the RCA index was used to reveal the various products and their market share in relation to Zimbabwe's total exports.

For the purpose of analysing the Zimbabwe's RCA in various exports the method used follows Lall *et al* (1997). Products were grouped into 'emerging comparative advantage'; 'continuing comparative advantage'; 'declining comparative advantage'; and 'continuing comparative disadvantage'. This method was deemed appropriate because over a period RCA per export product varies across these forms. Therefore

the resulting schematic classification of Zimbabwe's export composition is as shown in table 2.3 below⁸.

⁸ Formula used to compute data on table 2.3 below is $RCA_{ij} = (X_{ij} / X_{oj}) / (X_{im} / X_{om})$; where X_{ij} is the sectoral exports from Zimbabwe; X_{oj} is the sectoral imports in the OECD; X_{im} is total manufacturing exports from Zimbabwe; and X_{om} is total manufactured imports into the OECD. In this case we used net export values normalise by the formula $E/(E_{ij}+M_{ij})$, in order to avoid size effects. RCA assumes relative export performance for a product is an indication of its competitiveness. The weakness of the RCA is that it does not provide for a symmetrical ranking of indexes where competing countries are very different.

Table 2.3 Zimbabwe's Comparative Advantage in Various Products

Emerging Comparative Advantage					Continuing Comparative Disadvantage				
Intensity	SITC	Products	1990 RCA	1995 RCA	Intensity	SITC	Products	1990 RCA	1995 RCA
RI	054	Vegetables Fresh & simply preserved	0.7	1.6	RI	014	Meat Preserved Nes. etc.	0.5	0.8
RI	611	Leather	0.9	1.4	RI	058	Fruits preserved & prepared	0.4	0.1
LI	821	Furniture, Parts thereof	0.8	1.4	RI	122	Tobacco manufactured	0.8	0.7
LI	897	Gold, silverware, Jewellery	0.1	1.8	RI	641	Paper & paperboard	0.5	0.7
Continuing Comparative Advantage					LI	655	Knitted Fabrics etc	0.5	0.2
LI	651	Textile Yarn	3	1.8	SI	523	Inorganic chemicals	0.1	0.1
LI	652	Cotton Fabrics woven	1.1	1.4	SI	591	Pesticides, Disinfectants	0.4	0.2
LI	842	Men's outwear not knit	2.1	1.6	SI	784	Motor Vehicle Parts, Accessories	0.3	0.0
SI	671	Pig Iron (Ferro chrome)	21.8	14.1	D	718	Power generating machinery	0.0	0.0
Declining Comparative Advantage					D	736	Metalworking mach. & tools	0.1	0
RI	661	Lime & Cement	1.6	0.8	D	741	Heating, cooling equip.	0.1	0
LI	658	Textile articles	1.3	0.4	D	773	Electric. Distribution etc	0.9	0.2
LI	843	Women's outwear non knit	1.6	0.6	D	778	Electrical Machinery	0.2	0.1
SI	672	Iron, Steel Primary forms	6.6	0.4	D	874	Measuring, Controlling instruments.	0.1	0.0
SI	791	Railway vehicles	2.3	0.2					

Source: Adopted for illustration from Lall *et al.*, (1997), Zimbabwe: Enhancing Export Competitiveness

Note: RCA >1, product has a larger share in OECD trade than the country's total manufactures

RCA <1, country has a larger share of OECD trade in all its manufactures than in the product

=1, product and country share of OECD is equal

RI, resource intensive

SI, scientific intensive

LI labour intensive,

D, differentiation intensive

Based on the RCA indices above we can conclude that 'emerging comparative' advantage leap-frogged between 1990-1995. These changes seem to be in the labour and resource intensive industries. The major disadvantages are in the scientific area and in product differentiation. If these results are compared to the data on table 2.2 above the technological complexity disadvantage becomes clearer. By revealing the magnitude of RCAs in various sectors we are therefore in a position to identify the misalignment of resource allocation and factor intensity, and that of industry activity intensity to world market trends.

The performance (RCA) of Zimbabwe's exports in the OECD markets is shown on Table 2.4 below. On the strength of current exports, and as indicated by the RCA indices Zimbabwe's products were neither competitive nor dynamic. Firstly the country's exports are so small (Table 2.4), even by the OECD levels. Secondly in those areas where Zimbabwe's export growth is greatest the world markets growth rate seemed to be declining. Although gains were experienced in the unmanufactured tobacco and foodstuffs these were very small compared to the overall growth of the OECD market.

Table 2.4 Zimbabwe's market share in OECD (10 Most important exports, 1990-94)

	Market share in OECD (%)		% change in mkt. Share	% Total of ZM. Exports to OECD			Total OECD imports		
	1980	1994		1980	1994	+/-	1980	1994	+ / -
Tobacco unmanufactured	2.349	5.44	131.59	16.23	25.31	55.95	0.20.	0.16	0.4
Pig Iron	3.82	1.78	-53.4	33.32	11.57	-65.28	0.30	0.23	0.07
Nickel	1.97	1.62	-17.77	9.63	9.78	1.56	0.17	0.10	0.07
Meat , fresh and frozen	.03	0.22	633.33	0.86	6.07	605.81	1.01	0.98	0.03
Vegetables fresh & preserved	.005	.337	6640.0	0.12	1.36	1033.3	0.53	0.61	0.08
Women's outwear non knit	.001	0.33	3290.0	0.013	1.146	8715.3	0.64	1.2	0.56
Textile	0.020	0.071	255.0	0.39	1.223	213.59	0.68	0.60	0.08
Fruit, nuts etc.	0.010	0.036	260.0	0.233	0.79	239.06	0.78	0.77	0.01
Cotton Fabrics	0.000	0.293	0.293	0.00	2.48	248.0	0.39	0.29	0.10
Metal scrap	0.087	0.145	0.058	0.69	0.88	27.54	0.28	0.21	0.07

Source; Adapted for this discussion from Lall et al, 1997, Zimbabwe: Enhancing Export Competitiveness.

2.6 Technology base

Zimbabwe's manufacturing base has an abundance of basic and general factors of production particularly trained labour and natural resources, (Pontus and For: 1990; and Riddel, R.:1990). Pontus (1990) and Lall *et al.* (1997, pp.185-190) also concluded that Zimbabwe's capital stock is obsolete by developed country standards. Zimbabwe's enterprises depend on foreign sources of technology and do little of their own R & D. Lall et al (*ibid.*), and Latsch and Robinson (1997) in their survey of manufacturing technology in Zimbabwe commented that R & D in the normal scientific sense was absent. Therefore in order to upgrade the quality of their equipment,

"there is a lot of technology out there that can be drawn upon by Zimbabwean industry to upgrade its capabilities without investing in risky R & D",

Latsch and Robinson (1997, pp. 28.). These views point to the Asian technology phenomenon in that technology importation could be used as a short-term measure instead of internal technological R & D. Lall et al (*ibid.* pp. 75) went further to comments that for Zimbabwe,

“ It is possible to enter into high technology exports without doing much R & D if the activities are completely in the hands of MNCs and the technologies used remain at the lowest technological levels”.

From the above comments by Lall one is thrown back to the Vernon technology life cycle argument. However the quality of technology imported into the country has to be commensurate with the indigenous technological skills if Zimbabwe is to achieve any enhanced technology capabilities.

On a subjective assessment of Zimbabwe's capabilities and partly some objective measures such as increases to current investments, a technology index (TI) was used. Comparing Kenya and Zimbabwe, and on a sample of garment manufacturers the following statistics were obtained, (table 2.5).

Table 2.5 Technology Index (TI) of Manufacturing Firms, 1995			
(Means)			
	Engineering		Clothing
Kenya	0.04		0.32
Zimbabwe	0.56		0.66
Distribution of firms in High, Low and Medium (TI) Group (%)			
	High	Medium	Low
Engineering			
Kenya	25	30	39
Zimbabwe	57	45	12
Clothing			
Kenya	26	29	33
Zimbabwe	67	51	11

Source: Adapted for this illustration from Lall et al (1997), Zimbabwe: Enhancing Export Competitiveness

The above (TI) index are normalised to value between zero and unit. A higher score indicates greater capability. According to World Bank's (RPED III: 1995) Zimbabwe's (TI) is higher than other countries in the SADC, excluding S. Africa. In both engineering and clothing sectors Zimbabwe has a higher (TI) and a similar picture emerges from the distribution of the firms in terms of high, medium and low (TI).

2.7 Labour resources

The labour productivity of Zimbabwe and S. Africa is as shown in Table 2.6 below.

Table 2.6	Total Value-added US \$million (1989)	Employees	Labour productivity
S. Africa	23 172	1 462 000	15 849.3
Zimbabwe	909	214 400	4 239.7

Source: Adapted for this illustration from Pontus and Fors (1990), The Zimbabwean Manufacturing Sector: Current Potential and Future Development Potential.

In the study of the significance of skilled manpower to the manufacturing sector in Zimbabwe Pontus and For (1990) and Riddel R, (1990) concluded that there existed trained labour whose productivity rate was comparable to that of countries with similar agro-industry. The researcher use the above comparison with S. Africa, a DC with a technological stronger manufacturing sector than Zimbabwe, just to illustrate the differences in productivity levels.

2.8 Competition in Zimbabwe's sub-sectors

It is also imperative to look at present domestic and foreign firms as they affect the intensity of local competition in various sectors. Two approaches, the number of firms

in each sub-sector, and the concentration ratio (CR) of firms in each sub-sector were used to indicate the intensity and concentration of the competition. Some *caveats* are necessary in the utilisation of such broad-based methods. Firstly with the number of firms approach there is the weakness that it assumes pure competition and thus no single or few players have overall influence in the market *modus operandi*. This approach also ignores the sizes of firms as measured in terms of either turnover⁹ or employee levels. That weakness is eliminated when the number of firms is used to compute a Herfindahl Index (HI) because this index indicates the level of market concentration as well as reveal inequalities between firms in the same industry. The approach used in computing of the (HI) index is based on the coefficient of variation of the measured size, $(1/n)(1+cv^2)$. The N is the number of firms and cv is the coefficient of variation and the formula gives the coefficient of concentration.

The (CR) approach on the other hand indicates the market domination by a given number of firms in a sub-sector. It is measured in terms of firms' domestic sales as a proportion of total domestic demand in each market, both exports and imports included. It is generally accepted that such a (CR) indicates the level of competition pressure and to an extent the industry structure.

⁹ Firm's size measured in terms of turnover has various flaws and the single most weakness is that firms that are at different stages of value-added chain are indicated with huge disparities in size e.g. where one firm is at the initial stage and the other as at the end-market level. With the number of employee there is also the problem of differences in labour intensities in various sub-sectors.

Table 2.7 Competition intensity by Sector					
Sub-sector	Herfindal Index (HI)	Ranking by HI	CR (4)	Ranking by firm size (employees)	Ranking by NO. of Firms
Food stuffs	0.12	6	60	2	3
Textiles	0.18	2	77	1	7
Clothing etc	0.17	3	79	3	5
Wood & Furniture	0.13	5	64	4	6
Paper	0.19	7	51	6	4
Chemicals	0.05	9	32	9	2
Non-Metal Minerals	0.26	1	91	7	8
Metals	0.05	8	38	8	1
Transport	0.14	4	66	5	9

Source: Pontus Braunerhjelm and Gunnar Fors, 1995

Note: HI is degree of competition

CR is industry structure & competition

Size is labour intensity related

Two points must be put into perspective with regards to these statistics. Firstly in both M. Porter's (1990) industry level competitive advantage argument, and Rugman and D'Cruz (1992) proposal for a clustering based in network relationship they concluded that a high level of industry concentration and the resultant clustering forces firms to produce highly competitive products. Secondly, although we may agree that high concentration is important pressure for the designing of more competitive strategies and possibly enhanced upgrading of skills it is also important that such levels of concentration do not create monopolistic competition. The higher the (CR) the lower would be the degree of pure competition and therefore restricted innovation, higher entry and mobility barriers. For example, in *The World Competitive Report (1995)* the MNC size and their (CR) was associated with the crowding out of indigenous firms in some sectors. Furthermore, if such MNC have unparalleled advantages in some product sectors, high concentration ratio in the industry is unlikely to create indigenous innovations. Therefore from the statistics in table 2.7 above the level of local firms'

domestic competition (HI) is very low (0.26%). Coupled with a high (CR4) ratio (above 50% in all but two sectors) this may suggest that only few firms dominate sectors that export most of the country's products.

With regards to foreign competition two issues are important. These are the levels of import penetration and the average import tariff rates levied by Zimbabwe. At this point we are defining import penetration as the proportion of each sector's imported goods to the domestic demand. The total domestic demand includes the net difference between exports and imports¹⁰. These two elements of import penetration influence the level of competitive pressure that can be exerted by foreign suppliers. The following table 2.8 shows import penetration in some of the above sectors.

Table 2.8 Zimbabwe's sectoral level of Import Penetration		
Sub-sector	Import penetration rate %	Average import tariff %
Textiles	15	31
Clothing etc	1	26
Wood & Furniture	3	30
Paper	11	30
Chemicals	34	31
Non-Metal Minerals	26	34
Metal & Metal Products	46	23
Transport	54	28

Source: Pontus and For, 1995

From the above information Zimbabwe's competition intensity in the various sub-sectors is not uniform. Statistics indicate that the lowest penetration from imports is in the clothing and wood furniture industries, followed by paper products and textiles.

¹⁰ Import penetration is being defined as $\text{Imports } j / (\text{Gross product } j - \text{Export } j + \text{Imports } j) = \text{imp/demand}$.

These sectors are in the natural resources and are dominated by resource and labour intensive activities. High penetration rates in chemicals, finished metal products and transport sectors may signify greater competition from foreign firms in those sectors. This relates strongly to the technological and differentiation disadvantages highlighted earlier and also could indicate Zimbabwe's reliance on imported inputs in those sectors.

2.9 Industrial clustering

Following Porter's(1990) cluster building methodology Zimbabwe's key exporters were identified as belonging to nine clusters, (table 2.9). Using the SITC and in concordance with ISIC, exporters were grouped using four criteria. These were (1) primary product exporters that dealt in unprocessed or minimum processed exports; (2) local suppliers of machinery used in those industries; (3) specialist services providers to those clusters; and (4) the vertical stage of the industry's activities, i.e. upstream (primary industries), industrial support and related services, and final consumption stage (downstream activities). The guiding reference point was that the products were competitive in their respective vertical stages.

Table 2.9 Zimbabwe's Clusters of Exporting Firms

		Tobacco/ Beverages		Materials/ Metals	Food Processing	<i>Upstream industries</i>
Primary Goods		26.068		24.143	1.197	51.408
Machinery						
Speciality inputs				1.546		1.546
		26.068		25.689	1.197	52.954
						<i>Industrial supporting services</i>
		Textiles/ Apparel			Food	
Primary Goods		1.346			1.355	2.701
Machinery						
Speciality inputs						
		1.346			1.355	2.701
						<i>Final consumption services</i>
		Transport	Textiles/ Apparel	Materials/ Metals	Food Processing	
Primary Goods				0.935	25.435	26.37
Machinery						
Speciality inputs		0.985	6.294	1.674		8.953
		0.985	6.294	2.609	25.435	35.323

Source: Compiled by Author, 1999.

Basing on table 2.9 above three key observations may be made. Firstly the largest cluster is the Tobacco/ Beverages (26.068 %) and this is followed by Materials / Metals (25.689 %) and Food and Processing clusters (25.435%). These three clusters are the source of bulk of Zimbabwe's manufactured exports, (77.192 %). Secondly in all these three clusters primary products dominated the exports and that is common with the rest of the clusters. The only exception is in the Textile/Apparel special input services, which appear highest compared to that in the other two stages. The last fundamental

point is that the bulk of these clusters are in the upstream industries (52.95%), where resources and labour intensive activities are highest.

2.10 Summary

Analysing of Zimbabwe's background was aimed to reveal the general outline of its diamond facets. Therefore only issues relevant to the diamond theory, i.e. existence and level of the conditions of the diamond, were exposed.

2.10.1 Demand

The demand facet of the diamond was discussed from both economic trade relationships between Zimbabwe and its DC partners, UK and S. Africa. That was relevant in order to highlight the importance of exogenous variables that may be sources of the development of sophisticated demand. Innovations and upgrades introduced by affiliates of British and S. Africa firms predominantly influence the domestic demand sophistication for any exportable products. From a domestic perspective the population is small and has a relatively very low per capita income, which all limits development of scale economies.

2.10.2 Competition intensity

In the major export product areas competition is low and we may argue that this is a result of the industry structures and high tariffs on imports. There is no evidence to show that there is high intensity or rivalry emanating from high concentration ratio. Neither is there evidence that foreign penetration ratio is significantly high because such ratio is only highest in areas where the local firms are weak. Instead our limited

computations persuade us to argue that there is a high (CR4) in majority of the sectors and coupled with protection through high tariffs, this possibly means low competition.

2.10.3 Factor endowment

Zimbabwe is endowed with basic and general factors that are used in the primary exports processing. Its RCA is emerging and holding in the resources and labour intensive sectors, which is further evidence for that conclusion. However as indicated by the (TI) its technological base is slightly better than its main ADC comparator (Kenya). Its labour productivity compared to its main trading factor S. Africa is very low.

2.10.4 Related and Support Industries

Using the clustering process as projected by Porter (1990) there is very limited developed support service industries (2.7%) and the contribution of special input sectors is also low (10.5%). These have grown more in relation to the downstream firms in the Textiles and Material/ Metals (jewellery) industries.

We therefore can conclude this chapter with the argument that although Zimbabwe has a resource oriented export composition an explanation of what variables can explain its emerging comparative advantage in exports such as fresh foods, and disadvantages in other areas is required. In Chapter three we proceed to look at the concept of the diamond framework in its various formulations.

Chapter 3**The Concept of the Single-Nation Diamond (SD), Double-Diamond (DD) and Multiple-Diamond (MD) Framework****3.1 Introduction**

It has been increasingly recognised that traditional trade theories, and their *laissez faire* assumptions which focus on country specific variables alone, are inadequate to explain actual trade patterns (Athukorala et al 1995, pp. 109-122; Dunning 1990). Neither can comparative advantage alone explain how some countries have competitive advantage over others. New approaches starting with Krugman's (1977) New International Trade theory and its inclusion into analysis of Industrial Organisation theory are seen to introduce game theory to the analysis of firm/industry behaviour in a wider arena of international trade and competition. This role of the firm and the increased government participation in directing trade and economic policies is a factor that was ignored by classical trade theory. Thus a number of models that capture both the classical approach and the new international trade theory have been proposed in order to explain the different dimensions of this problem and yet still they do not providing a complete prescriptive framework that could concisely explain how ADCs can improve their competitiveness in DC markets.

The approach adopted by M. Porter's (1990) single nation 'Diamond Paradigm' is an attempt to explain such differences in competitive advantage through the existence of 'national' conditions that are conducive for creation of and achieving national competitive advantage. This Porter (ibid.) model focuses on domestic variables and its distinctive strength is that the 'Diamond' theory spans three levels of aggregation: the firm, the industry and the nation. However departures from the 'single-nation Diamond'

framework have taken two specific trends. Firstly there have been attempts to add a few other determining conditions to the current framework. This has been aimed at bringing into focus the role of particular variables such as Multinational companies (MNCs) and their transnational business activities (TNAs), (Dunning, 1990). In addition to MNCs technology has also been advocated as an additional indispensable stand-alone variable that affects and is affected by all of Porter's original 'diamond' conditions (Rajneesh Narula, 1993). According to the SD model Porter argues that companies have to be innovative for them to be competitive and yet he does not specifically define innovation except that it is the upgrading of resources and their combination. Rajneesh Narula, (1992) improves that point by referring to technology as the backbone of that innovation and it should therefore be perceived as an important and determinant variable. His argument is also that accumulated technology is an engine of growth only if it can be harnessed to make the best use of the available resources. In the context of global competition, where each factor has to be measured in terms of its specific contribution to overall competitiveness, the Porter model's bundling of technology elements creates operationalisation and measurement problems. This is because it treats technology as an infused part of the rest of the other diamond elements. Thus technology elements relationships with other diamond facets do not make its contribution in the SD system explicit or deterministic. Rajneesh's approach seems to recognise that deterministic relationship between technology and the other facets of the diamond conditions.

A second departure from the M. Porter's (SD) framework takes the form of a criticism to the fact that the national 'Diamond' alone may not explain the international competitive advantages of LDCs or any small developing nations. In that respect a double-looped 'Diamond' (DD) that ties a country's constrained determinants to those of its trading partner has been submitted as having a generalisable framework of explaining national competitive advantages (Rugman, A. and J. D'Cruz, 1991). This DD model was later

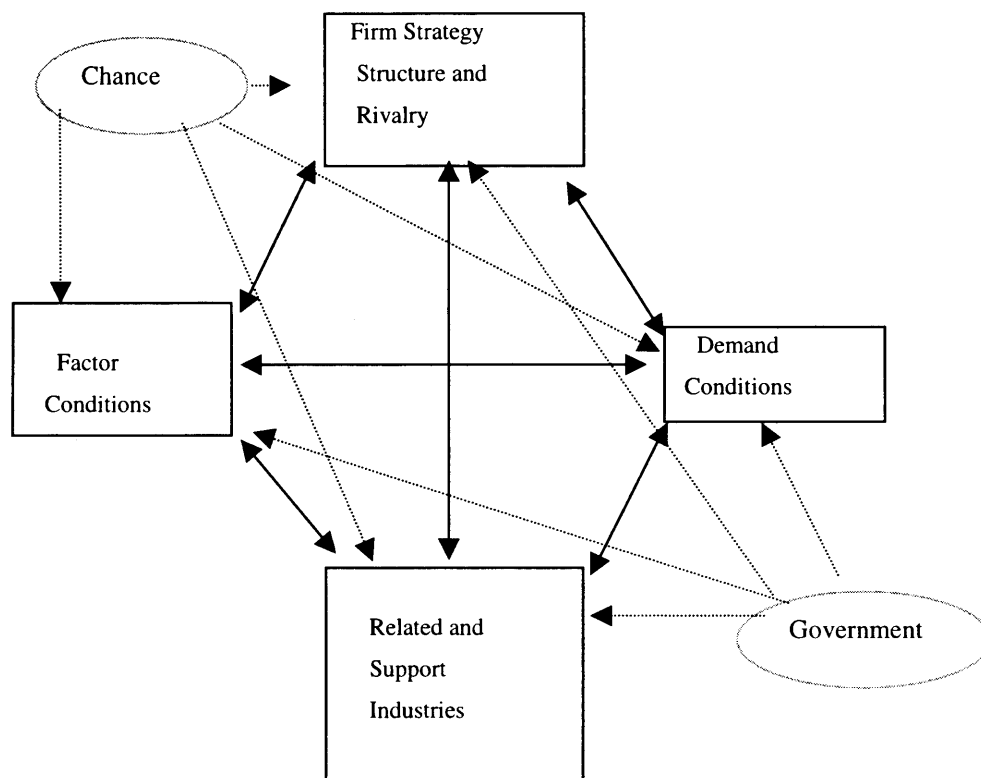
extended to cover multiple countries in a Multiple-Diamond (MD) framework, (Cartwright, 1993). The idea is that a Multiple–Diamond that is regionally based would offer to small nations an enhanced resources base on which to build their competitive advantages (Dunning, 1993; Bellak and Weiss, 1993). This MD concept therefore focuses on a regionally (geographical) based specialisation by each industry on the basis of advantageous contributions that derive from factors outside the national borders.

Theoretically the (DD) and (MD) models are not different to the (SD) except that the other two include 'off-shore' variables in their explanation of the sources of a nation's competitive advantage. With respect to technology and MNCs as key explanatory variables we perceive them as applicable to all the three models. Therefore in order to identify the appropriate model, which may provide an answer to the demands of creation of national competitiveness the following sections contain an exposition of the various components of the diamond conditions.

3.2 Diamond Paradigm (*Single-Nation Diamond*)

According to M. Porter (1990) nations are most likely to succeed in industries or industry segments where the national 'Diamond' is most favourable. The 'Diamond' is a schema of specifically identified conditions that are presumed to affect the capability of an industry or cluster in creating competitive advantages. These conditions as indicated earlier are; demand conditions, factor conditions, related and support industries, and firm strategy, structure and rivalry. Figure 3.1 provides an illustration of the SD Model determinants as a complete system of four internal and two external variables.

Fig. 3.1. The Diamond Model and its Variables (Conditions)



Source: Adapted from M. Porter,(1990), Determinants of National Competitive Advantage, *The Competitive Advantage of Nations* (New York: Free Press).

At a firm and industry level analysis these competitive advantage-determining conditions have been further amplified in subsections (3.2.1 to 3.2.6) below.

3.2.1 Factor conditions

According to Porter (1990) a country must have factor endowments upon which the local firms may build their competitiveness and that there should be a continuous upgrading of the various natural resources. Basing on Porter (1990), Hodgetts R.M (1993,pp. 17-40) amplified the industry's critical factors as;

- (a) “the quantity, skills and cost of personnel;
- (b) the abundance, quality, accessibility and cost of a nation’s capital and physical resources;
- (c) stock of knowledge resources”.

The researcher perceives the factor conditions of the SD model as the supply and availability to a specific industry or firm of those relevant factor inputs that contribute towards ‘low cost’ or product ‘differentiation’ advantages (Gray, 1991). Porter in his model distinguishes the role of factor endowment from the Ricardo’s comparative advantage sense by arguing that the SD model thrives on a continuous upgrading of these resources and their development of new innovations. As was highlighted in Chapter 2 above Zimbabwe is endowed with such natural resources and most of its exports are from natural resources intensive industries.

3.2.2 Related and support industries

Closely linked to the factor endowments is the fundamental existence of related and support industries that ideally must forge industrial clusters. These clusters are groups of firms that are assumed to work in harmony towards achieving mutual strategic networks. As Hodgetts (*ibid.* pp. 17-40) described, this is the

“ *presence of internationally competitive suppliers that create advantages in the downstream industries through efficiency or rapid access to cost effective inputs*” in the upstream”.

Porter (*ibid.*) argues that within those clusters firm strategies, organisational structures and the degree of rivalry, all positively contribute to the development of strong competitive bases. Thus home designed strategic plans and battles within these industries clusters are deemed to be a learning ground for international market battles,

skirmishes, or trade wars.

Therefore in theory Zimbabwe's low level of specialist services providers is a weakness in its clusters. The low level of local machinery suppliers or specialists on both primary and support services suggest limited support networking within the clusters. Outsourcing of such vital services from trading partners may be solving the absence of such competitive firms in local industries.

3.2.3 Firm strategy, structure and rivalry

Within the arena of a domestic market and common industrial relationships firms are assumed to be fiercely competing with each other for the limited markets. In order for any competencies to be developed the SD model depicts such competition in terms of two key managerial issues. These are; (a) the ways firms are managed and choose to compete; and (b) the intensity of domestic rivalry and the creation of durable competitive advantage in these industries. Porter postulates that a continuous designing of strategies and plans that are superior to other local competitors may lead to better competitiveness in the international arena. Many scholars concur on this point. However what is questionable is the level to which the domestic competitive strength can be measured against those of other country suppliers.

Rugman and D'Cruz (1993) argue that international competitiveness must be measured in the foreign market context as opposed to using domestic rivalry as a yardstick. Secondly even if we introduce imports into a domestic market it is reasonable to assume that foreign firms would attempt to compete in the local market in the norms of the industry's culture as determined by local demand. This may dilute the extent and structure of national competitiveness.

However, what is not clear in the SD model is the impact of intensified competition on the profitability of the industry or firms therein. It is common knowledge that intensified firm rivalry or competition may lead to lower profit rates for the industry. We may therefore argue that in the SD framework local firms possibly compete using dissimilar strategies and therefore do not strictly constitute 'strategic groups', (Gray, 1991). In that respect a degree of short-term super-profits may be achieved. However, Rugman and Verbeke (1993, pp.289-299) dispute this assertion because they argue that "*clusters lean towards similar strategic behaviour that results from country specific organisational structures (isomorphism)*". Their argument seems to suggest that competition in clusters is of a co-ordinated fashion and profits are long-term objectives. It is therefore reasonable to infer that by focusing in domestic competition and its nature of intensity and rivalry the SD model posit that profitability is a result and not an integral part of that competition. Therefore explaining production efficiency and upgrading of endogenous resources in complete disregard to the strategic importance of short-term business profitability is apparent in Porters' views.

3.2.4 Demand conditions

In the diamond theory only three dimensions of demand conditions are important. These elements are; (a) the composition, size and growth rate of home demand; (b) the mechanism through which the domestic demand is internationalised and pulls a nation's product and services abroad; and (c) the foreign demand dimension or its components as they affect local upgrading of products. According to the SD theory the demand composition, sophistication, its size and growth rate (both population changes and variations in disposable income) influences the quality of products marketed. Of greater importance in this argument is the question of whether local demand is of a sufficient size to sustain intensified competition especially where economies of scale are a critical factor. Given the small size of Zimbabwe's population and its low per

capita income, it is unclear how this dimension has contributed to the competitive advantage of the country's exports in more advanced higher income nations of the OECD. Local demand and its expansion may not be sufficient for such requisite economies of scale as are demanded by mass producing needs of MNCs, and this is one weakness in Zimbabwe's attraction of inward FDI.

Changes in demand for both consumer and industrial products are a chain reaction that links downstream firms' quality expectations to upstream firms' production response capabilities. For example, in an industrial market buyer firms would set standards of production inputs for the upstream firms. Supportive and competitive upstream suppliers, who are of international competitive level and have achieved higher levels of efficiency in their production/ processing capabilities, would then provide such inputs. From a consumer product market perspectives two issues affect the demand component. One of them is the natural consumers' desire or expectance of higher standard products; and the other is a firm induced change in product offerings. Thus on one end the consumers indirectly set the required level of complexity of the products and on the other aspect the firms themselves, through R & D make and push new or advanced technology products into the market. Therefore from both industrial and consumer market perspectives quality, demand growth rate and trends are set into motion by either the buyer or the supplier.

However according to the SD model there is an inherent assumption that the core attributes of the most competitive local products are readily acceptable to the external market (push factor). In defining the demand conditions Porter (1990) seems to disregard the influence of imported substitute products on the taste changes in local demand. The SD model assumes that the export market's requirements and expectations are either of less than or equal to local standards and export success follows the Vernon product life cycle sense.

3.2.5 Chance

By definition this is an exogenous factor that impacts positively or negatively on the operations of other facets of the 'diamond' conditions. According to the 'Diamond' framework *chance* factors are mostly outside the firm's control and would for example include the following;

- (a) new inventions;
- (b) impact of political decisions by foreign governments;
- (c) significant shifts in world financial markets or exchange rates;
- (d) surges in world or regional demand, (Hodgetts, 1993)

It is difficult to operationalise the SD model because such 'chance' condition cannot be a good background on which to plan except where it's a result of internal innovations. The author argues that 'chance factor' as defined is a remote possibility in majority of Zimbabwe firms/industries. For example the descriptions cited above (a-d) are either government induced or natural occurrences. These cannot be an integral part of export strategic planning unless they are embodied in a trade policy framework, in which case they cease to be 'chance' events. Therefore is arguable that it is not possible to plan or design competitive strategies basing on chance conditions and its inclusion in the diamond of determining conditions is questionable.

3.2.6 Government

As alluded to earlier, the role of government is limited to fashioning the business environment towards the enhancement of the local 'diamond'. The author however disagrees with Porter's view on the role of the government especially when dealing with

ADCs and specific issues such as the regional economic integrations. Examples of government activities that impact on the international competitiveness of the local firms are many and varied. Among the key common factors are;

- (a) the impact and type of export subsidies given to local firms;
- (b) establishing of local product standards and regulations;
- (c) capital markets interventions (low/high interest rates etc);
- (e) tax laws; (Hodgetts R.M. 1993 p.p. 41-54) and (Porter M.E. 1990 pp. 69-130).

Without belabouring the point it is suffice to argue *ab initio* that such government interventions are more than a 'fashioning of business environment'. In this study the researcher took the role of the government as an integral part of the SD model, (Chapter 4).

As can be discerned from the strategic issues embodied in the description of each of the above diamond conditions, and as also elucidated in Chapter 1 their focus is more on firm and industry level sources of capability and competitiveness building. However, although the theory spans the whole broad spectrum of firm, industry and country the SD model facets lay greater emphasis on two fundamental issues. Firstly there is the aspect of the firm as a business unit surrounded by these local diamond conditions i.e. how the dynamism and efficiency of the local diamond conditions contributes towards a firm's enhancement of its international competitiveness. The second aspect is the extent to which the industries or clusters formed by these firms are supportive to the evolving and dynamism of the national diamonds' i.e. how the system is self-feeding within the national boundaries. Such a self-feeding system is akin to a closed system that regards outward FDI as a by-product of natural internal development and inward FDI as " not entirely healthy", (Porter, 1990,pp.13)

These two dimensions of the firm and industry and their relationship with their diamonds is very important because the various facets of a national diamond enable different sectors of the same industry to achieve international competitiveness at different times and with varied magnitudes. Thus when evaluating the significance or weakness of the various elements of the 'Diamond' to a cluster's needs the diagnosis needs to explain a firm's reaction to these weaknesses or strengths, and how the industry clusters build greater strength on the basis of the existing relevant diamond conditions.

3.3 The Relationships between the Diamond Variables and Firm Competitiveness

The main theme of the SD model is that the competitiveness of a nation's firms or industrial clusters emanates from the magnitude of international competitiveness of each tenet of the 'diamond', and the strength of the relationship between the various facets. However the competitive strategies of the firms in the clusters will be determined by their 'product', 'processing' or 'structure' competitiveness vis-à-vis other suppliers to the same external markets. With product competitiveness focus is on the basic attributes such as packaging and functionality. This is different from process competitiveness where firm strategies hinge on value added variables such as quality, speed, order fulfilment, etc. For example, countries like Japan have been able to transform the 'product competitiveness' of original USA innovations into cheaper, quicker and more effective 'processing' than their competitors (Stephen Garelli, 1996). Thus foreign diamond innovations were further adapted into greater value added. Lastly, with the structure competitiveness the presumption is that the firm with an advanced infrastructure, for example logistical networks within and outside national borders, and global ownership of resources, would have competitive advantage in the supply of export products.

In Porter's (1990) SD model the significance of these elements and their differences is bundled within the firm strategy and structure facets of the diamond. It is the author's view that unless these three elements are properly identified the operationalisation of the diamond at firm level is difficult. These three competition-positioning variables (product, processing and structure) significantly affect the formulation of a macro level competitive posture within the national diamond system. The strength of the relationship strands of the diamond system, as reflected in their fluidity in handling or containing the dynamism of the various facets will help to define which of the three elements cited above should be developed towards an industry's competitive advantages. For example, countries with natural factor endowments such as Brazil, India and Russia although rich in natural resources are not process competitive; and so are commodity exporters from sub-Sahara Africa countries. Thus their export composition is concentrated in natural resources 'product competitiveness' and these are unprocessed or semi-processed products. Firms in those sectors or industries will therefore strive to compete on the basis of the comparative advantage existing in the national diamond conditions.

In comparison countries like Singapore, Japan, Taiwan, Indonesia etc, have built their strategies on 'process competitiveness'. M. Porter (1990) treated the later group of countries as having derived their international competitive advantage through process upgrading that was forced on them by virtue of natural resources constraints. He conclude that countries such as Sweden being of limited natural factor endowments had to develop and upgrade processing and production methods in order to compete in the European environment. The author does not totally agree with that point because factors that are presumed by the 'diamond' theory to improve international competitiveness in one context seem to have opposite effects in others. For example a great deal of USA industrial success in the early twentieth century is a direct result of its vast natural factor endowments, (Wright, 1990) and yet M. Porter (1990) argues that

scarcity of natural resources led Japanese firms to be more innovative and resourceful.

Porter (*ibid.*) cites countries such as Sweden and Netherlands as belonging to the factor-scarcity driven development of competitive advantages. However Sweden's international success in the automotive industry (Volvo and Scania) was in the bulk transportation segment and is 'product competitive' and so is the background of the international success of the Dutch pharmaceutical industry, (Porter, 1990). In summary the SD model projects an ideal situation that presents all the local conditions in a more positive frame and countries that are closer to the ideal levels are those with greater national competitive advantage than others.

3.4 Criticism of Porter's (SD) Diamond Model

There is a great deal of acceptance of the theory and significance of the model and its constructs as possible explanations for a country's sources of competitive advantage. However some of the key limitations of the model are as detailed below.

3.4.1 Domestic focus

One major flaw of the SD model lies in the difficulty of its operationalisation. Business managers and policy makers have argued that the definition imposed by national boundaries on the components of the diamond is too restricting. Stewart, J. (1992, pp 10-11) arguing against the SD model commented that world-class competition and world-class demand "*do not exist inside the national boundaries*". Furthermore "*.. such confluence of favourable factors.. will not likely to exist in anything but the largest and most complex economies*", and "*.. it is not essential for substantial demand conditions or strong firm rivalry to be present in the national economy for an internationally competitive enterprise to emerge*", *Business Quarterly*, 1992 (Spring). Rugman, A.

(1992) in the same discussion raises similar questions and suggested these as flaws in the *operationalisation* of this SD model. Following Dunning (1991) and the growing significance of MNCs in international competitiveness Rugman comments thus, “*The border of a multinational enterprise .. is no longer the nation state*” and “*..the appropriate size of the diamond need not be national; it is determined by the strategy of the firm*” . Rugman (*ibid.*) proceeded to argue that, “*therefore the relevant focus is indeed the locus of corporate strategy; for international business, it is an international locus*”. From that viewpoint the strategies must be benchmarked on international competition (Rugman, A. and Alain Verbeke; 1993). These criticisms are common and relate to managerial problems of transacting in a global market on the basis of ‘home-grown’ competitiveness.

3.4.2 SD and Small Nations

One major criticism levelled against the SD model is that it seems not applicable to small open economies, (Rugman and D, Cruz, 1991; 1993); Cartwright (1993); Bellak, C.J and Weiss, A.; (1993); and Hodgetts, R.H. (1993). This is because most of the economies of these countries depend largely on those of their neighbours in the triad or those of industrialised trading partners. It is this dependence that has given impetus to proposals by Rugman and J. D’Cruz, (1991) of a double diamond, or that of a supranational diamond (Bellak and Weiss, 1993; Cartwright, 1993).

3.4.3 Choice of variables

Limitations on the explanatory power of the SD model also lie in the variables chosen and the inward focus with which they are perceived to create international competitive advantage. Consequently criticism of the model range from its omissions of technological spillover derived from MNCs, to its complete disregard for the influence of

exogenous factors resident outside the national borders. Such omissions weaken the explanatory power of the SD model in some important areas, for example, the need to include the role played by multinational enterprises (MNEs)¹ (Dunning 1991; 1992; 1993). Examples of nations whose competitive advantages were induced by such MNCs inward FDI from one Triad member Japan, are Singapore, Taiwan, S. Korea etc., (Hobday M. 1994). In many ADCs MNCs or their subsidiaries conduct most exports, (World Competitive Report 1995; UN Transnational Corporations: 1996).

3.4.4 Financial Component

Of particular importance in any 'diamond' is the existence or lack of a well-developed and internationally integrated financial sector that supports international competitiveness. In the SD model Porter ignores the role of profits (implicitly the impact of exchange rate volatility on the competitiveness of exports) and he de-emphasises the impact of relative factor costs, (Daly, D. J. 1993). Thus the role of profits as a firm level objective on which the drive for the international competitiveness is normally targeted is being reduced to a lower level factor. Profits are a result of sustained competitive advantage (Grant, 1991), and also contribute towards enhanced competitive advantage (Madeleine Linard de Guertechin, 1996). For example, associated with the notion of profit as a critical element is the structure of a nation's taxation regime i.e. incidence of tax on those advanced segments of the industry relative to that of competitors from other countries. The level of taxation imposed on corporate profits, duty levied on imported input material, tax concessions given to members of an integrated economic union e.g. EU, are all factors that will impact on the competitiveness of a firm or industry and therefore cannot be ignored totally. Literature on development economics suggests that providing a favourable financial structure that has an incentive framework

¹ The terms Multinational Enterprise (MNEs) and Multinational Companies (MNCs) have been defined as corporations operating in different geographical regions or nations.

that embodies these fundamental factors has been a major financial limitation to the industrial development of LDCs².

3.5 Support for the SD model

Notwithstanding the above criticism and limitations of the SD model it captures the core of managerial and public policy issues and thus has been found to be an appropriate platform on which international economic development and export growth may be analysed. The SD model in its current framework has received support from various studies and commentaries (Goedart and Hardonk, 1991; Jacobs et al 1990).

In defence of the SD model Porter M. and J. Armstrong (1992, pp. 6-9) although in agreement with Rugman that “..all firms aspiring to be competitive must compete globally and adopt an international perspective”, they reasserted that the “ *ability to do so successfully is critically depended on the characteristics of the home market in which the firm is based*”. In the diamond theory MNC affiliates position themselves within the foreign home “*market in which the firm is based*” and compete using the location advantages. In that context the borderless diamond notion raised by Kenichi Ohmae (1995) and the Rugman (1993) proposals also embrace the entire rubric of the SD framework. Dunning’s (1996) postulation that the multinational firms can be regarded as multi-domestic, i.e. independent and relying entirely in the competitive advantage of different nations is in one context acceding to the fact that in each domestic diamond ideal conditions provide basis for a foreign or local firm’s

² The author agrees with (Bradley, F. 1996 pp.193), that at an international level a firm’s competitiveness reduces to its ability to increase its earnings by expanding sales /and or profit margins in the market segments in which it competes, and to defend its market position in subsequent rounds of competition, as products and processes evolve. This is almost synonymous with the firm’s long-term profit performance relative to its rivals. Meanwhile a country’s competitiveness is the degree to which it can produce goods and services that meet the test of international markets while simultaneously expanding the real incomes of its people (Bradley *ibid.* pp.3). That distinction is important when discussing the DD model as it brings into the arena the issue of who exactly should be competing i.e. firm, industry or both.

international competitiveness. Examples of such successful offshore clusters are the maquiladora industries in Mexico, (Hodgetts, R.M.; 1993).

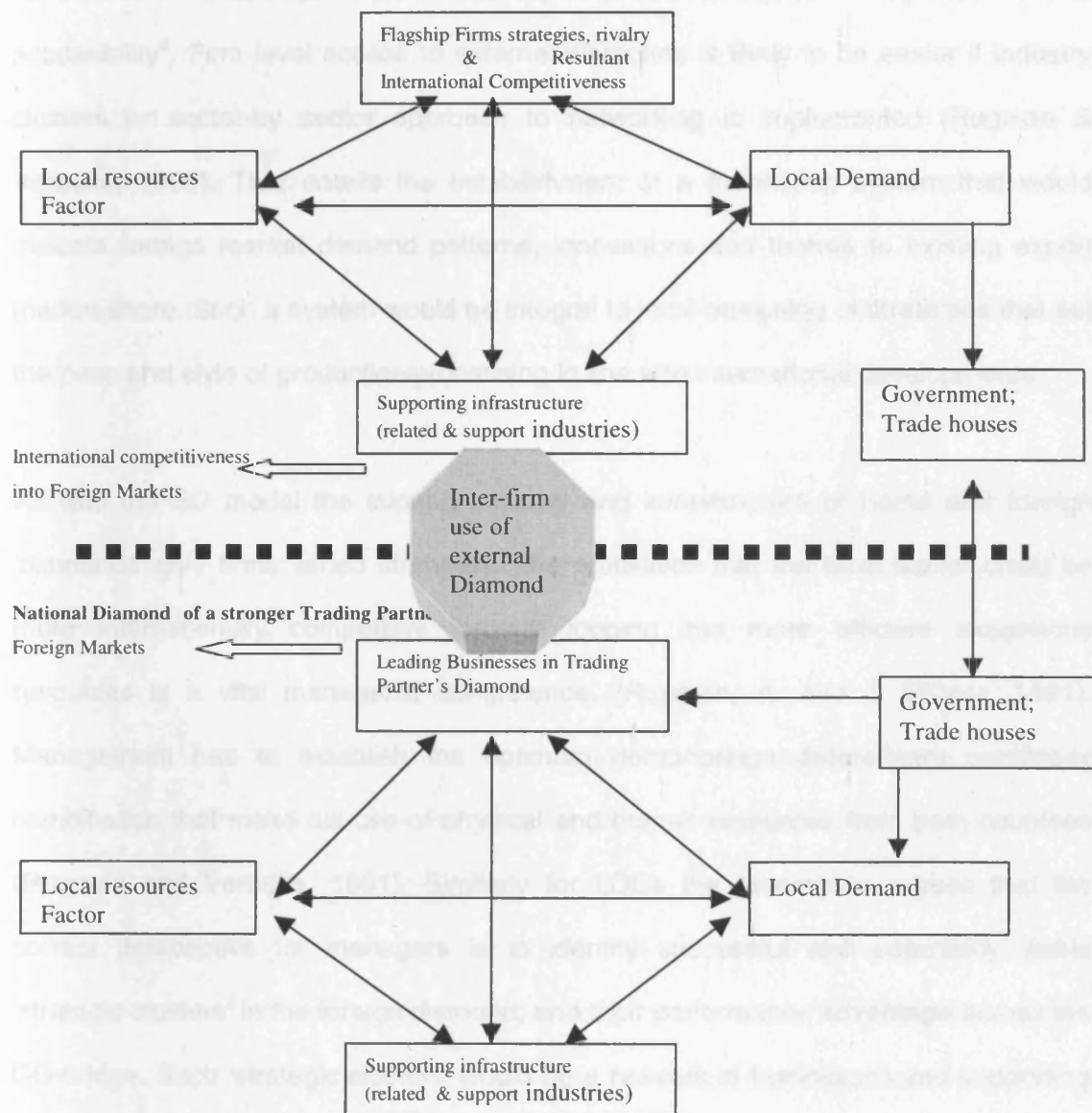
3.6 The Double -Diamond and Multiple -Diamond Models

The (DD) and (MD) model are based on the notion that firms in one country, instead of focusing on the local determinants could enhance their competitiveness by looping to the efficiency and determinants in diamonds of their foreign trading partners (Rugman A. and J. D'Cruz 1991; Hodgetts R.M.1993). That opportunity is particularly important for small countries that are located in the proximity of any of the triad nations (Bellak C.J and A. Weiss, 1993; Brouthers and Brouthers 1997).

Given the interdependence in inter-firm or intra-industry trade and foreign direct investment, for example in EU, SADC and the NAFTA economic integrations, to treat national industries as independent clusters is faulty (Cartwright 1991; Rugman and D'Cruz 1993). For example, operations of MNCs and the ever increasing globalisation of their activities based on global expansions inherently pressurises firms to seek resources either to exploit at location or import from countries whose diamond facets provide low cost advantages. Such inter-diamond looping provides a wider source of determinants that would enable the development of a firm's or an industry's international competitive advantage. Figure 3.2 is an illustration of the DD model and may also apply to a MD framework.

Fig. 3.2 Rugman and D'Cruz's Double Diamond Model (DD)

National Diamond of a Weaker Trading Partner



Source: Adapted from Rugman, M. Alan and Joseph D'Cruz (1991) *Fast Forward: Improving Canada's International Competitiveness*

The DD model's major contribution to the theory of competitive advantage is the exploration of exogenous factors that firms in the weaker 'diamond' countries can access and effectively use for their competitive advantage. Government or a combination of industrial networks and export promotion agencies may facilitate that accessibility³. Firm level access to external diamonds is likely to be easier if industry clusters or sector-by sector approach to networking is implemented (Rugman & Verbeke; 1992). That entails the establishment of a monitoring system that would indicate foreign market demand patterns, innovations and threats to existing export market share. Such a system would be integral to local designing of strategies that set the pace and style of production/processing in line with international developments.

As with the SD model the support industry and infrastructure of home and foreign 'diamonds' give firms varied strengths. The realisation that the local sector could be more internationally competitive through looping into more efficient exogenous resources is a vital managerial competence, (Rugman, A. and J. D'Cruz, 1991). Management has to establish the optimum home/foreign determinant conditions combination that make full use of physical and human resources from both countries (Rugman and Verbeke, 1991). Similarly for LDCs the researcher argues that the correct perspective for managers is to identify successful and potentially viable 'strategic clusters' in the foreign diamond; and their performance advantage across the DD bridge. Such 'strategic clusters' would be a network of businesses and supporting activities located in an external geographical area and is accessible to local firms.

The notion of using foreign determinants introduces other important managerial variables that are critical in the search for an explanation of sources of international

³ The UK government, through DTI and *Businesslink* directly and in some cases jointly with such other agencies as EMIC, British Foreign Embassy Offices, serve to provide information on potential export markets which UK firms can enter into. *Sources*; Department of Trade and Industry, DTI/Pub 3053/6k/11/97/NP; URN 97/948.

competitive advantage. One such fundamental variable is the outward orientation of the firms', industry and national policies.

3.7 Outward-orientation

One of the main variables that affect both the DM and the MD models is that to a large extent they depend on the outward-orientation⁴ of the firm, industry or the national infrastructure. We can define outward orientation in various ways depending on the context and objectives to be achieved. However adopting David Dollar's (1992) working definition, outward orientation is;

“ international trade policies that allow firms easy access to outside sources of input material and greater stability of the variability of exchange rates, and at the same time giving incentives to exporters”.

We prefer this definition because it focuses on decision making at all levels and puts the elements of the SD and DD models for explaining national competitive advantage into perspective. Furthermore its key elements are measurable. In contrast inward-oriented trade policies as those that tend to promote import substitution and a focus towards domestic market activities. From the definition above outward-orientation assumes a high level of free trade between two or more countries. That trade is expected to permit unhindered exports of products/services and the importation or access by local firms to foreign determinants of competitive advantage.

Thus in theory outward oriented policies are those in which industrial activities do not discriminate between production for domestic consumption from that for the external

⁴ Outward-orientation has been defined in economic terms as those policies that focus on open market system that discourage any import-substitution tendencies.

markets, and neither between buying of domestic as opposed to foreign products, (World Bank Report; 1987: p.83). The level at which the *laissez-faire* exists between nations indicates the degree of outward orientation and the potential for external exposure and also the inclination of decision-makers in firms. For example, government trade policy or international trade orientation is described in terms of 'strongly outward oriented', 'moderately outward oriented', 'moderately inward oriented' and 'strongly inward oriented' and all depending on the level of free trade.

3.8 SD, DD and Outward orientation

Whether inward-orientation is more conducive to the creation of competitive advantage than outward-orientation is a not explicitly explained by the SD or DD models. However according to Greenaway, D. and Geoffrey Reed's (1989) they summarised the difference between these two as follows;

" Taking the evidence on trade strategy and performance, and that on exports and growth, it is difficult to avoid the conclusion that outward-orientation appears to be associated more with superior economic performance than under inward-orientation, and that exports appear to be correlated with both domestic and international market share growth, and ...even if such associations are found, they do not constitute evidence on causality."

Adopting the above differences one could perceive that the superiority of outward oriented policies over domestic focused policies lies in three aspects: allocative efficiency of resources; more rapid growth in export earnings particularly for small nations; and greater exposure to the discipline of international competition, (Shahid, M. Alan, 1991). The more outward oriented the firm's policies or are the national trade policies are the greater is the chance of enhancing international competitiveness, (Greenaway D. and C. H. Nam; 1992).

Comparatively the DD model's open system approach seems more demanding of the firm's outward orientation because of the model's inherent pressure on decision makers to adopt an outward oriented business culture, (Salvatore D and Thomas Hatcher, 1991). Such an orientation makes the learning of foreign competitiveness and developments in the external markets an imperative step towards internationalisation. For example we could argue that offshore production⁵ investment decisions by MNCs is a process that derive from a degree of planning that embody outward orientation strategies. A key element in the management's export exposure is that outward orientation, i.e. a focus on experience about the export market business and contacts in the international markets are important in 'tapping' into the business culture of external environments, (Cavusgil, 1976).

3.9 Export Business Orientation and Strategic focus

The ability of the different industries or clusters to attract inward FDI or any resources⁶ from external diamonds is largely influenced by the 'attractiveness' of the nation's strategic trade policy. By being 'attractive' the country is presumed to have a domestic business environment that is conducive to foreign direct investment (Stephen Garelli, 1996), and is promoting to inter-firm transactions. Included in that definition of 'attractiveness' are factors such as culture openness, lower unit labour costs, fiscal policies, so on. On the other hand the national posture can be 'aggressiveness' in its

⁵ Offshore production is a more specific version of international subcontracting [Wastenabe (1972); Sharoston (1975)], and this is a concept based on U.S. tariff 806:30 and 807:00. (Jaymin LEE, 1986). This tariff provision allows US firms to ship components for processing overseas and to re-import the semi-finished goods tariff-free. However it is being used in this study to signify use of foreign resources through closed networking with foreign firms who provide production of goods or services at a low cost or differentiation advantage. In the current discussion international subcontracting may not serve to highlight the degree of foreign diamond dependence in either production processing or foreign selling.

⁶ Resources in this case include all facets of the diamond. For example, access to a particular market segment's demand sophistication may pull the guest firm's product quality standard to higher levels; pig-backing on a foreign flagship firm's leadership in distribution network; forward or backward vertical integration with related and support industries in foreign markets; and technologically advanced factors of production that are not available in the home base.

outward-orientation trade policies, i.e. fostering the promotion of local exports⁷, (Dollar, D. 1992.); and internationalisation of management (Çavusgil, 1981). 'Attractiveness' and 'aggressiveness' are two complimentary variables that must be considered in the formulation of any international trade and export development policy.

However the question that arises is the degree to which decision-makers can reasonably and precisely identify in a specific time frame the nature of 'aggressiveness' or 'attractiveness' that would form a broader base for developing international competitiveness. Adopting either an 'aggressive' or 'attractive' position is a contingency process. For example, if the country were endowed with natural resources but a weaker combination of the other facets of the diamond what form of 'attractive' or 'aggressive' competitive strategies would launch its international competitiveness on the international arena? Furthermore operating in a foreign market could prove difficult because of the hostility of foreign environmental culture. Hostile environment are depicted as those markets that are risky, stressful and dominating (Khamdawala, 1977, p335), and are characterised by precarious industry setting, intense competition and relatively unexploitable opportunities (Covin and Slevin, 1989). All these factors require managerial orientation that is attuned to competitively transact in such an environment (Çavusgil, 1976), and also a level of entrepreneurship that strives to establish a strategic orientation suitable for foreign market hostility (Robertson C. and Sylvie K. Chetty, 1997).

Therefore to place the 'attractiveness' or 'aggressiveness' postures of a country in a diagnostic perspective it is important to evaluate the 'national diamond' in each industry or cluster in terms of the standard strengths and weaknesses analysis (SWOT). Such a

⁷ The protracted arguments between the British and German governments over the status of the British pound sterling vis-à-vis the unified Euro currency, (*Fin. Times 14 Mar.1998-9*), illustrates a good example of the government's critical role. The argument was not simply a question of a viable exchange rate mechanism but rather and more fundamentally the impact the envisaged Euro currency will have on the international competitiveness of UK exports (products and services) among other things.

macro level SWOT analysis may help identify and define the home diamond facets' weaknesses and strengths, prior to deciding on the external diamond utilisation (Rugman and Verbeke, 1993)⁸.

3.10 Summary

Explaining a country's international competitive advantage in a neo-classical theory of comparative advantage has been overshadowed by Porter's diamond theory. Porter's *competitive advantage of nations* theory revolves around the 'diamond' determinant conditions and the strength of their linkages. The competitive advantage from domestic industries and its international durability is presumed to evolve from the continuous strengthening of the 'diamond's dynamism. Therefore according to Porter each of these conditions relates to one another in providing firms or industrial clusters an ideal base within which competitive advantage is created and sustained. This theory is based on the notion that if a country succeeds in 'creating' a dynamic development of these conditions, firms or industries within will achieve international competitive advantage.

The weakness of this model is that it limits the number of explanatory variables to domestic determinants, an argument that has led to the criticism that the SD model seems more applicable to large countries of the triad group. Secondly it is not clear from this SD model whether the rankings of each facet as projected by Porter could be generally applied in any country analysis without distorting the actual level of significance of each facet. Therefore even the introduction of MNCs and Technology into the model opens such ranking into a subjective case-by-case analysis, and thus

⁸ The World Competitive Report 1996 identifies Ireland, Thailand and to a certain extent Mexico as countries that have international competitive advantage based on an attractiveness positioning and Japan and S. Korea being on the aggressive end. USA is classified as having both.

limiting its generalisation. Furthermore there is the analytical problem arising from the model's depiction of the relationships of the variables. It does not suggest a clear causality relationship between these conditions.

The alternative to the Porter model has been suggested in the form of double-diamond or multiple-diamond models. This means instead of limiting sources of competitive advantage to local factors exogenous variables are introduced into the analysis. For small countries that are not endowed with some of the key conditions projected by Porter the double or multiple-diamond has been suggested as a much more generalisable and operationalisable model than the original Porter SD (1990) model.

The external focus of the DD or MD models makes the outward orientation of government policies and that of industry's management an essential pre-requisite. Such orientations conceptually permit international benchmarking of domestic competition, resources capabilities and implicitly the identification of weaknesses in the local 'diamond' and the key elements that could be out-sourced.

3.11 Hypothesis

There is no empirical evidence that lead us to conclude that Zimbabwe's national competitive advantage can be explained by either the SD, DD or the MD models. Given that the country is a small ADC and exports into the OECD countries it was hypothesised that the SD framework applies to that county as well, and that the DD or MD frameworks could offer better explanations. The two hypotheses were stated as follows;

Hypotheses.

1. *The 'Diamond' paradigm as stated by M. Porter (1990) fully explains Zimbabwe's export competitiveness in the OECD or S. African markets.*
2. *The 'Double-Diamond' and 'Multiple-Diamond' models explain Zimbabwe's export competitiveness better than the Single-Diamond model.*

Chapter 4

Technology, Multinational Companies and the Government's Strategic Trade policy as key variables in the diamond framework

4.1 Introduction

In this chapter we discuss the importance of technology, MNCs and the government's trade policy as key elements that are fundamental to the competitiveness of a local diamond. Section (A) deals with the technology variable, and sections (B) and (C) concentrated on the roles of the MNCs and national government respectively. With the technology factor focus was in its significance to the exports of the two sub-groups (upstream primary product exporters and downstream final consumer product suppliers). A similar approach was used to ascertain the importance of MNCs activities and the spillover of their international expertise to the local export firms. The role of the government was analysed last and the researcher was concentrating on whether its role is perceived higher than is suggested by Porter (1990).

Although the diamond theory elucidates the significance of these factors management has highlighted difficulties in the implementation of the diamond as a system. This is partly because in the diamond theory factors such as technology are depicted as already existing at a capacity level and upgrading of production/processing is therefore presumed to be a capability developmental phase. In LDCs such technology capacity cannot be assumed. Secondly the dominance of MNCs in the exports of LDCs is so significant that it is prudent not to ignore them in the export competitiveness of certain industries (United Nations, 1995). Similarly the government's creation of an 'enabling environment' that accommodates MNCs' injection of FDI and technology would only be

a strategic policy that derives from an understanding of the significance of each variable to the industries concerned.

4A.1 Technology

M. Porter's (1990) analysis puts severe stress on issues such as the relationship between firms, industry level innovations and strategic development of the diamond system, outward FDI and export competitiveness, without singling out which diamond condition is more important in each industry. International trade theory and management literature suggests that Porter's projection of technology factor is not specific and is webbed in the efficiency of other variables. Rajneesh (1993) in realising that complexity posits that all these determining factors are bound together by a common variable, technology and it is that variable which makes the competitiveness distinct. For example, in DC markets competitive advantages are dominated by technologically intensive activities. It is therefore reasonable to argue that technology reflected in advanced product developments serve as a nation or industry's technological barometer. As Porter implicitly emphasised, such technology development in a country is both a result of factor conditions, demand conditions in a country, firm/industry characteristics and supply-related industrial clusters, and also a cause of them. In that vein the nature and level of technology of a particular industry or firm in a country will directly affect the nature and type of support industries that develop around it.

Given the commonality of the EU, NAFTA and APEC economies the researcher agrees with Chen Jocelyn, (1997) in her argument that the psychic distance among these nations and the low differences in their 'national diamond' facets increases the level of rivalry among competitors. Technology intensity has emerged and developed to be the key driver for competitive advantage in intra-industry exports. In that respect the

relative competitive strength and characteristics of the other four endogenous variables forming the diamond hinges on the level of international technological competitiveness of each nation. Competitive advantage is therefore being perceived as a function of the technological advantages that are associated with firms operating in each industry/country, and as well as the degree to which the technology has been accumulated and has become country specific (Dunning 1991).

Cavusgil and Navin, (1981); and Cooper and Kleinschmidt, (1985) argue that there is some evidence of a relationship between technology accumulation and its intensification in an industry or country, and the countries' propensity to export. Although these findings related to [1] introduction of technology by MNCs into a host nation; and [2] direct acquisition of relevant foreign technology by national firms, our focus is on the resultant technological capacity of the local firms. In this study we also assume that national technological upgrading may be positively influenced by organisational assets of MNCs, as derived from the configuration of national diamonds of their home countries.

Differences in possession or lack of technology between the DCs and ADCs has been raised as one cause for dissimilarity in trade composition between advanced (North) and less developed (South) countries (UN 1998; World Bank, 1992), and such a divide seems to endorse the Leontief's Paradox (1950). Looking at the current world trend the technologically advanced countries' exports contribute more to world trade compared to those concentrating on natural factor endowments (*The World Competitive Yearbook*, 1986). However although there is some realism in the Leontief hypothesis firms with advantageous technology are relocating to countries where there are marketing or production advantages in order to sustain their competitive advantage (Dunning 1992). Examples of such locations are Indonesia, Taiwan, Singapore, Malaysia, Mexico, etc. A reverse example of such strategic combination of factors and

unit costs minimisation is the agglomeration of firms in high tech countries like UK by Japanese automobile firms.

From a market and production competitive advantage perspectives these inward FDI firms tap into the technology-based competitiveness of the UK 'Diamond', albeit also circumventing the trade barriers of the EU in the process. For countries like Zimbabwe lack of such technology capacity limits the extent to which the rest of the diamond conditions can leverage the local competitiveness into OECD markets.

4A.2 Technology as a Separate Variable

In an international marketing context the diamond paradigm does not provide a working definition of innovativeness, save that it is the upgrading of resources and their combination. Rajneesh Narula (1993) attempt to define the concept of competitive innovations by including technology advancement and the resultant lower unit cost as the key elements that constitute the innovation process. From the later perspective innovation is viewed as to embrace the knowledge and ability to produce goods and services of a higher or better quality per unit price, and that technology is the cumulative sum of these innovations.

Rajneesh's argument derives from the notion that technology has to be correctly matched with other factors of production e.g. firm specific technical skills, and high labour productivity. Kogut, B. (1991) also makes a similar argument and further commented that the 'competitive advantage' leadership of a country is not driven by technology alone or such mechanical variables as physical capital but also by the efficiency of the firms' dominating organising principles. In their arguments Kogut (*ibid.*) and Rajneesh (1993), and similarly argued by Lall (1990) they seek to extricate the contribution of technology from the overall diamond variable effects and give it a

distinct position. Notwithstanding, they conclude that at industry level national technological advantages are not simply the summation of the technological advantages of a country's firms but rather the created synergy between individual technological advances and other diamond factors.

There are no theoretical differences in the above arguments and neither do they make substantial departures from Porter's assertions. The major problem however is how to define at macro-level the technological aggregate over industries of a nation, and its consequential national competitive advantage. In this research we therefore sought to ascertain one relationship i.e. Zimbabwe's exports and the respective industries' level of technology base.

4A. 3 Technology Outsourcing and Export Capability building

There are two approaches that are presented in the discussion of building a nation's technology capability. The first view follows the diamond theory in that firms or industries are expected to be engaged in continuous R & D, and the subsequent commercialisation of such resultant technology for each respective innovator' gives the incumbent firm the international competitive advantage. Porter (1990) based his argument on the success of patterned technology that has been exported or Schumpeterian innovations that have given the local firm an edge over its local and foreign rivals.

The second view is based on the Hobday (1994) model. According to this model developing countries do not necessarily have to 're-invent the wheel', because they can import it. Based on the technological development process in the four Asian Dragons Hobday argues that the technology importation approach provides ADCs with

competitive technology that already exists¹. His model is a staged process that follows [1] technology importation; [2] imitation; [3] adaptation; and [4] own technology development, but not necessarily in that order. He argues that “latecomer”² firms need not necessarily start by innovations but could access mature technology in DCs in order to enhance their competitive advantage in product processing. Therefore ADC firms would enter at the mature or standardised end of the technology life cycle and cumulatively assimilate enhanced technology through organisational learning. Foreign demand for local products would force the pace of local technological learning among firms. Consequently they adopt a neo-Schumpeterian approach that would place a local firm on a continuous learning curve that embraces both domestic and foreign market needs. Thus outsourcing and importing into the local ‘diamond’ of foreign technology is a key success factors that would enhance local technological capacity and capability. The major theme in Hobday’ s model is the channel through which such technology is imported, e.g. through JVs, Licensing, subcontracting, OEM, etc.

It is clear that the difference in these two approaches lies in the ability of the firms/ industries to succeed in their own technology-based innovations. The Porter approach derives from a DC economy that has the facilities to engage in competitive R & D etc. In the Hobday case the argument accommodates the limitations of the developing countries, in that in as much as other factors could be competitive the introduction of mature foreign technology improves the capability scope and depth. Any attempt to ‘re-invent’ the wheel would forever lock these firms or industries in the natural resources based exports and the related international competitive disadvantages.

¹ Hobday’s examples are the Asian Dragons and the prominence of reverse engineering in Taiwan, Singapore, Japan and S. Korea between 1965-1990. This is ‘backward travel along the traditional technology life route’.

² “ A latecomer is defined as one located in a developing country, outside the locus of world innovation and R &D. Such a firm does not face demanding buyers in its domestic markets.....Such firms are cut off from leading industrial clusters and important marketing networks .. and they suffer from a lack of related support industries and a poorly developed technological infrastructure”, (Hobday, 1994, pp.33-61).

Given Zimbabwe's limited 'own' R & D it is arguable that the Hobday model may be preferred. The researcher's hypothesised argument is that technology collaboration with market leaders based in DCs or their local affiliates would positively contribute to the local industry's efficiency.

4A. 4 Technology resources and Export Supply capability

In theory Zimbabwe's technology related supply-side determinants of export capabilities depend on three factors. These factors are:

- (a) the availability of appropriate skills that may be used on the acquired technology and are possessed by the firm;
- (b) access to technology information both in terms of knowing what type of physical equipment would give 'processing' or 'production' competitive advantage, and supply sources of such technology; and
- (c) availability of financial resources that can be used to acquire that technology. This last factor is critical to the ability of the firms to acquire that relevant technology.

In this study these three elements were deemed important in the creation of the processing and production competitive advantages. Such processing advantages are a function of the firm's ability to produce at greater efficiency i.e. at lower unit cost. On the other hand production technology enhances the vertical differentiation advantages, i.e. changing product attributes or quality. Both are important elements in the initial decision to enter or to stay in a market.

Following Kogut, (1991) and Rajneesh, N (1993) the importance of technical skills and the development of other technology elements in Zimbabwe is imperative. Lall *et al.* (1997) commented that Zimbabwe's technology base is low particularly in the

technology intensive industries. This low level of technological capacity and capability was also highlighted by Tyler Biggs *et al* (1995) when they argued that the dispersion of technology capabilities was sparsely distributed with the big firms showing higher production efficiency (0.42%). By dividing industries into fragmented and segmented groups, or high and low technological intensity sectors, the country's technology base could be established, (Oliveira Martins *et al.*, (1996)³; Evangelos Ionaddis and Paul Schreyer; (1997). While conceding to that fact, the influence of such technology to production/processing capabilities of Zimbabwe's exports was to be established. Whether such influence is significantly different between firms that were exporting primary products as opposed to those exporting final consumer products was an issue to be established as well.

4A. 5 Summary and Hypothesis

Zimbabwe is hypothesised to depend on imported technology and this technology is presumed to be similar to that used in its trading partners' industries. Zimbabwe's own technology R & D is virtually non-existent (Lall et al; 1997) and therefore the technology input into its production/processing should be from external sources. In that respect and assuming that the rest of the country's diamond variables are internationally competitive such technology should positively contribute towards the firms' export capabilities. That supply capability is measured by the extent technology factors impact on the exports of the firms or industries. Those factors range from production/processing equipment to financial availability, and skills development and /or availability.

³ A distinction however should be noted on the meaning of these elements. Oliveira Martins et al associated the R & D intensity with the level of product differentiation (quality or variety); and Evangelos and Schreyer although using the same industry mapping, used it to highlight the double function of R & D i.e. differentiating products and improving productivity efficiency.

Zimbabwe's exports to the OECD are from upstream as well as downstream firms. According to the diamond theory a nation's competitive advantage can either be natural factor, innovation, technology and wealthy driven. It is the technology driver we intended to establish in respect of its influence on the supply capability of the firms' current exports. The main objective was to identify its influence on the supply capability of two sub-groups and whether each group was affected differently. The two hypotheses used where;

Hypothesis

- 1 *Zimbabwe's export supply capability is positively influenced by the availability in the local diamond of imported technology.*
- 2 *The impact of technology on the supply capability is different between primary product and the final consumer product exporters.*

The model for the estimation of the hypothesised technology factor was:

$$TECINDEX = AN^{bi}T^{b2}F^{b3} \quad *$$

where TECINDEX is capacity to supply technologically superior exports;

N is the availability of technical skills in the firm;

T is the industry specific Technology (physical & informational) that would enhance production/processing efficiency and in Zimbabwe (ADC) all such technology is imported.

* The dependent variable TECINDEX was measured as the ratio of technology intensive exports to total exports.

F is financial resource (investing & working capital).

In the context of the diamond theory three independent variables are important. These are technological capacity (T), relevant skills (N) and financial resources accessibility (F). This model assumes four points; [1] access to DC technology; [2] investment finance and working capital accessibility is not restricted by high interest rates or such other impediments; [3] availability of relevant and technically trained human resources; and [4] marginal return to scale vary as factor combination changes. However the weakness of this approach is that if the (TI) input variables are close substitutes or are barely incompatible their joint impact tends to be indeterministic. (*Appendix A details the expected signs of the above model's variables*).

Multinational firms and Export Performance in ADCs

4B.1 Introduction

The role of MNCs investments in foreign 'Diamonds' has become a subject of much interest with implications for policies on inward FDI (Caves1982; Casson and Pearce, 1987). For example, in the NICs of Asia foreign MNCs have played a major part in export competitiveness of Singapore and South Korea. In Europe the case of Switzerland's Nestle, among others, provides an example of a MNC whose foreign activities significantly contribute to the country's GDP as well as those of countries where its foreign affiliates are located. It is these external activities that have given cause for the argument that such a firm's source of competitive advantage cannot be solely explained or linked to the single 'diamond' of Switzerland ⁴.

M. Porter (1990) in his thesis deems MNCs inward FDI as an 'unhealthy' ingredient in the creation of national competitive advantage and the core of his argument is that industry/nations should concentrate on making local firms achieve international competitiveness through endogenous innovativeness and factor upgrading. In that argument Porter (*ibid.*) seems to ignore a number of essential issues that are crucial to the analysis of international business. In particular he does not greatly emphasise the influence of MNCs and their international business activities (IBA) on the host nation's diamonds. Neither does his measure of national competitive advantage seem to incorporate spillover effects passed by guest MNCs to host industry's competitiveness. Dunning, J. (1975); and Hobday, M. (1994) noted that in industries where there is participation by MNCs, the later infuses greater amount of advanced factor creation,

⁴ Dunning (1993/2), cites the example of Nestle of Switzerland, and where he argues that the national Diamond of that country is affected by Nestle's sales (95%) that emanate from its foreign based subsidiaries. The high level of sales based on foreign demand tastes, market size and sophistication affects the national GDP of Switzerland and thus affects other components of its national Diamond.

skills and technology assimilation and development by local firms. According to Hobday (*ibid.*) the effect of MNCs' inward FDI to a foreign country 'diamond' are evidently illustrated by the development and growth pattern of technologically enhanced production/process in Singapore and Taiwan. In his argument he concludes that the strong presence of sophisticated industry and advanced customer expectations, in those countries is a direct result of Japanese and USA MNCs activities and influences in industry development. Furthermore these MNCs have contributed to the exports of these host countries (Chen, E.K.Y. 1994a). On the basis of these arguments it is projected in this study that by translocating into other geographical areas some of the MNC's specific-asset advantages will spillover to host ADC industries. We however, by that proposition, do not dispute that the original source of the MNC's competitive advantage is in a DC diamond.

A MNC's contribution to a country's exports must be understood from two perspectives, *viz.* [1] the MNCs investment intention and its objectives; and [2] the impact of those objectives on a host country's industry. Generally the MNC's investment intentions could be summarised as follows;

- market-seeking, i.e. aimed at either by-passing existing or possible future trade barriers such as those created by the EU, NAFTA or SADC economic integrations, or to gain access into low cost marketing facilities in host nation;
- efficiency-seeking, i.e. locating at places that offer more profitable export supply possibilities, for example cheaper production/processing facilities that may serve as beachheads for other host regional markets;
- resource-seeking, i.e. residing within the vicinity of critical inputs that are not available in the home diamond, for example access to natural resources such as oil or ideal fresh flower horticulture temperatures of Zimbabwe, Morocco and Columbia; and

- strategic-asset-seeking i.e. investing on locations that are conveniently placed to provide backward integration linkages, (Dunning 1992).

According to Dunning (*ibid.*) the above intentions serve as the broader framework within which MNCs decision on outward FDI is undertaken. These strategic intentions serve as the principal basis on which the search for further sources of competitive advantage tends to drive MNCs to translocate operations into foreign 'diamonds', and such characteristics behaviour are an embodiment of Dunning's (1977) eclectic paradigm.

4B. 2 The Eclectic paradigm

Dunning, J. (1977) posit that prior to deciding on objectives for outward FDI the firm is endowed with specific-asset ownership (O), which gives it unparalleled competitive advantage. Secondly such ownership advantage(s) have to be internalised, (I) i.e. the firm can independently and efficiently use these assets throughout the added-value-chain and within its various SBUs. Furthermore his argument is that any geographical transfer of firm advantages that are embodied in its specific assets should be justified by locational advantages (L)⁵. That means firms will transfer those internalised assets to geographical *loci* outside the home 'diamond' in search of marketing or production competitive advantages. In that regard Dunning (*ibid.*) perceives these three factors as fundamental to the decision of a firm to transnationalise its operations. That process involves relocating of some of its operations into semi-independent or autonomous sub-units that remain hinged to the main base through various business strings.

⁵ Gray (1991) summarises these location advantages to include non-marketing and production variables e.g. host government subsidies, regulatory oversights, lower production costs etc.

Dunning's point is supported by various scholarly arguments and among them is Gray, P.H (1996). Gray maintains that although Dunning's views are correct the eclectic paradigm takes a static position in that it assumes that these factors will remain key success factor once they are internalised. Accordingly he correctly asserts that any rejuvenation or upgrading of current advantages into higher or different areas requires managerial competencies that are greater than those of rival firms. Clearly Gray's approach recognises the importance of the management of a portfolio of MNC's investments within the home and foreign 'diamonds'. By introducing the entrepreneurial element into this paradigm he therefore makes it more dynamic in that at each point in time management make strategic decisions that result in market seeking, asset seeking or resource seeking objectives. Dunning (1993) also recognises this evolving process, and acknowledges that the ownership advantages that are derived from such factors as production/processing technology have to be complimented by advantages that derive from common governance of the portfolio of SBUs. Such common governance includes advantages from multinationality and efficient management.

From the above points we have three broad bases through which the strategic intentions of MNCs' outward FDI and the principle sources of their increased competitive efficiency can be analysed. These sources are a portfolio of proprietary (firm-specific) assets; a portfolio of locational assets; and the managerial expertise to exploit these portfolios. MNCs transfer their 'domestic diamond' conditions as global inputs into outputs for global markets. Taking M. Porters' (1990) determinants of a nation's competitive advantage it is logical to agree with Dunning (1993/2) that the role of these MNCs in ADC's and their outward FDI (greenfield) or joint ventures (acquisition and mergers) makes it compelling not to ignore them.

However, this research analysed the MNCs roles from two angles and these are; [1]

technology importation, spillover and its diffusion into the local industry⁶ and [2] the MNCs direct contribution to quality/quantity of Zimbabwe's exports. It is the researcher's position that the first dimension depend on a number of factors and the major ones being the ability of the local facets of the 'diamond' conditions to accommodate the dynamism injected by MNCs; and the learning and assimilation capacity of the firms in the local industry. Such learning and information or knowledge transfer between MNCs and local firms is effected in formal and informal ways, (Kirim, A., 1990). Formal modes are basically market mediated and MNCs play an active role, especially when they are of equity FDI (acquisition/mergers) nature. Compared to informal modes such as learning by participation, visiting trade fairs and exchange programmes, MNCs will provide cost effective spillover effect. The researcher agrees with Blomstrom and H. Person (1983) proposition that MNC's horizontal linkages with local firms tend to affect the industry's structure, conduct and performance through those formal and informal ways.

With regards to the increase in export volumes/quality dimension Rhe and Belot, (1990), concluded that the MNCs spillover effect on the industry's exports would be observed in quality and volume capacity changes. This conclusion derives from the fact that MNCs have multi-market presence and therefore serve as conduits for both inward information about the external customers, competitors etc. and carriers of local product qualities into foreign markets ⁷.

⁶ The word technology is being used in its broadest sense to embrace technical information contained in patterns, technical knowledge and communicated to other firms (Enos, 1989); skills, knowledge and procedures required for doing useful things, Bond (1988); software of production, i.e. managerial and marketing skills, (Francis Stewart, 1977).

⁷ There are various arguments as to which country is the exporter of products of such 'offshore' investments. The global nature of some firms e.g. Nestle, Toyota, Caterpillar and various UK Based computer chip manufacturers etc. are such that MNCs equity investment is strategically spread across various international diamonds. In this research such internationally successful exports are being considered at source.

4B. 3 MNC and Indigenous firms' industry relationships

At the firm level the export behaviour of the firm is comprised of two interdependent decisions. For firms that have a large share of the domestic market Athukorala *et al* (1995; 109-122), argues that the first decisions are whether or not to export; and the second decision is related to the portion of total output that is to be exported. In Zimbabwean industries that are composed of indigenous firms and dominating MNCs, such decisions are taken in the background of the MNCs leading edge over local competitors. The edge is in major aspects of production/processing, export market intelligence etc. Furthermore the MNCs' relationship behaviour and orientation, i.e. rivalry or network relationship, towards local firms is influenced by factors such as whether or not the firms involved are pure exporters (Rubens Lopes Braga, 1998), or they chose to compete using non-price strategies (Nagesh Kumar, 1991).

In some cases where the MNCs produce exclusively for foreign markets the relationship is competitive co-operation⁸. In such environments the level to which clusters of support and related firms can form is determined largely by the local firms' ability to provide technical specifications on required export inputs to the MNCs. However in the short-run the extent to which indigenous firms' participate in the network clusters is limited by their technical capabilities, (Awuah. B. Gabriel's, 1997). From a local industry perspective Rugman A. and D'Cruz, (1991) posit that the local affiliates of the MNCs become the industry's flagship firm and in Zimbabwe industries this is the position, (for example, D. Whitehead, *Textiles*; Anglo American Corporation, *Mining*; Bata, *Shoes and Leather products*, Inter-fresh *horticulture fresh produce*, etc.)

⁸ Examples of such situations are the free export processing zones in Zimbabwe and other ADCs. Such export free zones are seen as low (labour) cost areas. Advantages gained by firms sighted in such areas include export tax concessions and other incentives directed at the promotion of export production or processing. In such instances minimal co-operation between MNCs and local firms is expected.

The MNCs and indigenous firms' relationship may also be influenced by government policies on competition. For example, the latitude with which government policies allow free competition between the MNCs and local firms can affect the nature and intensity of competition in the local industry. Furthermore the level to which MNCs are forced to undertake the extra cost of developing local export suppliers will affect its relationships with local firms (Hill, 1985). However network relationships that arise from sub-contracting of peripheral activities have more benefits to indigenous firms than pure rivalry. By adopting a pluralistic approach to transactional relationships the MNC's networked value-added activities produce positive spin-offs within their industries, Dunning, J. (1996). Implicitly the upgrading of ADC's 'diamond' facets and the competitiveness of firms in local industries could be better served by a network relationship that is designed to promote a participative learning framework.

Co-ordination among local firms, as argued by both Dunning (1996) and G. Richardson (1972), is preferred because of its inherent reduction in transaction costs. For example, in the short-run the matching of supply and demand would be a task of the market and naturally it has higher transaction costs. As opposed to market determination, co-ordination does not require the matching of aggregate supply to aggregate demand, but separate and mutual planning by incumbent firms. That way the resources are targeted to specific development paths. In the long-term market determination would then provide the framework within which strategic planning can be achieved.

4B. 4 MNCs and local industry changes

In general terms MNCs spillover effect takes two aspects and these can be simultaneous and independent of each other, or *ad hoc* but related. In one end there is either an inward-oriented flow, such as local firms' access to information about foreign products and technology; and on the other side there are location-specific external

economies that are associated with MNCs exporting. The later form of spillover would include the changing of local methods to 'catch-up' with production/processing that is incumbent in the international industries and markets. The author agrees with Davies, (1977) when he argues that both forms of spillover include knowledge diffusion and subsequent skills training and development.

The extent to which the local firms' *modus operandi* or culture can change as a result of the MNC's location-specific externalities is limited by the degree of the industry's geographic concentration (clustering) and the technological difference between the MNC and the indigenous firms⁹. That concentration takes into account; [1] the number of firms in the industry; [2] inequality of market shares among them; and [3] the potential for coalitions (Lall, 1990). These three factors affect the domestic market structure, network relationships and intensity of competition within the industry. For example the larger the domestic market share held by foreign MNCs in ADCs the less likely are the indigenous firms to improve their efficiency and the more they are likely to collaborate with MNCs. Indeed the researcher agrees with Kokko Ari (1994) and Blomstrom (1983) who concluded that if the MNC's products are differentiated, and are technologically superior to those of local firms then the propensity for collaborative behaviour by local firms is increased, i.e. the intensity of competition would probably be lower. An example of such relationships has been empirically studied in Mexico's maquiladoras that are associated with USA MNCs. These maquiladoras have shown higher propensity to upgrade the quality of their export products (Blomstrom M. and Hakan Persson's; 1983). With both Kokko, A. (1994: Ghana) and Lall (1980: Malaysia) providing empirical evidence in the same vein similar developments should be expected from an ADC, (Zimbabwe).

⁹ Technology is being used as a proxy for all advanced factors that give a MNC export competitive advantage over ADC exporters.

This strong presumption that MNCs provide significant technological and training benefits to ADCs derives from the notion that its geographically translocated efficiency is passed over to local industry members. In Blomstrom M. and Hakan Persson (1983) the improved technological efficiency, as measured by labour productivity in domestic firms, were associated with the presence of foreign MNC subsidiaries in the host industries. Although labour productivity differences between MNCs and indigenous firms were identified in the above analysis these could be attributed to variations in capital intensities, technological and organisational capabilities (Haddad and Harrison: 1994). Furthermore we cannot assume that the MNC's presence in an industry, *ceteris paribus*, will always improve labour productivity. Gershengerg Irvin (1987) obtained an inconclusive result in Kenya when he analysed the diffusion of managerial know-how from MNCs to local firms in a textile industry that was dominated by foreign firms. Chen, E. K. Y. (1983: a) in his analysis also commented that the direction of causality between MNC's inward FDI and skills development is not clear. Arguing from the Dunning's (1977) eclectic paradigm perspective, MNCs that are resource seeking would be expected to invest in lower cost labour countries to take advantage of lower labour unit costs. In that case Chen's (ibid.) point is that MNC one directional causality may not be established. However the opposite development would occur if such skills developments were an inescapable step towards a full exploitation of other locational advantages.

A MNC's competitive strength in the international market has significant impact on the durability of diffused firm-specific advantages. If the flagship MNC's competitiveness in the external markets is weak it is also possible that the significance of the spillover effect on international competitive advantage in the local industries is also relatively weak in character and vice versa. An ADC industry's innovations and upgrading of its production/processing or international competitiveness is expected to follow that same

pattern. Indeed in Zimbabwe, as in similar ADCs, MNCs have both negative and positive effects on the development of the local export competitive advantage.

On the positive side, as part of a global network, MNCs have leadership in external marketing channels, have better knowledge of foreign markets, possess experience and expertise in the different facets of product development and international marketing. They are also well placed to take advantage of inter-country differences in cost of production. All these are externalities that could spillover to local firms. On the negative side, MNCs' restrictions imposed on local affiliates may impede the easy development of a foreign market base for local products. As correctly concluded by Lall (1996) a strong presence of MNCs in an industry may inhibit the development of indigenous technological base beyond the adaptive research. Hone, 1984, (pp.146) and Helleiner, 1988, (pp. 130) also suggests that such impediments adversely affect the learning speed of those companies clustered around the MNCs operations.

Although Gershenberg (1987) and Blomstrom (1983:1990) conclusions provide two diverging points they however concur that at operational levels MNCs activities have some positive impact on the nature of changes in the local industry skills development. We however strongly agree with Lall (1996) that without the host nation heavily investing in other resources development, MNCs *per se* would not be significant in influencing the overall upgrading of production/processes. This point is the fundamental argument that Porter's (1990) makes in the 'home diamond' paradigm.

4B.5 MNCs and Spillover Incidence

The nature and type of businesses that MNCs introduce into the local industry will affect the magnitude of the spillover incidence. Those that operate independent of local firms' input may not have positive contribution to the development of technologically

superior indigenous exports (Helleiner 1973 a: b). For example 'assemble type' of MNCs are unlikely to involve meaningful resources input by local firms. These partly form the bases of M. Porter's (1990) 'unhealthy' inward FDI argument. However where MNCs partly rely on local input its spillover can change the economic disposition of a sector or industry¹⁰. That spillover includes choices of technological investments. Such a MNC induced developmental trend follows that in MNCs source countries, for example factor intensity production/processing fashions in USA, Japan etc., (Kojima, K., 1977; and T. Ozawa T., 1981). However, with the globalisation of operations such differences tend to disappear although the organisational and managerial elements may tend to remain embedded in the firms¹¹.

Upstream sections of the industry that change in concert with MNC activities respond to downstream market changes as per the pace established by the MNCs local challenges. New demand standards as represented by the MNCs' quality expectancy would be imposed on some indigenous firms and the larger the size or number of firms in an industry associated with that MNC the wider would be the spillover incidence. However consistent with the technology gap theory is the argument that the rate of 'catch-up by ADC firms would be slower if the imported technology or MNC's expectancy is too complex for easy adaptation by the ADC firms. Consequently the incidence of spillover is reduced and we would thus expect marginal changes. It is also arguable that the greater the difference between the foreign and domestic diamond facets the less would be the knowledge diffusion process, and the steeper would be local firms' learning curve. Conversely if the technological competitiveness capabilities

¹⁰ O'Sullivan P.M. (1968) argued that inward FDI by USA, Canadian and later German MNCs contributed significantly to Ireland's transformation in exports composition from an agriculture-oriented output towards manufactured exports.

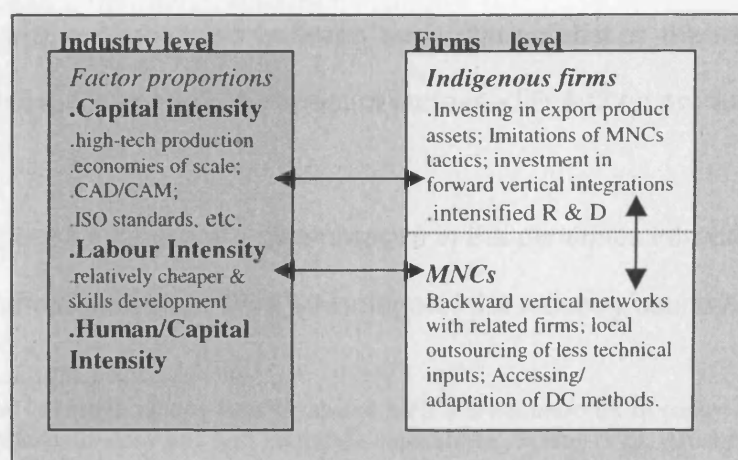
¹¹ The introduction of JIT, QC circles and TQM by Japanese firms in UK is yet another example of MNC distinctiveness. Toyota (UK) have adopted the culture of business relationships (*Kaizetsu*) (Slack; 1995).

and adjustment efficiency of ADC firms are relatively developed the transformation process is deemed less painstaking.

4B.6 Summary and Hypothesis

The hypothesised MNC's spillover effect is characterised by two contextual states. At industry level there is the factor intensity aspect i.e. the industry changes its degree of technological intensity, human/capital intensity or labour intensity in its production/processing. At the firm level there is the firm-specific asset state where firms respond to current and potential industry change requirements through internal reorganisation. This takes the form of intensified R & D activities, proactively investing in foreign market products that are potential 'cash cows' or 'stars', greater focus on innovations that may lead to advanced factor creation and upgrading of basic resources. Figure 4.1 below illustrates the two states and how they are linked in an industry that is based in an ADC.

Fig.4.1 Industry spillover and development of factor intensity states.



Source: Author, 1999.

Figure 4.1 above illustrates the industry states, i.e. changed factor utilisation (intensities) in production/processing methods that give a specific industry the competitive advantage¹². That industry 'state' depends on changes that take place within firms and their inter-relationships with MNCs. In this approach the MNC, being privileged with multi-market information, is assumed to be leading in the factor intensity drive. The researcher agrees with Koizumi and Kopecky (1977) who concluded that with technology transfer that is explicitly introduced in the production function, capital intensity becomes a strategic variable in the characteristic of the industry's growth pattern.

According to this two state perception the MNC's spillover and the resulting development process will create changes in the industry's exports' production/processing. Such changes are a result of either one or both of the following factors;

1. a change in characteristics of the firms/industry as result of intensification of factor proportions e.g. capital or labour intensity and is not related to changes in each firm's export market share; and
2. changes in the relationship between such characteristics themselves and export market share, for example the effect of increased R & D on product differentiation.

These two types of changes are all embraced in the dynamics introduced by the MNCs and they do affect the competitive advantage of the industry/country. As concluded by

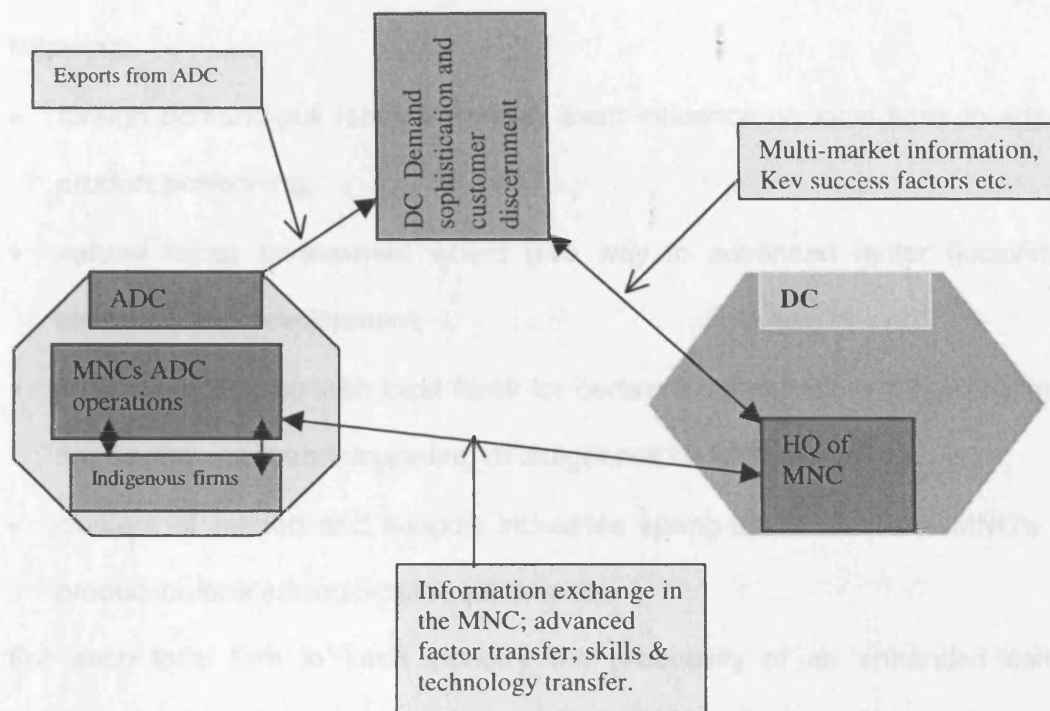
¹² Technological intensities among local firms and MNCs is not uniform. In some instances MNCs adapt their technology intensities to suit host country's capabilities (White 1978, Ahiakpor, 1986). Ahiakpor, (Ghana case) concluded that such factor intensities are not similar among various firms within the same national industry i.e. state, private firms and MNCs. The deciding factor is the cost (profit) considerations. Therefore it is not always correct to assume that in the spillover context the level of technology assimilated by these ADCs firms and its impact will be the same as those used by MNCs competing in the DC market environment. Both White and Ahiakpor are correct in that ADC firms also adapt the imported technology for domestic use and therefore its application may still be of a different standard to that in the DC market.

O'Sullivan's (1968) on the Ireland study such industry changes is a process that follows the guest MNCs' influence on the type and nature of factor intensities. MNCs and local firms re-engineer their production systems, and re-orient indigenous export culture to conform to the foreign influences on export character composition and volumes, product quality and their competitive attributes. This notion of business culture change is based on Findlay's (1996) 'contagion' hypothesis, which postulates that the domestic firms in industries with greater presence of inward FDI tend to have a greater propensity to adopt new technologies, tastes and management of functions. All these are alien to a closed ADC diamond that does not open its facets to outside interventions.

Following from this MNC argument, and taking an industry as a proxy for a 'national' diamond, it is possible to perceive industry and firm states as one single end of a triangle of export market competitiveness development, (Fig. 4.2 below). The two states as detailed above (fig.4.1) would be inside that ADC leg of the triangle and represents the internal metamorphosis of any of the industries. In that context any positive improvements are generated through domestic and foreign inputs to that industry's overall diamond. The other two sides of the triangle are the home diamond of the MNC (DC) from which new technological innovations are imported. This could be in a Vernon product life cycle fashion, albeit at a faster rate or it follows the Hobday M. (1994) model of industrial technology capacity building.

The third leg is the common foreign market where both ADC firms and MNCs affiliates compete to supply. In this case such markets are UK and S. Africa whose MNCs have investments in Zimbabwe. Figure 4.2 below is an illustration of the MNC spillover triangle as projected above.

Fig.4.2 ADC firms' gains from MNC spillover process



Source: Compiled by Author, 1999.

The contextual framework proposed by this MNC spillover approach is that the MNC is located in the ADC for various strategic reasons (Dunning; 1977). The MNC brings into the industry better export enhancing capabilities that can spillover to indigenous firms. The local firms in turn assimilate/imitate or learn the foreign (DC) methods of competing in DC markets. It is therefore argued that initially such learning could be a response to the MNC's challenge in their home market and later as a networking process that link them with the advanced country processes and methods. Consequently exports by both the indigenous and guest MNC are of better competitiveness than prior to MNCs involvement in the ADCs industries. National exports are therefore upgraded as a result of that networking. Initially the indigenous firms could be mere suppliers of semi-processed inputs to the MNC and like in the

maquiladoras in Mexico or in the *Kaizetsu* in Japan the industrial customers further process the products prior to exporting them. In that respect we can arguably infer the following;

- foreign demand-pull factor informally exert influence on local firms to adjust their product positioning;
- natural factor endowment would give way to advanced factor (local/imported) utilisation and development;
- MNCs' competition with local firms for certain local resources place challenges on the development and upgrading of indigenous factors; and
- clusters of related and support industries spring-up to meet the MNC's level of production/processing input requirements.

For each local firm in each industry the probability of an enhanced competitive advantage that derive from its association with the MNC will depend on what part of the MNCs' negative-positive continuum the firm gets locked into. The closer the local supplier firm is to the MNC quality expectations the greater is that probability. Spillover benefits will also depend on the ability and willingness of the indigenous firms to share information with MNCs. It is therefore presumed that the probability of 'technological' diffusion is greater where the local firms are an integral part of the industry's network of related and support firms. In that link-up the nature of factor proportion utilisation i.e. factor intensity that the MNC adopts will also spillover to those indigenous firms. In that community of firms the MNC is thus presumed to act as a catalyst for such changes both internal (firm specific) and externally (industry specific).

Hypothesis:

1. *The introduction of inward FDI by Developed Country MNCs into Zimbabwe's exporting industries has a positive effect on the probability of local firms to adopt export strategies similar to those that give the MNCs international competitive advantage.*

4C Government

4C.1 Introduction

The government's contribution to a country's international competitive advantage has been theorised from different and sometimes opposite perspectives. In the 'Diamond' model Porter argues that the role of the government in international trade should be less direct and yet proponents of the new international trade theory suggests the imperfections in the markets requires such direct interventions (Brander J. and B. Spencer: 1985; Krugman, P.,1992). Furthermore, trade theory and empirical studies give insight into the ever-increasing role of the government in more than 'fashioning' the environment for building exports capability and capacity. That active and direct role is necessitated by the need for government to be participants in the emerging trade integrations such as the EU, NAFTA etc. In this section the researcher questioned the position of a government as an auxiliary factor in the creation or sustaining of international competitive advantage.

4C.2 Government's Strategic Trade Policy and the Diamond

Main traditional models of international trade were entirely static and tended to explain trade flows on the basis of fixed factor endowments, given tastes, given technology and free trade in a perfect market. These models do not seem to make an allowance for the possibility that a country's comparative advantage could change as a function of private economic activity or might even be shaped by government policy. Similarly the diamond theory places emphasis on the argument that it is the firm and not the government that is actively involved in the design and sustaining of competitive advantages in the market places. However, the fact that government could capture permanent advantage in industry after another by giving an initial impetus down the

learning curve of their firms and industries now emerge as a result of impeccable formal models, (Klaus Stegemann, 1989). For example, contrary to Porter's projection of the government in an auxiliary function, Ernst *et al* (1998) concluded that the building of technological capabilities and capacity by the Asian Tigers involved direct participation by the government. This was through formulation of policy guidelines that made firm level developments and innovations specific national objectives. Furthermore governments are known to protect the overall strength of the domestic firms and in some instances in the foreign markets as well. Failure by the governments to develop an effective national strategy and structure limits the degree to which other variables can competitively serve national industries in the international markets (Richard, P. Nielsen, 1984).

The claim that governments should not be aggressive in the pursuit of trade policies that support home industries for fear of retaliation by other governments is no longer dismissed as a *non sequitur*, (Dixit Avinish, 1989). In some cases the government's direct activities and participation in the international arena exceed that of its national firms. For example, as commented by Business Week (14 Dec. 1981 pp. 39-120);

"...the total net borrowings in the international capital markets by governments for business exceeded the borrowings by non-financial business without government participation".

Government activities are directed at strengthening of the local diamond conditions or part thereof. The question raised in this study is therefore what makes a government presiding over diamond of country X perform better than that of country Y. The answer to that lies in their ability to formulate strategic trade policies that positions the local exports on a cost competitive advantage.

The prevalence of bilateral trade agreements that are rooted in political decisions is an example of processes where the government takes a leading position in supporting

export business. The government's ability to formulate an appropriate strategic trade policy that can catapult the core competencies of the local flagship firms into the more imperfect international markets has to be an integral part of the working of the diamond system and not divorced from it¹³. Therefore given the emerging significance of economic integrations and bilateral trade agreements it is arguable that a country's competitive advantages over other countries cannot be explained exclusively on the basis of differences in national diamond facets: relegating government influence to the peripheral.

A strategic trade policy will of necessity be designed to serve specific industrial sectors of the country and that entails identification of industries that are potential stars and can spearhead the competitiveness of the home firms and industry into international markets (Crick, D, 1992; Crick, D. and M.R Czinkota, 1995; Richard Nielsen, 1984). In the domestic diamond framework it is inevitable that only international trade policy formulated by each country serves as a conduit within which a swift transmission of domestic capabilities and competitiveness into the international arena may be cushioned. For example, as argued by Aggarwal Raj and Tamir Agmon, (1990), import substitution¹⁴ is a phase where government leads the corporate sector towards a development of local diamond's competitiveness.

However for a government to identify and properly assist firms that have the potential to compete in the international markets two issues are important. These are; [1] an understanding of the nature and structure of the specific national industry; [2] the industry must be able to competitively respond to expected quantity and quality

¹³ Industrial policy should be perceived as involving some form of industry, firm or project specific policy or targeting, and arising from a co-ordinated government plan to influence industrial structure in a particularly well defined way, (Krugman, P.; 1992).

¹⁴ The difference between import substitution and import reproduction is that the former concept looks at the purpose of learning from 'sheltered' competition pressure and the later relates to product modification of foreign products to local tastes, with limited learning and innovation , (Mytelka and Taffere, 1998).

decisions necessary for the international markets ¹⁵. With respect to ADCs the capability and capacity of the firms to positively respond to such new or additional challenges seem to require more than mere corporate decisions. As correctly argued by Dunning (1996) in order to foster the firm's ability to engage in fierce international competition the relevant government's role ceases to be that of an 'umpire', and instead should adopt the protector's role. Specific to the diamond theory the question is whether such a government should take a leading or secondary role in the operation of the diamond system.

Attention has been paid to the merits and demerits of the government's export strategic trade policy but not much has been projected as the process that should take place in the implementation of that trade policy. Stegemann, (1993) suggested that implementation of such government led export development may take place as a sequence of three stages:

- (a) deliberate interventions in the market aimed at giving the local companies protection from competition, or ensure their participation in the activities that are dominated by MNCs. For example in a case study of the relationship between MNCs and local government development strategies in Ghana, Awuah. B. Gabriel (1997) concluded that there was direct and inherent pressure exerted by the government on MNCs to use local firms as providers of input materials;
- (b) export promotion that involve subsidisation of cost elements in the production of export products; and

¹⁵ The Airbus is a good example of a strategic trade policy of a multi-government-sponsored investment by several EU countries, initially France, UK AND Germany. It was sponsored at low interest rate finance, thus making it operationally competitive. This was a direct investment that went beyond creating a national competitive environment. Its competitive position is to challenge Boeing's dominance of the industry (Aircraft Financing: Uncommon Agreement, *The Economist*, (Oct.1982. pp.72-74).

(c) funding some investment in foreign markets, for example the role of Japan's MITI in helping Japanese companies towards offshore export investments.

Thus according to Stegemann (*ibid.*) the distribution of the export activity intensity between the government and firms changes as the process moves from one stage to the next, and the government side-steps as firms find their foothold. At any of these moments the competitiveness of all other facets of the diamond are brought into evaluation.

In theory therefore the government is important in directing initial changes in a country's comparative advantage and any future focusing on international trade competitiveness is expected to result from that initial push, (Raj Aggarwal and Tamir Agmon 1992). In the second phase the corporate sector replaces the government as the spearheading force¹⁶. The government's export trade policies and the profit maximisation behaviour of the firm jointly affect the evolutionary process of internationalisation of local competitive advantages. Any weakness in either the government or firms' competitiveness against the foreign competitors would adversely affect the national competitive advantage. The significance of that joint thrust is not specifically emphasised in the Diamond model and the government's role is restricted to providing a platform and not to participate.

¹⁶ Aggarwal Raj and Agmon (1992) cite examples of the trade development policies of India, Singapore and South Korea. In all the three countries the government took a pivotal role in designing macro-economic policies that took into account the microeconomic interests and infancy of the domestic firms. Similar developmental progression has been observed in Japan through the role of MITI although K.Ohmae (1987) attributes the role of the MITI to advising the already complex Japanese business culture.

4C.3 Summary

In the Diamond theory the ever-increasing role of the government and its agencies in the promotion of export of competitive home products is not emphasised. The government's participation and influence in institutions such as the General Agreement on Trade and Tariffs (GATT) and regional economic integrations like the EU, NAFTA and SADC in the Southern Africa area, gives the home industry a defined width of an access window of opportunity into foreign markets that are otherwise closed even to very competitive local products. Negotiated agreements on trade modalities provide the local firms opportunities to export their competitive advantages in the form of high quality products, low cost products and new products. The reason is that although a country may have competitive products that could easily penetrate the foreign market the host government's policies interferes with that ability. Raj Aggarwal and Tamir Agmon (1992) argue that most of such government roles manifest themselves when governments choose macro economic policies that favour domestic firms.

Arguments for direct government participation in international trade are rooted in the new international trade theory that accepts that the imperfections in the international markets compel government's periodic interventions. Krugman, P. (1992) and Brender and Spencer (1985) posit that treating government, as a mere supporter of corporate strategic intentions is a theory that has limitations in a global economy. Similarly Wood and Berger (1994) support that view and their argument is that in the context of the new trade theory the governments export trade policy has a decisive influence on the success of the firms to achieve international presence. Brender and Spencer, (1985) concluded that some aspects of the strategic trade policy aim to shift monopoly profits from foreign to domestic manufactures. For example monopoly profits may accrue to an OECD based firm because entry into the industry or served market is restricted by factors such as artificial trade barriers (quotas, high import duties and quality standards

such as ISO 9000 series or BS equivalence). These reduce the cost competitive advantage of guest firms. Such restrictions directly interfere with the guest company's ability to implement strategies that would normally achieve better competitive advantages in their domestic markets.

We therefore pose a question as to whether the role of the government as perceived in the diamond theory should be elevated in the application of the theory to ADCs such as Zimbabwe. Based on that Porter's theory the government's role was tested as follows;

Hypothesis *The Zimbabwe government is not directly and positively involvement in the export competitive advantage activities of various local industries.*

The hypothesis model was:

$$H_0: \Phi \leq 0$$

$$H_1: \Phi > 0,$$

where Φ is the mean value of the government's perceived direct involvement in the export activities of the firms or industries. The statistical computations are detailed in Chapter 8.

Chapter 5

Export Product differentiation, Finance and the Exchange rate Effects

5.1 Introduction

In this chapter we discuss firm level factors that are closely related to international competitive advantage capabilities of Zimbabwean firms. Three factors were deemed integral to the export supply capability variable of many of these firms. These are; [1] the ability of the firms to achieve high levels of *product differentiation*; [2] availability of *export trade finance*; and [3] the *effect of exchange rate variability* on the cost/price competitiveness of the exports. The author chose to look at these factors for three fundamental reasons. Firstly, it is M. Porter's (1985) argument that competitive advantage could be derived from implementation of the generic strategies of 'differentiation' and 'cost leadership'. The second reason is that in the 'diamond' model Porter (1990) does not specifically emphasise the importance of financial resources as an important factor in sustaining international competitive advantage. Although in the criticism of the SD model this point has been raised it merits further consideration from a microeconomic perspective.

The third reason is that exchange rate variability affects the export pricing strategies of Zimbabwe exporters. It was therefore important to look at the effect of exchange rate factors with regards to how they affect the level of export price adjustments. In that context the 'cost leadership' strategy was being analysed in terms of the price and volume adjustment behaviour of firms as a response to such exchange rate variability.

5.2.1 Export Product Differentiation

Among the impediments that confront LDC exporters in DC markets is their limited capability and capacity with respect to export product differentiation and adaptation. The fundamental point is that product differentiation derives from the heterogeneity of some of the basic characteristics of the supplied products and a differentiation strategy is critical when product reputation or branding is a key market mix element. Product differentiation can be approached from either a marketing or production perspective. The marketing approach focuses on the product positioning (Porter; 1990: Kotler; 1994) and the production perspective looks at the inherent characteristic of the products, (Greenaway, D.; 1989).

Greenaway D. (1989) took a more production-oriented (Lancaster type) view of product differentiation and concluded that products could be differentiated into three categories viz. horizontal, vertical and technological differentiation. Horizontal differentiation refers to the varied combination of a product's core attributes. The degree of core characteristic intensification or a varied combination of a number will give the product its distinctive features. Such differentiation is also perceived as locational differentiation because it invokes preference diversity in customers and provides an opportunity for product branding. Vertical differentiation on the other hand refers to differences in "absolute amounts contained in different products" (Greenaway, *ibid.*). In vertical differentiation the difference is in various quality levels of each product. Therefore the difference between vertical and horizontal differentiation is that the former is associated with quality and the later with variety. However technological differentiation is distinct from horizontal and vertical forms in that it introduces a new attribute to the product leading to an improvement or upgrading of the product's current offerings. In that

dimension the product is altered from its current horizontal or vertical differentiation and the improvements could render the original products inferior or obsolete¹.

The marketing dimension of product differentiation is eloquently defined by M. Porter's (1985) generic classification: focused or broader competitive scope. According to Porter's approach a firm would achieve greater competitiveness if it concentrated on serving specific segments of the market. Kay, J. (1995) supports this view and further argues that differentiation should be precise with regards to either the supplier firm or its product market positioning. In a discussion of product positioning and market segmentation analysis, Kotler, P. (1994, pp.265-270) emphasises that the size of the segment and its growth potential should be the basis upon which product or firm positioning must be done. The author agrees with these points.

Although both Porter and Kay's propositions seem universally acceptable however their implementation by LDC firms exporting into the OCED markets is problematic. The problems arise from the countries' weak production differentiation capabilities. Given Zimbabwe's limited technological capabilities it is fundamental that such exporter firms must have some degree of market (generic) differentiation strategies in order to launch their products in such OECD markets. According to Porter's (1990) 'Diamond' theory such capabilities should be developed in local industries and it was therefore necessary to analyse Zimbabwe's level of export product differentiation.

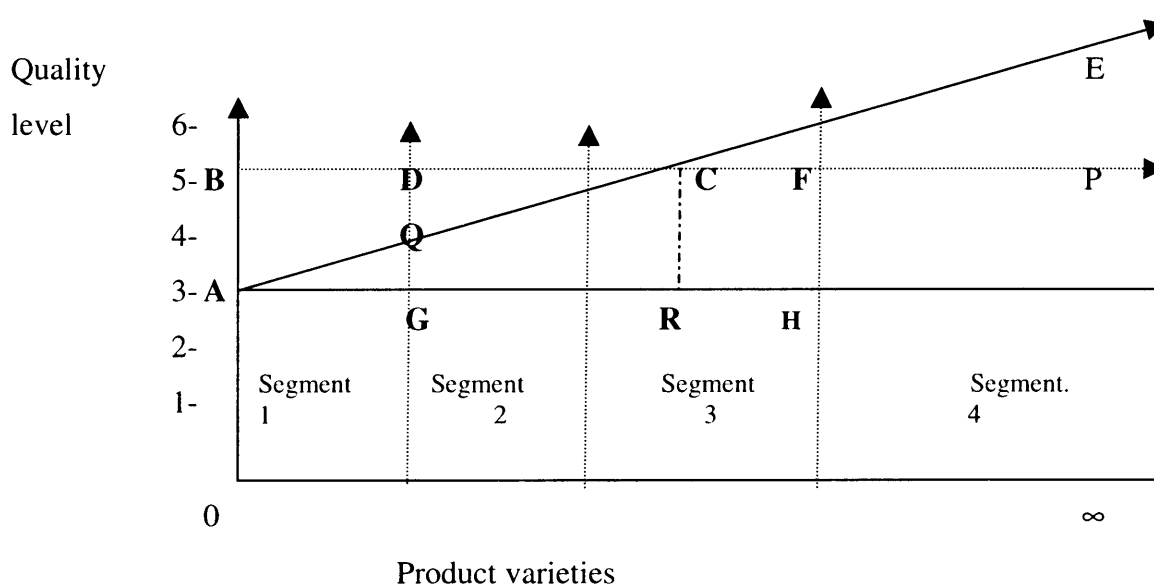
¹ Greenaway eloquently illustrates as follows, "...the presents of different coloured paints could be described as horizontal differentiation and the availability of water-based and oil-based paints is vertical differentiation and the introduction of non-drip (water-based and oil-based) paints could then be described as technological differentiation."

5.2.2 Product Differentiation Synthesis

The choice of whether Zimbabwe firms can emphasise production oriented or marketing related forms of product differentiation rests on which strategy sets the foundations for future products' international competitiveness. In the 'Diamond' theory that foundation seems to be assumed as existing and the discussion of national competitive advantage departs from that developed industry position. In the case of Zimbabwe such an assumption would be risky. Therefore a theoretical exposition and synthesis of the production and marketing approaches for establishing such a foundation was necessary.

The diagram below (Fig. 5.1) is an illustration of the applicability areas of the vertical and horizontal differentiation and the range within which alternative differentiation strategies may be applied.

Fig. 5.1 Product Differentiation Alternatives



Source: Author, 1999.

Two assumptions were made in the above diagram; [1] both vertical and horizontal differentiation assume a linear progression i.e. vectors AE and BP; [2] upgrade changes move the product from one lower level to a higher level. Treating ABFH as a rectangle of opportunities for competitive advantage, and from which either form of differentiation strategies will enhance a firm's competitive advantage, a few observations can be made. With vectors AE and BP signifying the degree of product differentiation and the inherent competitive advantage embodied in that uniqueness, the size and number of segments supplied should determine which forms of the differentiation strategy (vertical or horizontal) to be used. For example in segment [1] horizontal differentiation gives more competitive advantage (ABDQ) compared to that of vertical differentiation (AQG). As the segment or market size increases, and assuming similar linearity, vertical differentiation would increase the competitive advantage.

Furthermore by taking the angle of vector AE as a measure of technological enhancement it is arguable that the bigger the elevation (greater customer added value) the larger the competitive advantage associated with that form of differentiation. However, at point **C** both vertical and horizontal strategies will achieve similar levels of competitive advantage (area of $\Delta ACR = \Delta BCA$) and beyond that point vertical differentiation achieves more than the other strategy. Point **C** could be reached within one market segment or over the entire geographical market.

As the diagram indicates horizontal differentiation can be assumed to start with functional competitive advantage that can command different prices in various segments and each variety would have specific market segment cost/price advantages. With the vertical differentiation the continued upgrading of the product would tend to move the obsolete product from one segment/market to another in the Vernon product life cycle sense. In simplistic form, and prior to upgrading of product attributes (vertical

differentiation) a wider variety (horizontal differentiation) of the product would tend to give greater market share opportunities. Similarly by upgrading the qualitative attributes of the product to a higher level than zero, e.g. above level 3 on the diagram, technical (vertical/horizontal) differentiation increases the opportunities for competitive advantage. The durability of that competitive advantage will depend on the sophistication of the differentiation and how easy it can be imitated. Thus theoretically vertical and horizontal differentiation should not be perceived as exclusive and dichotomous but rather as viable alternatives or supplementary to one another.

Focused differentiation as suggested by M. Porter (1985) is an option that LDC firms that have achieved the production differentiation capabilities may successfully follow. In an in-depth study of LDC supplies of horticulture flowers from Kenya, Gambia and Morocco UNCTAD (1998) concluded that the competitive advantage of these countries derived from their ability to consistently supply a small range of flowers and to small market segments. The differentiation is in the product quality (colour and variety) and the foundation lies in the appropriate temperate climatic conditions and farming skills. Zimbabwean exporters of fresh horticulture foods and flowers provide a similar example.

LDC exports into a developed country market can be placed on a continuum of low and high technology differentiation, (Hoen and van Leeuwen, 1991). With vertical and technical differentiation developing countries (African) suffer disadvantages deriving from their lack of production technologies i.e. diverging technological factor intensities that lead to cost efficient competitive advantage, (Kierzkowski Henryk, 1985). That inability to export high-technology products to DCs markets is very pronounced both in the Porter (1985) and Greenaway (1987) differentiation fashion. On the other hand with horizontal differentiation LDCs do not emphasis the differences in production technologies but rather on supply of the varied products, and these seem to attract

equal prices in most DC markets, (Henryk, 1985). Any upgrading or innovations will only move the firm higher in the vertical differentiation continuum but that may not necessarily mean immediate enhanced competitive advantage or increases in market share.

In the export markets of UK (or similar OECD) the degree to which Zimbabwe firms adopt the various forms of product differentiation is constrained by the countervailing power of the retailers. That market power is exerted through implicitly restrictive buying methods of the importers and their controlled retail distribution networks (IDS, 1996). Furthermore the choices of differentiation strategies that the suppliers can design and implement are limited. For example Zimbabwe's supplies of horticulture fresh foods to retailers such as Sainsbury, M & S, ASDA, TESCO etc. in UK reveals a customer-influenced level of (vertical/ horizontal) differentiation. Requirements of the UK Food Act particularly the 'due diligence' specifications implicitly restricts the opportunity for adopting a proactive and supplier designed vertical or technological differentiation. These 'demand side' factors create the initial framework within which the LDC exporters can choose their differentiation strategies.

However, ADCs adopt a step-by-step approach in their product differentiation strategies, (Wortzel and Wortzel, 1981). That process takes into account the choice limitations imposed by the downstream buyers. Sequentially the process has the following characteristics;

1. importer defined' strategy specification;
2. development of export-product designs and differentiation strategies that take into account knowledge gained from networking with DC importers;
3. independent and proactive market development strategies based on external market information;

4. movement away from 'contract manufacturing' towards independent product designs; and
5. establishing of a market or product position in the foreign market and becoming formidable competitors who now rely on consumer pull instead of channel push strategies.

This process indicates the path, which some LDC firms follow, and the scope of product differentiation development. This Wortzel and Wortzel, (1981) development process underlines the argument that LDCs exporters have limited opportunities to proactively design differentiation strategies that are independent of DCs institutional buyers' countervailing power. However it does not follow that every LDC firm has to follow these stages, it all depends on the nature of its products. As to whether a firm chooses segmenting the markets or serving niches is a decision that is taken in the background of the product differentiation options available.

In both M. Porter and Greenaway approaches the fundamental objective for differentiation is to maximise hedonic prices². Use of such prices is aimed at reaping price premiums on those specific product attributes (technological/vertical differences) that increase consumer perceived added value. From a market planning perspective use of hedonic pricing makes it possible for Zimbabwe exporters to analyse the range within which various product differentiation forms achieve better price premiums.

In summary, therefore, the ability of the LDC exporters to compete in the DCs markets may be determined by their capacity and capability to define the type of product differentiation that satisfies quality and variety expectancy in each market segment. Emphasis in this study is focused at the various forms of differentiation i.e. vertical,

² Hedonic prices were defined by Rosen 1974 (pp. 34), "the implicit prices of attributes revealed to retailers from observed prices of differentiated products and the characteristics associated with them".

horizontal and technical. The ability of the firms to identify the appropriate segments and subsequent formulation of the appropriate differentiation strategy to serve those segments is critical. The choice of which of the three forms of differentiation to use is partly determined by the firm's production/processing technical capacity and capability.

LDC firms are pressurised by DC importers/buyers' preferences to choose either vertical (quality) or horizontal (variety) differentiation. The success of these firms to vertically differentiate their products derives from production or advanced core attribute heterogeneity. The availability of such production capabilities and or technological capacity in the local diamond is a fundamental step towards achieving a distinctive product positioning in export markets.

5.3 Financial limitations

In both the SD and DD/MD models the existence of developed financial infrastructures within national and international industry sectors has been assumed to provide ready trade finance. The role played by a strong formal financial sector in supporting external trade has been associated with the dynamic growth of exports from Japan, S. Korea and Taiwan (Nissanke and Aryeety, 1998). Similarly in LDCs the recognition of the inadequacy of the financial systems and the high-risk nature of export activities has been documented (UNCATD and World Bank, 1994). In the background of third world indebtedness such financial constraints cannot be ignored since they influence a country's ability to successfully trade in the international markets.

Majority of export products from Zimbabwe (and the sub-Sahara Africa (SSA) are from the agro-industry. The high risk inherent in such industries have been linked to the resultant high cost of capital for those sectors (Gonzalez-Vege, 1990). In Zimbabwe industry or firm specific financial difficulties in the agro-export sectors are exacerbated

by a banking service that is; (a) fragmented; (b) has low market integration; and (c) has internationally incomplete institutional organisation. As observed by Brandon and Conford (1996), and also reported by Nissanke (1998) such restricted financial support to industry, and high disparities in financial support programmes among the various manufacturing groups, (WB, RPED 40), contributes to the competitiveness bottlenecks that face the country's exporters. In East Asia countries such financial linkages were critical to a “ *creation and development of a fast-tracking system of trade finance*” Nissanke *ibid.pp.15*. In Japan, for example, such financial networks were extended to offshore traders and was spearheaded by Japan's MITI (Ministry of International trade and Industry), Fransman, M. (1998).

In Zimbabwe finance for international trade activities is plagued by risk such as performance risk, transaction risk, non-payment risk and exchange rate risk. Although such risk can be managed through risk shifting, risk fragmenting, or risk sharing processes the development of financial institutions that can provide home based cover for Zimbabwe exporters has been very low (World Competitive Report, 1995). Even institutional investors choose safe liquid assets outside those in the agro-export sector, (Adam and O'Connor: 1998). World Bank report (RPED No. 234, 1994) concluded that seventy-one percent (71%) of the industry depended on 'own funding' for start-ups and where possible their retained earnings are used to sustaining export competitiveness. For small family owned enterprises such financial independence is a restrictive factor.

5.4 Impact of Exchange rate variability on Export Competitiveness

Conditions under which domestic demand and capacity utilisation may affect export supply are a function of the choice theoretical-model of the firm³. According to Faini R,

³ The assumption is that the firms choose the level of production capacity and later determine production levels, its allocation between domestic/foreign markets on the basis of prices, demand & that capacity.

(1994 pp. 81-100) in his analysis of firms' supply capacity and return on investment from exports argues that a decision to export and the volume of exports are a function of the firm's capacity utilisation, and factors such as marginal costs and revenue are treated in aggregate terms. The theoretical basis for such decisions is that expected total revenue and total variable costs from each export consignment vis-à-vis the domestic market demand are integral to the firm's profit maximisation strategies. Inherent in that profit maximisation policy is the cost/price competitiveness in each market. A key factor in the determination of export price competitiveness and profitability is the impact of exchange rate movements.

Currency changes are exogenous to the firm/industry and these are associated with both internal and external macro economic factors. These factors cause misaligned exchange rates that result in overvalued currencies that in turn hurt exports. Misalignment is a persistent departure of the exchange rate from its long-run equilibrium level, (Williamson J. (1985), and as similarly concluded by Pick H. D and T. L. Vollrath, (1994)⁴ such misalignment occurs in markets that are not allowed to adjust to changes in economic fundamentals. In terms of the diamond model, Porter (1990) projects that government policies create the negative constraints that result in such misalignment. However the author also agrees with Krueger O. A. *et al*, (1988) that industrial protection measures such as import substitution also distort the real exchange rate. Zimbabwe has gone through such a phase (1977-1995).

In general the impact of exchange rates on prices is analysed from both the demand and supply dimensions. The supply side deals with the reaction of exporters to changes in exchange rates between their currency and those of their trading partners.

⁴ Pick and Vollrath (1994) concluded that misalignment diminished Argentinean exports of maize, wheat and meat and similar adverse effects of currency misalignment were also identified in Egyptian exports of cotton, Indonesian coffee and cocoa in Ivory cost (Mohammed El- Samhoury, 1988).

Meanwhile the demand side perspective deals with the reaction of the specific market to changes in import prices caused by such exchange rate variability. However for this study the focus was on the supply side and in particular the exporters' reaction to exchange rate movements and the factors that limit the price/quantity adjustments that follow from such exchange rate movements.

The conventional supply side view is that local firms loose market shares in the foreign markets whenever their national currency appreciates. That view is based on the assumption that both exports and imports are price elastic (Tatom, A. John, 1988). Exports would decline as a result of higher foreign price for the exporter's national currency (G. Pfeffermann, 1985). The argument behind this conventional view is that there is an inverse relationship between an increase in the value of an exporter's national currency and export market share (Glick and Hutchinson, 1988). In this study the effect of exchange rate was focused on the ability of firms to shift exchange rate adversity to export markets, i.e. level of exchange rate passthrough.

5.4.1 Exchange rate Passthrough

'Passthrough' is the degree to which changes in currency values affect the prices of traded goods measured in foreign currency. It is a measure of the percentage change in the selling price of the export product expressed in terms of the percentage change in the exchange rate. If the price in the foreign market reflected the appreciation/depreciation of the Z\$ the 'pass-through' is regarded as complete i.e. one hundred percent. In the case of a zero 'passthrough' it is the price received by a Zimbabwean exporter in local currency (Z\$) that must adjust to the exchange rate changes and the export prices in foreign currency remain unchanged.

Literature on the level of exchange rate 'passthrough' on manufactured products shows varied exporter responses. In some instances 'passthrough' following such currency appreciation or depreciation has not been complete and also that in the long-term there is a significant lag in the transmission of such 'passthrough' (Menon, 1992; Mann Catherine, L, 1986)). Another view is that the degree of 'pass-through' depends on the exporter's market power as a price setter or a price taker (Dornbusch Rudiger, 1987). If an exporter is a price taker the short-term reaction to exchange rate changes will generally depend on any of the following factors; the market structure, degree of product differentiation/substitutability, demand elasticity in the export markets, degree of competition, and relative foreign and domestic market shares. Literature on product differentiation and exchange rate passthrough suggests that the more differentiated the products the larger the level of passthrough. In this specific context differentiation is destination-specific demand differences for the product, and is therefore different from market segmentation differentiation that is generally found in markets that have limited opportunities for arbitrage. It is also argued that there is an inverse relationship between the firm's market share and exchange rate pass through (Krugman, 1987; Mann, 1986; Dornbusch, 1987 and Knetter, 1989).

5.4.2 Pricing to market and the 'law of one price'

Related to the exchange rate passthrough is the 'law of one price' for all markets. By definition the 'law of one price' implies that if there is any change in the exchange rate between countries the product prices across markets change on a one to one basis. The 'law of one price' assumes conditions of perfect competition and that domestic prices are equal to export prices. The principle of 'law of one price' also assumes an equal rate of passthrough. Application of this pricing strategy implies that export prices would be equal across all export markets, and for homogeneous products arbitrage eliminates any differentials in the common currency price of these goods. However

relaxing that 'law' allows for price variability and different levels of profit margin adjustments⁵, (Mann Catherine, 1986).

An alternative pricing strategy is 'pricing to market' i.e. different prices for similar products that are exported to different markets. Whether firms 'price to markets' or apply the 'law of one price' literature indicate that some export shifts tend to follow markets whose exchange rates have changed most (Zilberfarb, 1989. p.155), albeit such geographical price adjustments are not instantaneous. What seems to be important to the firms is whether the currency's movement is temporary or permanent. In the former case exporters will squeeze their profit margins (minimal passthrough) in order to retain short-term price competitiveness. In the later case they will attempt to allow for a complete pass-through, (Krugman, P., 1987; Mann, C., (1989).

5.4.3 Pricing to the market, passthrough and the market structures

The pattern of industry specialisation and trade, i.e. intra-industry and inter-sectoral trade and market structure has an impact on the level of exchange rate passthrough. In intra-industry trade there is high linkage between domestic and foreign prices. That intra-industry trade has also been associated with opportunities for a high degree of 'pricing to market' and a lower degree of 'passthrough', (Hamid Faruquee, 1995; and Knetter, 1993). Literature also suggest that by their imperfect nature segmented markets make it possible to apply price discrimination, and between segments exporters vary the level of 'pricing to market' in response to changes in real exchange rates, (Marston, R. C. 1990). Such price discrimination would largely depend on

⁵ The assumption is that conditions of perfect competition across countries allow the law of one price to operate. For example UK prices in sterling £ may be equal to those levelled in the French market or any market in the EU and any price in foreign currency are adjusted for exchange rate movement i.e. $P_d = P_f \cdot \text{er}$. Such export price includes export costs over and above those related to the domestic market.

information diffusion within and across segments, (Hamid Faruquee, 1995; Krugman, 1987; Knetter, 1989).

Zimbabwe exporters are price takers in major markets of the OECD and most of these markets are fragmented and not very segmented, (Ndlela and Robinson, 1995). Some of these export markets have existed for over a century and during that period strategic trade relations and some specialisation have emerged. The country's colonial and historical trade linkages with UK and S. Africa have some bearing on Zimbabwe's degree of 'pricing to market' and application of 'law of one price'. In such hysteresis⁶ situations two factors, (a) the extent of the exchange rate changes and (b) the firm's planning horizon for each export segment, are deterministic to the degree of 'pass-through' that firms may allow for each market (Kenichi Ohno, 1990). For example, in comparing USA and Japanese exporters Kenichi (*ibid.*); Klitgaard Thomas, (1999); Jiawen Yang, (1996) provide conclusive evidence that the more forward focused the firms the lower would be the degree of pass-through.

5.5 Summary and hypothesis

According to international trade literature and international marketing theory the relationship between product differentiation and the level of exchange rate passthrough is explained by a number of supply-related factors. In the context of the SD and DD/MD models these factors transcend all diamond conditions. The level and extent of vertical or horizontal differentiation implemented for a local market is market specific and to attempt to globalise that strategy is risky for small exporters (Rugman and D'Cruz, 1992). The researcher's perception is that Zimbabwe's differentiation strategies both in the Lancaster and Chamberlain sense as projected by Greenway, (1989) have to be

⁶ The argument being projected here is that the pricing behaviour of each firm with respect to exchange rate changes is partly determined by market specific history of the relationship of the export prices and the exchange rates.

fine-tuned towards the foreign market expectations. The ability of local firms to create product heterogeneity that would invoke premium prices (hedonic) is a key factor that needs to be reviewed from a non-domestic frontier. If the SD model's sources of competitive advantage argument is subjected to foreign market product differentiation requirements, and analysed in the context of exchange rate passthrough associated with such differentiation it is envisaged that new or different competing strategies are required, (Ansoff, H.I; 1979).

Assumed in the diamond theory is the availability of financial resources. On the basis of domestic competition that assumption places all local firms on a similar or equal financial resources exposure. However reaching beyond the national borders requires a more competitive and stronger financial network both within and outside the local diamond. In Porter's (1990) analysis this point is not emphasised. In this study such financial capability was not assumed because studies on financial problems of Zimbabwe have indicated unequal and limited financial strength of various manufacturing sectors, (*World Bank RPED No. 40; 1995*) and Ndlela and Robinson; 1995). The limitations imposed by such financial inadequacies weaken the links within the local diamond's conditions and its strength as a source of international competitive advantage. Such limitations include high cost of investment and trading finance, and recourse to foreign sources of finance becomes a viable alternative.

Related to financial constrains is the impact of exchange rate variability. The argument followed in this study is that firms' response to exchange rate movements are similar to responses to price changes measured in local currencies, (Junz and Rhomberg, (1973); Mohsen Bahmani-Oskooee, (1984). Therefore a permanent change in the exchange rate between trading partner nations may represent a change in export competitiveness. However, it is also arguable that with highly volatile exchange rate movements any changes in short-term competitiveness are less important in the

formulation of export market price strategies, (Mann, C.; 1989). Firms will strive to stabilise export prices in the currency of the destination market and as dictated by competition in that market.

With respect to international competitive advantage export price changes are influenced by two factors. These are the degree of 'passthrough' and the extent to which 'pricing to market' allow that passthrough. In this study focus was concentrated on a number factors that inhibit or influence a high degree of passthrough. These are;

- prevailing export market price;
- level of intra-industry/firm exports;
- countervailing power of the importers;
- effects of imported production inputs; and
- product differentiation and substitutability

Emphasis was focused on the level of influence with which these factors are perceived to affect the firms' export price adjustments, and how each of factors is ranked in effect.

Chapter 6

Business Networking in Foreign Markets

6.1 Introduction

According to Porter's diamond of 'national competitive advantage' competitiveness is intensified by the formation of a clusters of related and supportive firms. However it is not easy to measure the impact such clustering contributes towards building an industry's competitive advantage. In one perspective it may be assumed that such intensified competition is based on a commonality that stems from the firms' response to similar market needs. In that regard the market selects products, (and potential firms), on the basis of their competitive cost/ quality performance, (Kogut B.1991 pp. 12-47). Secondly such intensity of 'cluster' competition may also be heightened by the injection of substitute products into the domestic diamond by MNCs, and they tend to achieve competitive edge by utilise their international experience in strategic business management. From that perspective the cumulative capabilities, developed in response to the home markets pressure, may consequently provide the urge for expansion into overseas markets¹. However reaching to the foreign market may require corroboration with external principals who are involved in the targeted export market. Therefore the 'cluster' concept enables firms to analyse and understand market dynamics from two angles; [1] source of support for industry's competitive advantage; [2] achieving industry specific networks that give strength to the home 'diamond'.

In this chapter focus is directed at analysing business networks as a web of strategic relationships that tie the members of a cluster or any firms together, and are achieved through the harmonisation of these firms' strategies. Firms within a network are

¹ Competitiveness is being defined as the ability to design, produce and market products, the price and non-price characteristics of which form a more attractive package than those of the competitors.

assumed to agree to align and harmonise their competitive strategies for mutual advantage (Rugman A. and J D'Cruz 1992). An ideal network involves suppliers, customers, and in the LDCs, governments as the main non-business infrastructure. Consequently the capabilities of a firm to create competitive advantage reside not only in its know-how in transforming the national diamond facets into outputs, but also in the strengths of its institutional relationships with customers, suppliers, or sources of new technology. Furthermore, focusing only upon domestic competition may obscure the significance of these institutional linkages because they are often public goods to national companies.

6.2 Rugman and D'Cruz Network Model

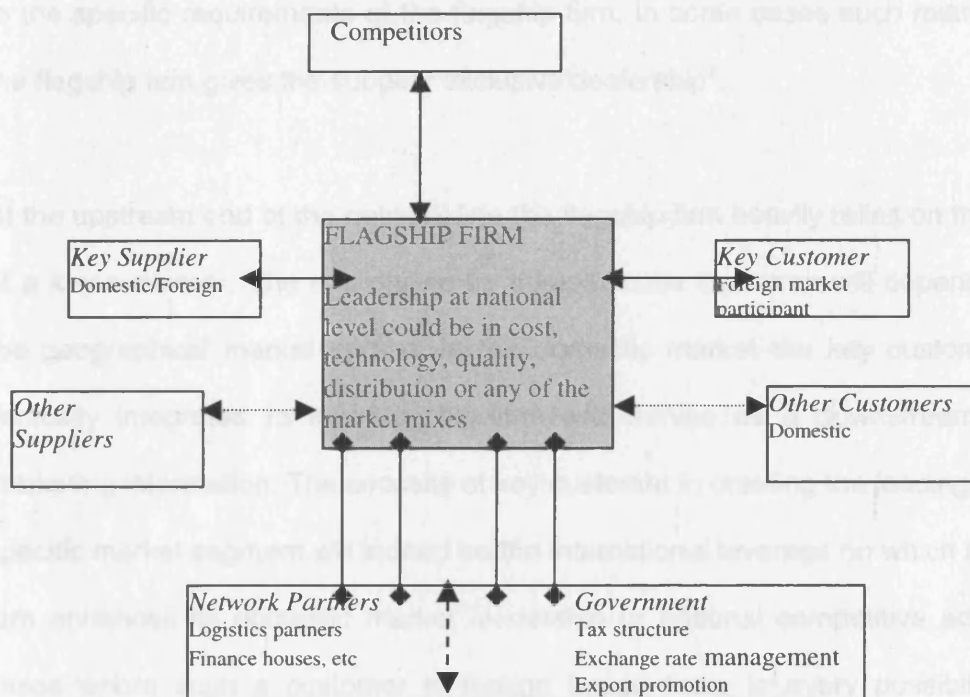
One of M Porter's levers for enhancing a nation's competitive advantage is the competitive strength and integration of the related and support industries. He advocates for a strategic cluster of firms whose activities are closely related and are supportive to the flagship firm. Such a strategic cluster is a network with some of the following characteristics;

- (a) “ a *resource base* that consists of physical and human resources that are internationally competitive and compensated by competitive benchmarks;
- (b) *supporting industries and infrastructure* capable of providing inputs that are internationally competitive, in terms of both costs and innovation performance;
- (c) *customers* who provide the flagship firms with opportunities to hone their competitive capabilities, particularly for new products and services; and
- (d) *leading firms* that have established this location as a home base for globally competitive businesses”, (Rugman, A. 1992 pp. 34).

In other words there must be a “Flagship” firm, which forms the recipient of support

from related industry². However, in order to understand the workings of such co-operation Rugman's Five-Partner Model serves as good starting point (Fig. 6.1). This model brings into focus all possible participants in a strategic cluster and the point that is important in this model is the nature of relationships that provide an appropriate level of support from upstream firms and vice versa.

Fig.6.1 Industry level Network of Related and Support firms (**Export Oriented**)



Source: Adapted from Alan Rugman and D'Cruz's (1992), *The Five-Partner Model*

² Rugman M. Alan and D'Cruz (1992) argue that the flagship firm is the hub of a network of support and related firms in the industry. By implication the flagship firm is considered as the home industry's national competitiveness representative.

The main feature of the Five- Partner Model is that there are two types of relationships that may be implemented, viz. networks and conventional relationships, and either can be established with customers, competitors and suppliers. The distinction between the two is in their degree of association or intra-firm strategic alliances. In the case of the key suppliers the Flagship firm is perceived as the main or only customer. Therefore a greater part of their product supply is geared towards meeting the needs of the flagship firm. In this regard it is anticipated that the key supplier's product attributes and competitiveness vis-à-vis those of a potential foreign or other competitor suppliers, are to the specific requirements of the flagship firm. In some cases such relationship with the flagship firm gives the supplier exclusive dealership³.

At the upstream end of the network line the flagship firm heavily relies on the existence of a key customer. The role played by this particular customer will depend greatly on the geographical market served. In the domestic market the key customer may be vertically integrated to the Flagship firm and serves as a downstream source of marketing information. The success of key customer in creating the leading edge in the specific market segment will indeed be the international leverage on which the Flagship firm enhances its domestic market leadership or national competitive advantage. In cases where such a customer is foreign based there is every possibility that the flagship firm's external market information gathering and product distribution will improve on the basis of the key customers' marketing strategies and interrelationships. Therefore such collaboration in a business network allows competitors to accelerate organisational learning by accessing to the expertise and resources of other firms, domestic or international.

³ Examples of such linkages are found in companies such as Marks and Spencer in UK, who outsource some of their clothes from lower wage factories in Morocco. M & S provide designs and quality cloth which is then made into specific Marks and Spencer labels for the high street market retailing.

The role played by the competitors in the domestic clusters or networks could be that of joint product designers for domestic markets. From another perspective competitors form joint-suppliers in order to command a stronger marketing body without necessarily forming a cartel (Denice *et al* 1996)⁴. Therefore in seeking to understand the close co-operation of competitors it is important to understand the totality of relationships among firms engaged in production, distribution and use of goods and services in what may be regarded as an industrial system, (Easton, 1992; Hakansson, 1992; Hakansson and Snehota, 1995).

In this network relationship the flagship firm makes conscious choice about which customers are Key Customers and deals with those in a preferential manner compared to the rest of them. However network partners have limited strategic autonomy and thus tend to operate within constraints that the leading company delineates for the whole network. Central to that relationship is their corroboration, sharing of information and analysis of the business environment. That degree of mutual interdependence between members of the network is critical for the creation of a vital international linkage.

This issue of clusters and networks has been discussed from different angles. Normative discussions and analysis focus on the individual actors in the relationship. Management literature on networking theories emphasises on issues such as relationship development and its management, relationship portfolio management, investment in relationships, and managing a firm's position in the network (Johnson and Mattsson, 1992; Hakansson and Snehota, 1989). All these factors are treated as managerial variables that are fundamental to achieving business internationalisation. In

⁴ Denice Welch *et al* (1996) examined and concluded that the Australian Joint Action Group was a typical example of such a competitor group because domestic farmers were co-operating in order to competitively enter the Japanese hay market.

the diamond theory such relationships form the cornerstone of the cluster network. Welch, D *et al* (1996) ⁵, argue that the logic of such management sponsored networking schemes is that the companies should be able to achieve far more impact in a foreign market by acting in concert rather than singly: with resources being shared. What they did not specifically address on their model is how firms on their own can bring about that degree of pooled competitive resources without the direct involvement of government agencies or macro policy guidelines that are designed to create a conducive export networking from within the national diamond.

6.3 Nature of Business Networking

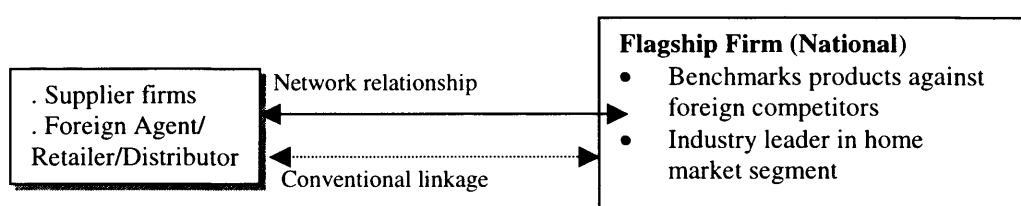
At this point it becomes pertinent to pose a question as to what type of business association should firms adopt. There are two options: the conventional commercial system and network relationship system. However both have advantages and disadvantages. One distinctive feature between them is the depth of the relationships because with a network such relationship is deeper than an arms length commercial relationship (Wilkinson and Young 1994)⁶. Furthermore, the form of a relationship is influenced by three fundamental contact factors. These are summarised as *activity links*, *resource ties* and *activity bonds*, (Hakansson and Snehota; 1995). 'Activity links' refer to the various activities that the international buyers and sellers perform and in themselves form or shape the tone of their trade relationship. In the case of 'resource ties' relationships they take the form of either forward or backward vertical integrations and such relationship are necessitated by the need for resource supplies. In such instances the degree of dependency becomes higher, (Shonker Ganeson, 1994). The

⁵ Welch, L. S and F. Weidersheim-Paul, 1980, cite examples of export grouping schemes that represent government policy interventions aimed at initiating the internationalisation of domestic firms and in particular the international competitiveness of local firms and industries.

⁶ According to Wilkinson I.F. and Louise Young (1994 pp 67-79) best results are achieved when there is low competition and high co-operation among members. "...dance' relationship is better than a close marriage" relationship because the former allows for more than one partnership and network transactions are akin to any type of dance that requires the mutual co-ordination and not competition between parties.

'activity bonds' types of networks are generally transaction-oriented relationships governed by short-term business interests. They may take the form of quasi-joint ventures with very loose commitment on the part of the incumbent firms. However, all three types are regarded as relationships that link national importers and exporters. Fig. 6.2 below illustrates the level of such relationships.

Fig.6.2 *Nature of business relationships*



Source: *Adopted from Alan Rugman and Joseph D'Cruz, (1992)*

At a micro level the two systems give different depth of a partner's involvement in the marketing and strategic issues of the other. With conventional commercial system there is an indirect contact between the exporter firm and the foreign consumers. This is a weakness because for ADC exporters the selection of market segments particularly in the foreign market is itself a major strategic issue that requires such direct and close contact. This is different from the network form of relationship as it generally allows for the sharing of customer information between partners.

Interaction frequency is also a major determinant of the speed at which that transfer of information and closeness can be achieved. That transfer of information also depends on the exchange and adaptation processes, the later being a consequence of the former, (Helen Lars *et al* 1988). However in industrial marketing systems information exchange presupposes the development of contacts between individuals in the

companies (Turnball, 1979). Higher contact intensities may lead to closeness as it reduces the psychic distance between importers and exporters. Such contact may involve people with expertise in different export areas and indeed that external market exposure is a critical factor (Cavusgil, 1984).

Therefore, according to the network model, in the long run competitiveness in international markets is less a matter of rivalry among firms and more a question of competition between business systems. Instead of competing on the basis of market power to gain competitive advantage firms collaborate in co-operative relationships and that is aimed at enhancing their mutual competitiveness (Rugman and D'Cruz 1993). Such collaboration is clustered around the Flagship firm.

6.4 Cluster Leadership by 'Flagship Firm'

From the industrial cluster (Porter, 1990) argument it is not clear how a flagship firm is determined, save that it develops from within the industry's competition pressure. In order to identify how the industry promotes the creation of a flagship firm two issues must be examined and these are the competitiveness of a firm itself and the relative comparative advantage or disadvantage of the industry within which it operates. It is common knowledge that firms producing the same type of goods are distinguished by their specific competitive advantage and disadvantages against the "background of collective comparative advantages and disadvantages related to the industry to which they belong", (Kamel Abd-el-Rahman, 1991 pp. 84). That means that the efficiency or inefficiency of the individual firm in relation to comparative advantage characterising their industry is a critical factor.

Firm specific competitive advantages arise from factors of superiority that are specific to the firm by comparison to competitors. Despite the existence of conditions of relative

comparative advantage in the country the firm may not necessarily have competitive advantage and vice versa (Rahman *ibid.*). However as a result of the existence of market imperfections collective comparative advantages in an industry creates various level of competitive advantages. A difference in the exploitation of these various elements would result in dispersed margins, productivity levels or any performance indicator within the industry. Thus some firms would achieve short-term monopolistic advantages in such industry environments. According to Rahman, (1991, p 94),

“One could argue that specific advantages (*competitive advantages*) of firms operating under unfavourable collective industrial conditions (*comparative disadvantages*) enables these firms to vie with their foreign competitors”.

This view is similar to what M. Porter (1990) perceived as the environmental constraints that force national firms to innovate and upgrade towards international competitiveness. Those firms that fail to innovate would be inhibited by such comparative disadvantages. Thus by definition it is not important that firms have to operate in an industry whose ‘national diamond’ provides the most conducive comparative advantage, but rather that the firm’s ability to exploit opportunities is the critical factor. However if such comparative advantage is superior it places firms on a natural advantage compared to those from other countries. Reviewing Porter’s (1990) argument, when such competitive advantage stems from a factor endowment in an industry, among other factors, to what extent does comparative advantage or disadvantage affects the firm’s efficiency to transform its industry level competitive advantage to international competitive advantages? Does this rest on the firm or the industry, and what are the key success factors required for that transformation?

6.5 Key Success Factors

Grunert and Ellagaard (1993) described key success factors as those skills or resources possessed by a firm and may be used to re-engineer current activities for better results. From that perspective it is implicit that for any factor to be perceived as a key success factor it has to have a causal relationship. For example, a change in factor intensity that results in a reduction in relative unit costs is a causal key success factor. It is important, therefore, to define the market and marketing objectives prior to seeking variables that may be key success factors (Soren Bisp et. al. 1997). Identification of firm-specific key success factors⁷ for a particular export market is important because in theory that could lead to the identification of steps that are necessary to achieve competitive advantage.

Constructs that form key success factors may be viewed from two perspectives. Firstly there are those factors that may be causal variables leading to the heterogeneity among exporting firms, for example firm-specific production technology. Secondly there are those factors that establish 'customer perceived value' as the bedrock of the firm's competitive advantage, for example exclusive information on a segment's customer expectancy. However, as Rockart (1979) argues in each market environment the success of these change factors should be measured in terms of their effects on; [1] the successful creation of a competitive advantage and industry positioning of the firm (heterogeneity), and [2] improved managerial disposition towards better understanding of the external markets (customer's value added). It is also the author's argument that a LDC firm's ability to re-engineer production/processing towards improved positioning in the DC markets is largely determined by the type and durability of a given set of key success factors.

⁷ The use of key success factors seems to be based on the concept of strategic 'planning school', and the various views are well enunciated in Mintzberg, (1990) and Grunert, (1993).

In the context of LDC firms identification of factors that would propel their competitiveness from a less dynamic local environment into an intensified and ever turbulent DC market would include an evaluation of both local and external 'Diamond' conditions. Key success factors may not be large in number but ought to be actionable. According to Bisp *et. al.* (1997) identification of a market and the relevant key success factors requires a top-down approach. By implication this means management would focus on market/segment identification, and according to a supply-related criteria that includes the critical success factors. For example, market identification would bring into analysis pointers such as similarities of manufacturing process, differences in technology and distribution channels, *modus operandi* and the required nature and form of investment levels. Subsequent benchmarking of a firm's resources in terms of both quality (efficiency and effectiveness) and quantity (economies of scale) becomes a critical step. These factors impact on the capability and capacity of the firm to supply a given export market, and foreign benchmarking should be a continuous process.

Identification of key success factors as a prelude to the formulation of strategies for improved competitiveness is based on a contingency approach. For example management's acceptance of externally induced discontinuities that may require a reconfiguration of the 'value chain' has wider strategic and tactical implications on the firms' planning and reviews of current competitive advantages. Those discontinuities to current methods arise from compelling needs discerned from the acquired foreign information. Therefore championing those changes requires a management's outward orientation that is ready to continue seeking new information, learn from it and institute relevant changes (Senge P. , 1989).

It is also important that export market orientation should be conceptualised in terms of both philosophical 'cognitive' and behavioural 'change' dimensions, (Deshapande *et. al.*, 1993). The philosophical view is that the firms' ability to learn (cognitive) from

developed countries (UK or S. Africa) serves as an asset necessary to trigger some discontinuity of the current domestic practices in Zimbabwe. At the same time the behavioural (change)⁸ perspective is that out of the knowledge input, discerned from the foreign 'Diamond' markets, firms will be compelled to respond. Such behaviour could be either an evaluation of local 'Diamond' conditions in terms of their quality and quantity or a firm level upgrading or re-engineering of their 'value chain'.

Export market orientation invokes in decision-makers a challenge for using information either in a conceptual context (learning what to change) or instrumental (understanding of future trends in each market segment). Unless management has export information disposition such utilisation of information as a key success factor does not generate effective changes. It is clear therefore that the notion of market orientation focuses on the ability of the firms to learn about customers and specific-market competitors, (Day 1994a, p 37). As similarly argued by Hunt and Morgan, (1995, pp. 11) such market orientation should therefore be the basis for formulating distinct strategies and their implementation.

6.6 Networking extended to export markets

At macro level the national government can create a macro-level network system through regional economic integrations such as the EU, NAFTA and SADC. In as much as this may not be specifically aimed at strengthening the home industry base towards national competitiveness its effect on international trade is that of creating some form of government sponsored networks (Bayer, 1994; Hendry, 1994). M. Porter(1990) correctly states that countries do not trade but it is also true that government

⁸ These two may be described in terms of cognitive elements that primarily affect interpretations of market events and understanding of their developments. The behavioural element is a proactive response of a learning organisation and focused on these events and future developments.

macroeconomic policies affect the competitiveness of local products in foreign markets. Therefore separation of firm/industry international competition positioning from that projected by the government is not a framework of analysis that can be advocated for Zimbabwe whose industries face tough negotiations in the WTO, Uruguay round etc.⁹. Consequently it is necessary to treat a nation and its industries as having a common networking strategy.

Literature on export marketing management has been focusing on factors such as relationship marketing as it affects channel management; networking as a way of penetrating the distant markets; and the impact of conflict¹⁰ between buyers and sellers on the strength of the network, (Katsikieas and Nigel 1991). Furthermore, literature suggests that LDC manufacturers are marginally interested in the foreign market product marketing, as they perceived this to be a difficult area and tend to confine their activities to the production side of the network relationship (Katsikieas and Nigel *ibid.*). These LDC producers, being aware of the different structural elements of the foreign market compared to the home market, delegate their export trade to the “seller of production capacity” in international markets. Katsikieas (*ibid.*) concluded that such behaviour is less common in firms that trade in the regional markets because psychic distance is reduced by geographical proximity.

⁹ At this point there is a very thin line between the government and industry. M. Porter (1990) seems to treat government as an establishment that operates independent of input (managerial) from industries and yet it presides over a wider decision area. It is the researcher's view that government export trade policies directly and indirectly affect the firm's competitiveness in international markets.

¹⁰ The definition of conflict used here is what Palamountain, J. C. (1969) termed as the *vertical* type where there is conflict between channel members at different levels, which is arising from policy differences. This is not only limited to intra-firm or inter-industry but includes governments' strategic trade policy guidelines that may be regarded as protectionist by foreign nations.

Building of business relationships is one of the most important determinants of achieving international market competitiveness. Kenichi Ohmae(1989) in looking at the Japanese marketing strategies concluded that failure to understand the culture of Japanese distribution networks is a contributing and possibly a major factor for the failure of USA and European firms to get a foothold in the Japanese distribution network. That culture of strong distribution networks in the foreign market requires 'insider' knowledge that is accessed through such networks. For example, in the case of Zimbabwe exporters, networking with the retailing groups such as Tesco, ASDA, M & S, Sainsbury etc.¹¹ could reduce the level of countervailing power exercised by these importers. Part of the difficulties experienced by these exporters is a consequent of their undeveloped channel management, inappropriate relations or purely a lack of the capability to use foreign market information.

6.7 Foreign Market Information

A major factor attributed to or projected as a fundamental reason for the failure of the ADCs to competitively use their relative comparative advantages in advanced country markets is their limited knowledge of the international markets, (Johanson, J. and Vahlne, J. 1977; Weekly, J and Bardi, E. 1975). Exactly what type of information is important for these ADCs is difficult to gauge because the appropriateness of each piece of information depends on the degree of its influence on decision-making. Furthermore it is also difficult to measure the impact of such information on export performance in a way that can link decisions made and the utility of such gathered information, (Yeoh, 1994). Therefore information acquisition, use and objective assessment of performance is a difficult but important process that impinges on the creation of a firm's export competitive advantage. That information gained from foreign

¹¹ These retailers import foods such as asparagus, baby corn, mange tout peas, runner beans etc from farms in Zimbabwe, and on specified chemical content that satisfy the EU rule. *Source*, IDS (UK).

markets is a key success factor only if the firm is achieving international competitive advantage through internal changes that are dependent on such information¹².

6.8 Information acquisition and utilisation

The approach taken in this study is that the developed foreign markets of UK and S. Africa are a significant source of knowledge for enhancing product adaptations in Zimbabwe: away from local tastes, towards international market competitive challenges. Management literature indicates that firms or industries in both developed and developing countries argue that they could perform better in the foreign markets if they had information about those markets and that they could use such information in their future decision making process. In the context of this discussion and in direct response to the unabating need for that critical information acquisition three common sources of information are assumed. These are export market research, export assistance, and market intelligence¹³. Souchon Anne, L. and Adamantis Diamantopoulos (1996) have argued that in as much as these sources of information are made available very little is known about the circumstances under which they are used in a complementary fashion or treated as substitutes.

Export literature also indicates that information acquisition varies across industries, countries, (Cavusgil 1984a); firm experience, (Cavusgil and Amine 1986) size and

¹² In assessing the linkage between export information and export performance one major problem is that there is no uniform definition of export performance that satisfy all purposes and in many ways export performance varies according to the specific dimension of performance that is being measured (Yeoh 1994, p 60). However as it is a multidimensional construct two units of analysis are considered in this context of competitive advantage. These units are (a) the firm versus export activity performance; and (b) past performance versus comparison with competitors.

¹³ In the present discussion market research encompasses research carried out within and outside the home market (Cavusgil 1984a), and is formal, systematic, and objective (Douglas and Craig 1983). Meanwhile export assistance is a form of direct or indirect government export promotion which enables exporters to make more informed decisions about the external markets. Export market intelligence is a narrowly defined generic term for any informal approach to information acquisition (Souchon A.L and Diamantopolous 1996). Such information is obtained through customers, agencies and/or distributors.

experience of the organisation, (Reid S, 1984); and stage of internationalisation (Cavusgil 1984b). However, Cavusgil and Zou (1994) put a *caveat* that investigations into improved export performance arising from usage of these sources must proceed with caution to ensure that performance measurements are matched with the firm's objectives.

In order to analyse the role played by foreign market information as a critical success factor two models are used. These models are the *Information Utilisation in an Exporting Setting Model* (Anne L. Souchon and Adamantios Diamantopolous 1996: (S & D model)); and the *Internationalisation Process of the Firm- A Model of Knowledge Development and Increasing Foreign Market Commitments* (Johanson, J. and J. Vahle 1977: (J & V)). The Souchan and Diamantopolous model looks at the three sources of information, its use in an export framework and various export performance objectives that could be achieved by using such different frameworks in decision making. Thus it starts from information acquisition, focused information use and result measurement. In this discussion the expected objective is improved competitive advantage arising from foreign market information utilisation.

The Johanson and Vahle (1977) model on the other hand looks at the gradual increase of export knowledge arising from incremental learning and how it may be proactively supported in a foreign market involvement. This model departs from the premises that domestic firms or industries can become more competitive in the international markets through participation on learning by doing and on an incremental basis¹⁴. It is the author's presumption that by using foreign 'Diamond' information Zimbabwe would be able to develop methods that are oriented towards competition in the foreign market or for converting existing relative comparative advantages to international competitive

¹⁴ Such learning include profiling of competitors; market structures, dynamics and key players; foreign buyer behaviour; and establishing of networks with distributors within those foreign markets.

advantage. The argument projected by a combination of the above models is that the local firms or industry could gain competitive advantages in those foreign markets, using knowledge obtained from outside their home 'Diamond'. In the author's view focused information acquisition and usage will either directly or indirectly affect the exporter's knowledge of the external market. Strategic or tactical decisions aimed at creating or sustaining competitive advantages would be based on such information and the subsequently developed knowledge.

The J and V (1977) and the S & D (1996) models are thus being used as conceptual frameworks to affirm or dismiss the home base argument as projected by Porter (1990). It is assumed here that the 'Diamond conditions' as stipulated, particularly the demand determinant, are different from those of the external market. Such difference could be in retailers' buying methods or product attributes and either can be a basis for creating some level of competitive advantage. However one important point about these two models is that they both seem to be starting from a common premise that the foreign market provides critical input information that would;

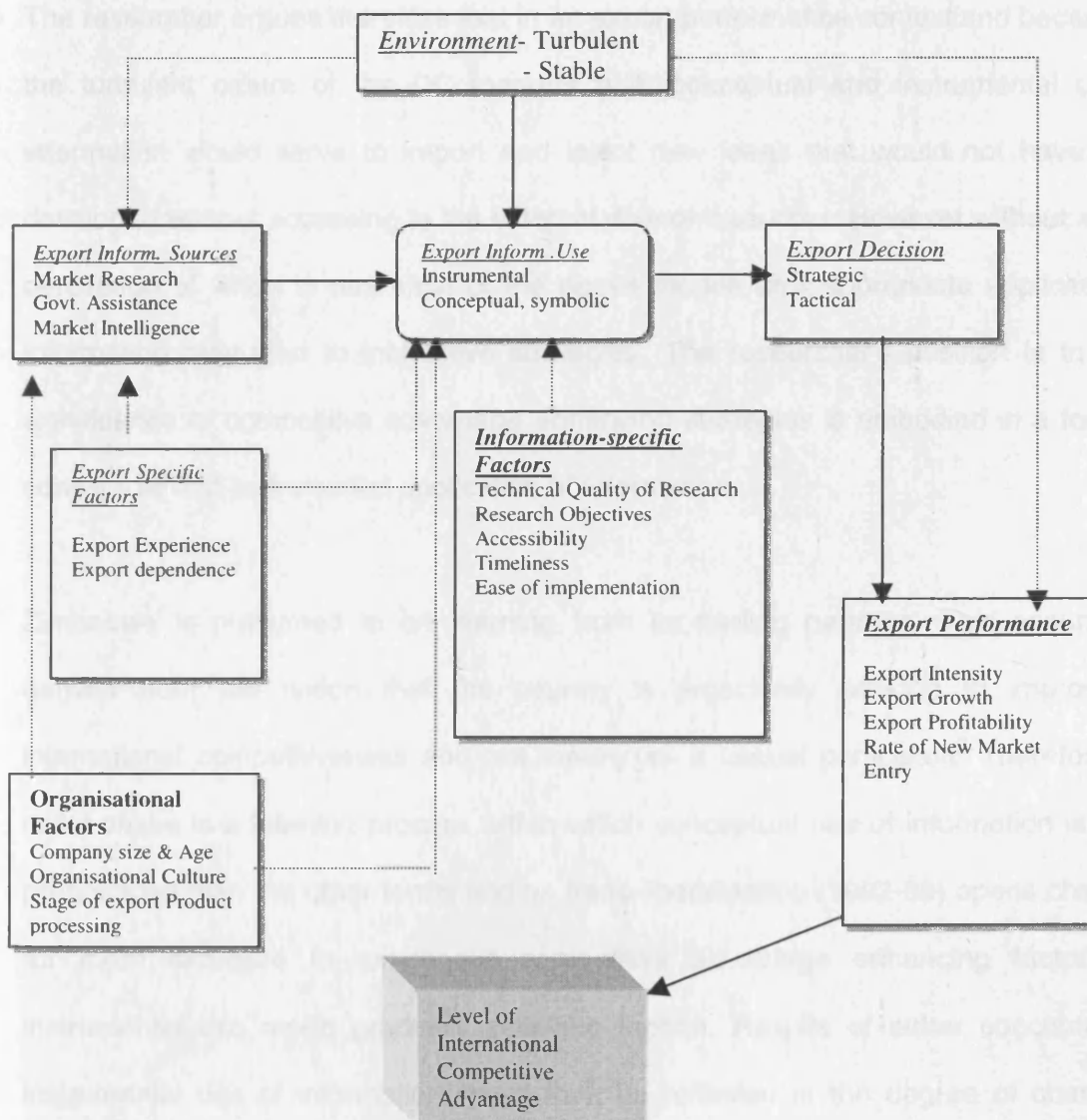
- (a) inject some changes in the firm/product positioning away from that it holds in the domestic market; and
- (b) be a key input for improved competitiveness in the external market and serve as a source of knowledge for the future .

6.9 Information Utilisation Model

According to Souchon and Diamantopolous (1996) export information can be used in three dimensions. These are instrumental, conceptual and symbolic. With instrumental use of information there is the direct application of knowledge to solve a specific problem, (Moorman, 1995). An example of such instrumental use of information is

when a decision to export or adapt a local product for the specific needs of a particular foreign market segment is based on specific market research in that foreign market or its proxy. Meanwhile the conceptual use of information may be defined as any usage of information that broadens the decision maker's knowledge and once such knowledge is assimilated it would be used for non-specific future decisions. In contrast to the two above, symbolic usage of information is when information is used to justify a decision already made. This is more of a post-event application of information aimed at endorsing or influencing acceptance of a decision.

Fig. 6.3 *Information utilisation Model*



Source: Adapted from Souchon, L and A. Diamantopolous, (1996)

Export information utilisation, as defined in the three dimensions cited above, is a multidimensional construct that is affected by a number of external factors. These include environmental changes, for example the stability or turbulence of the market, exchange rates variability, growth and market structure changes; organisational influences such as experience of management about the foreign markets, export-specific variables, information specific factors and the information sources used. According to this information utilisation model decision-making is the crucial intervening variable between information use and performance and therefore in whatever context information is used it has significance in the quality of decision applied.

The researcher argues therefore that in an export performance context and because of the turbulent nature of the DC markets both conceptual and instrumental use of information would serve to import and inject new ideas that would not have been developed without accessing to the external diamond sources. However without a clear perception of when to use each of the above modes an inappropriate application of information may lead to ineffective strategies. The researcher's position is that the significance of competitive advantage enhancing strategies is embodied in a focused conceptual and instrumental application of information.

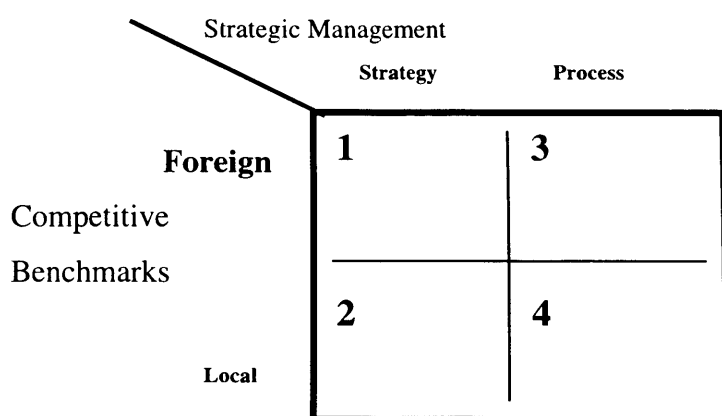
Zimbabwe is presumed to be learning from its trading partners. This assumption derives from the notion that the country is proactively seeking to improve its international competitiveness and not merely as a casual participant. Therefore the initial phase is a learning process within which conceptual use of information is more pronounced than the other forms and as trade liberalisation (1992-99) opens channels for more exposure to exogenous competitive advantage enhancing factors the instrumental use mode gradually sets into motion. Results of either conceptual or instrumental use of information would then be reflected in the degree of change in export intensity, growth and profitability. Such export intensity could be directly linked to

an enhanced product differentiation or reduced unit cost of production.

According to the above model and with particular reference to Zimbabwe two exogenous factors are important in the consideration of the context in which information is used. These are the export market stability or turbulence and information specificity factors such as information accessibility, easy of implementation of importer's technical data, and technical quality and timeliness of the information obtained. Market stability or turbulence includes changes in market size, intensity of competition, host government interventions, technological improvements etc. Therefore armed with experiential knowledge and developed skills on the conceptual and instrumental use of such acquired information the firm can deal with various strategic issues: benchmarking domestic resources to external market requirements or use foreign resources for domestic input.

To illustrate the significance of foreign information in strategic decision-making context figure 6.4 below is used. Right from the beginning the Zimbabwean firms are assumed to benchmark their resources and capabilities against those of the S. Africa or UK competitors. By that benchmarking firms are able to design separate strategies for foreign and local marketing competition. The various processes that work to achieve each market objective may be similar or different.

Fig. 6.4 Strategic Management and Internationally Competitive Benchmarking



Source: Adapted for illustration from Rugman A and J. D'Cruz, (1992)

The matrix above captures two specific aspects of the strategic application of international market information and these are; [1] comparative analysis of local and external resources and capabilities (benchmarking); and [2] strategic management (change) of export activities (strategy and process) towards meeting export objectives. In order to bring the external and home diamond into focus Zimbabwe's position would be treated as importer of both competitive advantage enhancing information and factor resources. Therefore from both sides Zimbabwe seeks to upgrade its capabilities.

In the first case, using foreign standards discerned from gathered data or information as a benchmark, local firms diagnose their current strength and weaknesses in foreign markets; and the nature of domestic competition ('process' i.e. rivalry and structure) compared to that in the specific foreign markets (cells 3 & 4). That is a 'cognitive' application of such foreign information. In that respect strategic changes that are necessary for upgrading of local products or services will create a discontinuity in a firm and consequently leading to innovations, (Rugman and D'Cruz 1992). Conversely solely benchmarking against the local 'Diamond' conditions, particularly the demand

and firm rivalry facets would not increase the awareness of the inadequacy of the endogenous factors in the international markets. It is in that perspective that one would argue that striking a strategic fit between strategies and environment would require an appropriate process and structure.

On the second case the matrix highlights that choosing competitive strategies based on foreign benchmarking must be followed by a process that is supported by a firm's foreign structures. In that respect it is questionable whether a firm should limit itself to using the national 'Diamond' facets (cell 4) or it should benchmark itself against the international competitors using external Diamond facets (cell 3). Those advocating for changes to the single nation diamond would place greater emphasis on cell 1 and 3.

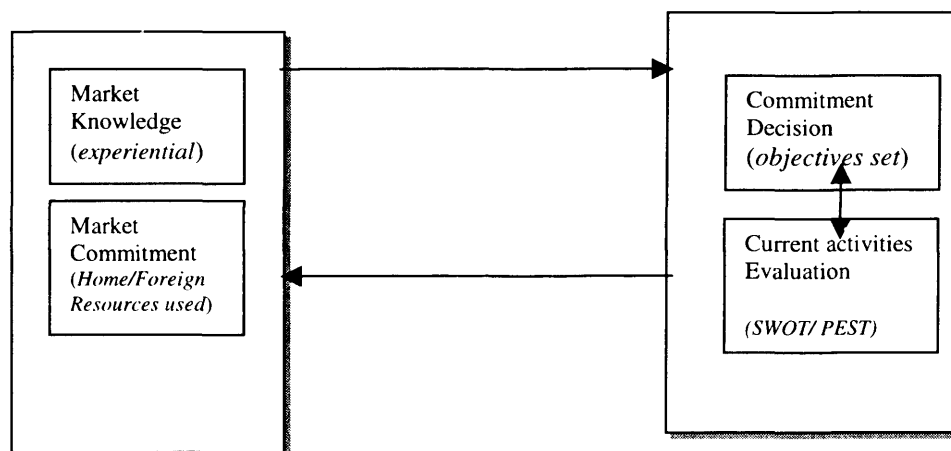
In summary, the question remains as to whether a firm's international competitive advantage strategies are sharpened more by its benchmarking against foreign factors or to domestic processes only. For an open economy like Zimbabwe access to DC market standards and information may lead to adopting cells 1 and 3.

6.10 The Johansen and Vahlne (J & V) Model

The J&V model is basically a notion that a firm's knowledge acquisition and gradual learning through a staged process creates and develops its international business commitment. The model starts from the premises that a local firm can learn international exporting through a process of incremental development of knowledge gained by direct participation in that or similar foreign markets. The firm's gradual assimilation of knowledge about foreign markets and operations are important in the formulation of competitive strategies that are ideal for those markets. However, the basic assumption of this model is that lack of such knowledge is an obstacle to the development of international competitiveness. This seems a clear departure from

Porter's home base argument, wherein the domestic information and the 'diamond' conditions are assumed to be key success factors in the development of firms'/industries' international competitive advantages. The most poignant contrast between the two is that the 'Diamond' model treats the domestic environment as the sole arena where a firm's competitive strength can be enhanced through local upgrading and innovations. The J & V model treats some elements of the foreign diamond conditions particularly the foreign market and trade as well as competition patterns as sources of information critical in developing or building a firm's international competitive advantage.

Fig. 6.5 State aspects in the Knowledge Development Model



Source: Adapted from Johansen and Vahlne (1977)¹⁵

Of particular importance in the J & V model's context is the sequence of information acquisition and knowledge accumulation by a firm: as a critical process in the learning of export business management that may lead to market entry, market share

¹⁵ Words in parenthesis are the author's.

expansion etc. Such developmental process may arguably be seen in the translation of Zimbabwe's relative comparative advantage in the farming of certain food and horticulture products into competitive advantage in the direct supply of processed exports to supermarket retailers in UK¹⁶. That learning influences the change agencies in the firm and is a direct result of the firm being exposed to new threats or opportunities in the foreign environments (Johanson and Vahlne *ibid.*).

The envisaged learning, development and the subsequent commitment to the specific export market are inversely related to the psychic distance between the home and the importing countries¹⁷ (Johanson and Vahlne, *ibid.*). The smaller the difference between supplier and importer's perceptions the greater the chances of a ADC firm to enter and establish a market share in a DC market.

The J & V model posits that market knowledge is associated with foreign market commitment. Prior to that commitment a process of internal and external evaluation of resources and capabilities based on a supply criteria is assumed to take place. Such a supply-oriented evaluation takes into account the logistical issues, agencies relationships, networks between importers and exporters, backward information transmission, domestic and foreign based upstream and downstream support and related industries etc. Inevitably this brings into focus two state aspects; [1] knowledge about the foreign markets possessed by the firm; and [2] resources commitment for the foreign market. From that perspective evaluations of strategies that maybe used in different segments of the markets can be done. For example, choosing new channels of distribution and the decision to commit domestic and appropriate foreign resources to that channel may be the required action.

¹⁶ Such development and learning include producing as per the legal requirements of UK's Food Safety Act, 1990, as insisted upon by Sainsbury, M & S, Asda, Whitrose, and Tesco etc.

¹⁷ Psychic distance is being defined as the sum of factors preventing the flow of information from and to the market, e.g. differences in language, education, business practices, and industrial development.

Thus the external market provides the necessary external information determinants that will feed into the formulation of export market strategies. The diffusion of knowledge within the firm facilitates lateral growth (commitment) of a local firm into the foreign markets (Johnason and Vahlne 1977). Therefore the underlining argument of this model is that decisions on foreign market opportunities or threats are made in response to the symptoms observed in the neighbourhood of the market. Furthermore the degree of market uncertainty is reduced through increased interaction and integration with the market environment, as opposed to using the domestic market determinants as the only levers for competitive advantage.

6.11 Summary of the information models

In summary the J & V (1977) and Souchon and Diamontopolous (1996) models highlight two important issues. Firstly they both focus on the role of foreign market information in export decision-making and that objectives are subsequently set in the background of foreign and domestic resources available to the firm. Secondly the source and manner in which information is used, instrumental or conceptual, is critical in making strategic export market decisions. Such gradual learning, experiential and proactive, leads to a commitment of resources for the chosen export destination. Included in that learning process is the development of strategies that would establish an ever-revolving transformation of natural resources relative comparative advantage into durable and sustainable international competitive advantages.

Theoretically by accessing information and developing strategies ideal for each export market the firms are assumed to acquire a better understanding of the export market environment. Thus their knowledge of customer expectancy (quality/variety), buying and distribution system, and production/processing technology used by competitors will be enhanced. On the basis that such knowledge is not readily available in the

Zimbabwean 'diamond' access to UK or S. African information is therefore a fundamental element in the development of firm level competitiveness. Thus implicitly imported information and standards that are injected in the domestic diamond of a LDC may achieve two outcomes. In one respect the local firms push products that are similar to those from the DC markets i.e. different tastes and preferences are introduced. In another perspective the respective firms adapt to new and international methods and thus the nature of competition and techniques adopted in the local 'diamond' get reformulated.

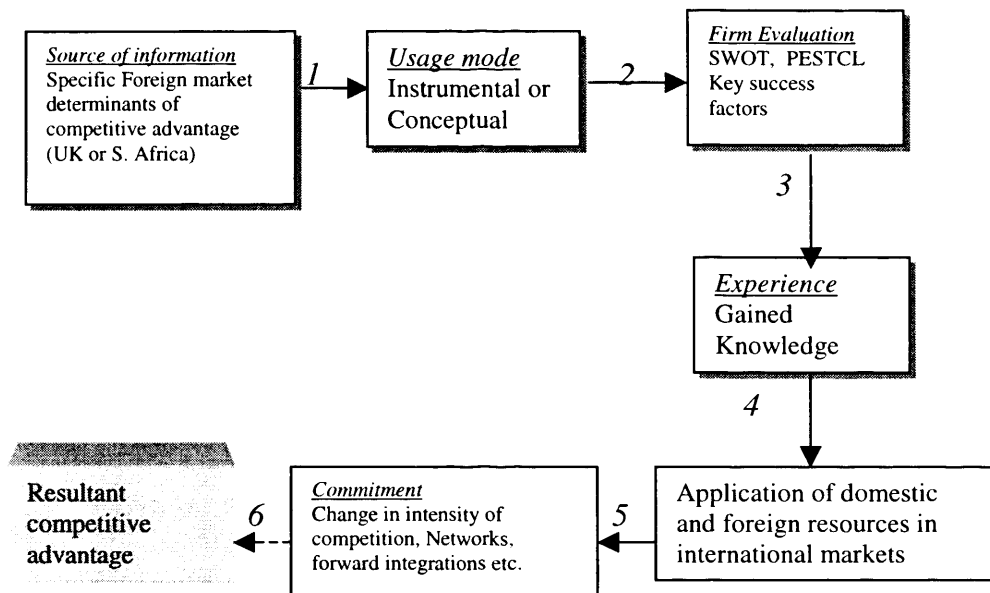
There are however three distinct disadvantages that are associated with these two information models. Firstly the approach of using foreign market data and information would tend to direct Zimbabwe exporters towards markets where such data or information is complete and readily available, as that reduces uncertainty. It could be argued that consequently that locks the management focus into those markets and evaluations of capabilities and capacity to compete are based on the definitions of such parameters or such a background. The second disadvantage is that such an approach may only provide information on products already on the market and therefore any new product performance would be forecasted in the background of such historical data. Implicitly that may inhibit dynamic innovations by ADC exporters, albeit success of new product launches would partly depend on instrumental or conceptual application of such information.

Thirdly the reverse side of this approach may result in the importation of technology and capital, and subsequent development of appropriate skills by Zimbabwe in an effort to adapt exports to the DC requirements. This directly impacts on the specifications of products that are then offered to the domestic market.

Notwithstanding, the two models seem to be interrelated and could be jointly stated in

the following contextual framework, (Fig.6.6).

Fig. 6.6 Information utilisation flow towards international competitive advantage



Source: Compiled by the author, (1999)

The conceptualised stages 1 to 6 do not necessarily form the decision-making path. However at each stage key events are expected to happen. Between information or data gathering and its usage [stage1] it is assumed that relevant information is obtained, and at stage two the external environmental analysis includes appropriate use of the gathered information. Any gained knowledge of the external and internal business environment would lead to application of foreign and domestic resources. Such application of key success factors is a decision that is reflected in foreign market commitment changes. Success or failure in that foreign market or domestic industry is a by-product of that whole process of gathering and application of information.

On the basis of the above discussion some key questions could therefore be raised. These focus on two issues; (a) the role of foreign information as a determinant in

building a firm's international competitive advantage in that foreign market; and (b) the importance of developing a network based experiential knowledge in order to enhance the 'customer's perceived value', (better export performance).

6.12 Information Factor Linkage, 'Perceived Value' and Business networking

Information obtained from outside the local 'Diamond' is and could be action oriented (behavioural) or educational (cognitive) and how the recipient uses that information in the export market depends on their market orientation. Information is used in the cognitive context when the management is foreign focused, (Matti Tuominen et. al. 1997). Robertson and Chetty, (1997) observed that there is a relationship between such a firm's foreign market orientation "measured along an entrepreneurial-conservative continuum", and export performance. From that perspective the ability of the firm to apply information in either behavioural or cognitive context will therefore enhance its knowledge about the customers in that market.

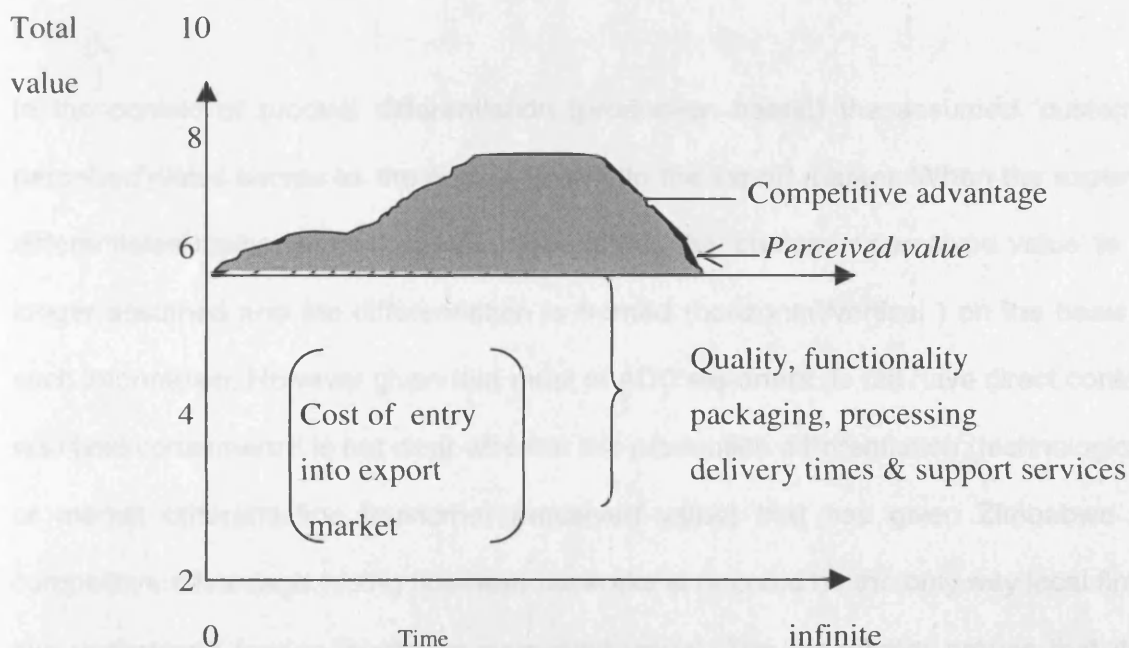
Establishing a strategic fit in the export market requires an understanding of the customer's perceived value, i.e. the degree of sophistication and customer discernment. Information about the export market customers and their perceived values is a critical success factor, (Slater, 1996; Porter, 1985; and Band, 1991). That customer perceived value¹⁸ is distinct from quality (Jozee and Dominic, 1997). In developed country markets quality is a necessary, albeit insufficient, asset for gaining or retaining customers. Hamel and Prahalad (1994) posit that quality will not be a "competitive differentiator" in future, and Treacy and Wiersema (1995) support this

¹⁸ In the current discussion customer perceived value is defined as the difference between the benefits and the sacrifices i.e. the cost and benefits that distinguishes one supplier from the other (Slater 1996). Competitive advantage is thus determined by the magnitude of the difference between cost and value per each offering (Jozee and Dominic, 1997). Brandenburger and Stuart (1996) defined value added as a willingness to pay minus the opportunity cost, and sometimes measured in terms of superior benefits or inferior sacrifices per each product.

contention by suggesting that quality will remain a cost for admission into the foreign markets particularly those of the developed countries; and an asset for survival (Slater 1996). It is therefore reasonable to expect Zimbabwe exporters to seek information on the nature and level of 'customer perceived value' and what elements constitute that 'value added'. That search would include identification of networking relationships that contribute towards achievement that 'perceived value'.

Figure 6.4 below graphically illustrates the conceptual 'value added' element and indicates the magnitude of competitive advantage a firm has over a given time frame. That perceived value is over and above other product attributes such as quality, and serves as an intangible and critical source of competitive advantage. It is assumed at this point that other elements of what constitute the product or service may be easily imitated and thus do not provide strength needed for a key success factor.

Fig. 6.7 *Customer perceived value and competitive advantage*



Source: Compiled by Author, (1999)

The above diagram illustrates the conceptual difference between the cost of market entry and total customer perceived value. As Porter (1985) argued the intensity of competition among suppliers obliterates any long-term competitive advantage and thus the shape of the perceived value line would be bell shaped. Thus anywhere below 5.8 units firms may have similar resources and could be competing using the market mix elements. Any firm that has identified key success factors would raise its customer perceived value above 5.8 units and thus create competitive advantage. However, measures of customer satisfaction on their own may not reveal the exact market competitive advantage of a firm and neither do they show points for improvement. The key point for Zimbabwe exporters is that achieving the 'customer perceived' value should be based on using the customer and not the firms' definition and as illustrated by the matrix (fig. 6.4.) such customer perceived values have to be in the foreign market environment. Dealing with the competitive advantage from technological perspective (production oriented efficiency and effectiveness) is but one side of a coin, and meeting the level of 'customer perceived value' of an export product also requires foreign diamond information.

In the context of product differentiation (production based) the assumed 'customer perceived' value serves as the cost of entry into the export market. When the exporter differentiates his/her product on the marketplace the 'customer perceived value' is no longer assumed and the differentiation is framed (horizontal/vertical) on the basis of such information. However given that most of ADC exporters do not have direct contact with final consumers it is not clear whether it is production differentiation (technological) or market differentiation (customer perceived value) that has given Zimbabwe its competitive advantage. Using business networks is or could be the only way local firms can understand foreign 'customer perceived value'. The researcher argues that it is only through instrumental use of that 'customer's perceived value' information that domestic competitive advantage may be transmuted across national markets.

Chapter 7

METHODOLOGY

7.1 Introduction

This chapter details the research methodology and procedures used in testing various hypotheses. In the analysis of the SD, DD and the MD models the approach adopted follows that used by Porter (1990) and Cartwright (1993) and in the present case it was focused on testing of the applicability or generalisation of the Porter model on Zimbabwe (ADC). Although this is a replication of studies in Austria, New Zealand and the Netherlands, the model has never been tested on an African country. Zimbabwe was chosen because of three reasons. Firstly export products that have shown an emerging (revealed comparative advantage) RCA in that country, (1994), do not have a big domestic market (less than 7% on flowers) and therefore the significance of the local demand variable was being questioned in this study. Secondly the vertical linkages in the value chain as suggested by Porter's clustering schema do not seem to follow the upstream, support industry and final consumer topological sequence. The third reason was that the author is familiar with the country's exports development activities and the country's search for endogenous and exogenous determinants of international competitive advantage.

The greater part of this chapter details the 'Diamond' variables and their measurement. Operationalisation of the variables was designed to allow for parametric tests that were necessary in testing specific hypotheses, and was always linked to the theoretical underpinnings of the diamond theory and its closed systems approach.

7.2 Problems Encountered while conducting research

Major problems encountered during the research were financial limitations to conduct longitudinal case studies on firms; and the respondents' lack of appreciation of macro and micro factors that are inherent in the workings of the diamond system. This was apparent in their lack of understanding of their industrial clusters and the significance of the diamond variables to each firm or the industry's linkages. The respondents' perceived themselves as fragmented units.

There was also a problem that derived from the respondents' historical trade linkages with some of the OECD countries. As was also reported by Teitel Simon and F. Thoumi (1997) family owners or co-founders of many of these export firms, (90%) are of European descent. Consequently there was a risk of biased scoring in favour of foreign diamond elements. To solve this specific problem their scoring was compared with those of independent experts, and also with the *World Competitiveness Report* data and methodology. For that purpose data was obtained from IDS (UK) and Zimbabwe, British Commonwealth Secretariat (Export Division), University of Zimbabwe's Business School and UNCTAD (Geneva). Local institutions such as the Ministry of Industry and Commerce, Zimtrade and Confederation of Zimbabwean Industries (CZI) also provided raw data on specific areas of the study. Mean scores of their data served to indicate the level of variances in perception between the sample scores and those from these organisations. Thus with such independent data being used as a reference we could adjust for outliers in our sample data.

However time series data was not available or simply did not cover a period long enough to allow for robust analysis of covariation of variables and export market changes. This study could have been enriched with specific market analysis using

methods such as Constant Market Share Analysis that uses such time series data. With that data limitation the study proceeded on the basis of cross-section data.

7.3 Research Design

7.3.1 Type of study

This was a cross-sectional study that sought to cover a wide spectrum of exporters. The primary objective was to capture a sample that was representative of the exporters' population and those who had characteristics that could be analysed in the 'Diamond' framework. In that respect the survey was designed to generate data that could be computed towards establishing information on population parameters and variances in sample sub-groups. However as in other studies questions on sensitive data were minimised, as their response rate was predictably low.

7.3.2 Method of Data Collection

The research was planned as a mail survey. This method was preferred because of three reasons: viz. (1) its wider geographical coverage, (2) lower operational costs, and (3) that it permits considered answers. Interviews were also used during the pre-testing and the final survey stages. These interviews were conducted over a period of six (6) months and were held with members of various organisations; Confederation of Zimbabwe Industries (CZI, manufacturers and exporters group); Horticulture Promotion Council of Zimbabwe (HPPC, horticulture produce i.e. foods and flowers exporters); and members of the textile and metal industries.

7.3.3 Questionnaire Design

At the questionnaire design stage a number of statistical and procedural aspects were considered. Key among these was an analytical framework that could permit a diagnosis of various elements within the diamond models and also could allow for the inclusion of independent variables that hitherto have not been empirically tested as part of the diamond model, (imported technology and MNCs). Questions were raised on, *a priori*, internal validity of the six original Diamond variables. The covariation and non-spuriousness in the relationships within the diamond system, albeit still lacking the time order sequence in that causal inference, (Nachmias and Nachmias, 1996), was also assumed. On these assumptions the focus was therefore limited to identification of the *loci* of the diamond variables that gave the Zimbabwe firms their international competitive advantage.

The questionnaire was divided into two sections and with each covering two components. The first section dealt with identification of firms, their clusters and group classification. Therefore questions relating to sample selection criteria (section 7.3.5) were treated as general and occupied the first part of the questionnaire. The second part of the questionnaire dealt with the dependent and independent variable elements. Questions on each variable were divided into two components. In one component each variable was presented through sets of closed-end questions that dealt with both the single diamond and double/multiple diamond model alternatives. The respondents were expected to subjectively score the variables on the basis of their firm/industry's perceived competitive advantage deriving from either local or foreign variables. On the other component the questions sought to obtain data on the significance of each variable to the firm/industry's international competitive advantage. This entailed establishing from the respondents' those factors they perceived as critical in each diamond facet. The objective was to identify specific key success elements within each

variable that could be related to the international competitiveness of their exports. In that respect data on the existence and importance of the networking, external knowledge acquisition, international information utilisation and buyer-seller relationship models were brought into analysis.

In order to help respondents give focused consideration to the various facets of the diamond model questions were grouped under each variable's sub-heading. Questions that covered more than one variable data needs were grouped under sub-headings that were closely related to their diamond determining conditions.

7.3.4 Pre-testing the Questionnaire

Prior to distributing the questionnaire a pre-test was conducted in order to ascertain the accuracy and relevance of the questions in producing the appropriate data. This pre-testing was designed to cover a reasonably wide base; i.e. firm and industry level management as well as representatives of export promotion organisations in Zimbabwe. This target group was chosen because their sectors are actively involved in all forms of export promotion and indeed deemed acquainted with some of the diamond determining conditions and their relation to national competitive advantage. Secondly the SD model itself spans a wider spectrum of firm, industry and national levels. By distributing the pre-testing questionnaire across a wide range of decision-makers feedback on their common understanding of the survey questions could be obtained across the country, industry and firm spectrum. In total 25 sets were distributed and 16 were received duly completed with comments and clarification questions. Discussions were held to clarify and amend sections that had raised inappropriate questions that yielded wrong data.

Communication with the respondents was effected through contact points of the CZI, Zimtrade, and HPPC. Sponsorship for the survey was sought and provided by three key institutions. These were Zimbabwe's Trade Consulate in UK, Zimtrade and HPPC. These institutions were chosen because they either represent specific industries or the export interests of various firms in Zimbabwe, or their UK agencies.

7.3.5 Sample Selection method

A sample frame was obtained from the register of exporters in Zimbabwe (1997). There were 1250 registered exporters and these are mainly in the cities of Harare (capital), Bulawayo and Mutare. These cities are centres of agricultural, industrial engineering and agro-manufacturing respectively. The criteria used to define the population were that; [1] the firm had been exporting for more than three years; [2] the firm's exports belonged to Zimbabwe's twenty-five largest exports into the OECD markets and S. Africa, (1994, SITC); and [3] they had frequently exported into the OECD in the last 3 years. The first criterion served to exclude firms that did not have minimum practical export experience because these were presumed to have limited appreciation of the international significance of the Diamond conditions.

The second criterion was used to link Zimbabwe's major exports to a specific market area and in conformity with Porter's (1990) methodology that limited the export product consideration to the largest twenty-five product groups (50 in Porter's studies). These exports were ranked by value (f.o.b.). Two hundred and fourteen (214) such exporters were identified and only one hundred and fourteen responded (Fig.8.1). In this study it was not possible to use exclusion thresh-hold or minimum cut-off points based on the values of each firm's exports, as was done in previous studies. This was because of the extremely small sizes of their individual exports, and also unavailability of disaggregated data.

The last criterion, the frequency of exports to OECD and the S. African market, was important for two reasons. Firstly it allows the analysis to be confined to the locus of the market area where data on Zimbabwean exports are not too small for analysis. Secondly the frequency factor reduces outliers caused by inclusion of *ad hoc* high value exports, as these do not necessarily suggest exports consistency. From the diamond theory perspectives that frequency is relevant in that;

- (1) the higher the frequency the greater the indication of demand for the product;
- (2) it is a suggestion that more demand is placed on local natural and advanced factor resources;
- (3) it requires a development of 'related and support' industries within and outside the national borders; and
- (4) it is inherently linked to continuous exposure to foreign competition.

From the sample frame of 1250 exporters the sample units were categorised according to SITC (version 2) and also according to their level of prior export product processing. According to the SITC the products exported were in the Textiles, Clothing, Wood Furniture, Paper and Paper products, Chemicals, Metal and Metal Products, Tobacco and Beverages, Horticulture (fresh food and flower), and Art artefacts categories. According to products' level of processing the sample units were grouped into 'primary product clusters' and 'support and final consumer clusters' (Table 7.1). If the exports were direct to final consumers their clusters was classified as group 2 (GRP2) and if products were exported as raw material inputs the clusters were classified as group 1 (GRP1; primary product exporters). This method was different from that used in previous studies. For example the author disagrees with Cartwright's (1993) approach,

where firm profitability was used as a dividing line. The argument is that the definition of profit varies on a firm by firm or industry to industry basis, albeit accounting standards attempt to harmonise them. That definition of profitability is not always consistent even within countries. That made such a divide unclear and hence the choices to use the products' stage of processing.

In order to cover wider population characteristics a quota sampling was also used and this was based on each industry's proportion of total registered exporters' population. Therefore to a degree this was a stratified selection of a sample defined in terms of their SITC, export markets groups and the inclusion criteria. A random selection of these firms was then done from that population of two hundred and fourteen firms.

Table 7.1 Grouping of Firms by Product

Product	Export firms responses	Usable Responses	MNCs	Export Destinations
<i>Group 1 (Primary Product Exporters cluster)</i>				
Coffee	3	2	1H	OECD
Coke	2	1	1H	OECD
Cork & Wood	2	1		OECD
Cotton Lint	1	Nil		OECD/S. Africa
Fabrics	11	4	1H/B1	OECD/S. Africa
Ferro-Alloy	1	Nil		OECD
Flue-cured Tobacco	3	1	2H	OECD/S. Africa
Leather pieces & shoes products	8	3	2G/1H	OECD/S. Africa
Iron & steel	1	Nil		OECD/S. Africa
Iron Products	15	6	2H/1B	OECD/S. Africa
Industrial Chemicals	4	2	2B/1H	" " "
Raw Sugar	1	Nil	1H	" " "
Tea	3	1	2H/1M	" " "
Timber	2	1	1M	" " "
Yarns	5	3	2CG	" " "
Totals	62	25	22	
<i>Group 2 (Support & Final consumer Clusters)</i>				
Furniture and Accessories	18	6	2H1M	OECD/S. Africa
Manufactured Fertiliser	1	Nil		S. Africa
Manufactured Tobacco	3	2	2H	OECD/S. Africa
Men's wear	10	4	H2/B2	OECD/S. Africa
Nickel	1	Nil		OECD/S. Africa
Non-electrical machines	12	3	1H	S. Africa
Refined Sugar	1	Nil		OECD
Works of Art	17	6		OECD/S. Africa
Vegetables & Fruit	} 20	} 7	} 1H	OECD
Cut Flowers				OECD
Totals	52	28	11	

Note: H= Harare; B = Bulawayo; M = Mutare; CG = Chegutu; G= Gweru (cities and towns where MNCs are located and these MNCs are involved in more than one sector).

Source: Compiled by author, 1999

7.4 Operationalisation of the variables

Operationalisation of the variables served to define each variable's factors or components that represented its observable characteristics. Using theoretical assumptions about their nature and relationships with the diamond concept variables were defined in abstract terms and measured indirectly. Factor analysis was used to identify relevant components of each variable. The mean score of identified components defined the variable in a measurable form. Theoretical questions based on the diamond paradigm or other related models were therefore raised using those factors. Factors used for each variable and their measurement are detailed in section 7.4.1 to 7.4.8 below.

Following Cartwright (1993), advanced factors, sophisticated demand, and firm rivalry being strongly emphasised in the diamond theory were measured using an interval scale between zero (0) and ten (10), (Table 7.2). The less important facets such as natural resources, and related and support industries were limited to a maximum score of five (5) points. Such subjective scoring creates a case-by-case operationalisation of variables and consequently it limits the generalisation of its results, (Miller, D.C., 1991). However notwithstanding such subjectivity the author agrees with Cartwright's operationalisation method for two reasons. Firstly competitive advantage as defined in terms of industry's share of world exports is a multi-dimensional construct and the measuring of the effect of each variable associated with changes in competitive advantage can be converted from qualitative to quantitative measurements. Secondly by using an interval scale measurement the analysis was amenable to computation of parametric tests. Typical descriptive statistics such as mean and variance analysis, being ideal for this study makes use of the interval scales appropriate. Below is a description of each variable and their measurement.

7.4.1 Demand (DM1, DM2 & DM3)

This represented demand for Zimbabwe's exports. Three factors that were perceived as important to this variable are the sophistication of the demand (DM1), size and growth rate of demand (DM2), and the internationalisation of that demand (DM3). The survey focused on obtaining data that would reveal the degree to which discernment by domestic customers was perceived to be associated with the quality of the increased exports, (DM1) (Porter, 1990). Secondly the impact of decreases or increases in that demand was also examined, (DM2). The improvement of quality that is presumed to derive from the sophisticated domestic demand-pull has been extensively argued in support of the SD model and also in other marketing management theories. It was therefore necessary to measure the perceived strength of that demand vis-à-vis international competitive advantage of the relevant products.

The third component related to the internationalisation of demand, (DM3). This is the degree to which the increased exports and their competitiveness in foreign markets derives more from foreign demand than from within Zimbabwe. Even if domestic customer sophistication or discernment is low/high the only way that such quality transfers to the international market is through either product push by local firms or demand-pull by external customers. However, assuming a market driven process, demand-pull is a reflection of the product's competitiveness. Therefore foreign demand features prominently when local firms adapt their export output quality and/ or alternatively raise their production or processing efficiency in order to satisfy external demand requirements. This point was important in establishing the importance of domestic or foreign demand in shaping strategic decisions related to competitiveness of these exports. However, following Cartwright (1993) and Porter (1990), these demand elements were measured on interval scale of 0 to 10.

7.4.3 Technology (TG)

This variable was treated similarly to the advanced factor variable except that access to information on new technical upgrades, and technological networking were regarded as important and therefore were emphasised than in the original set of (AF) elements. The (TG) variable was defined as that foreign technology which is not locally available and is still a key factor in a firm's export market competitive advantage. During data gathering technological factors such as technical knowledge, technical skills and manufacturing technology were used as indications of the presence or absence of that technology variable. With respect to manufactured exports the existence and use of computer aided operations, (CAM) and (CAD), were deemed a good indication of technological characteristic of that firm or industry's technological capability². This was analysed in the background of the results of the country's technology capability index. All these components were included and measured on a 0 to 10 interval scale.

7.4.4 Firm strategy, structure and rivalry (FSSR1 & FSSR2)

Firms' rivalry was analysed from market and strategic behaviour of the firm and also included separating the effect of domestic (FSSR1) from foreign (FSSR2) competition. In that respect four elements were used in the analysis of this variable. These were; [1] the difference in importance of local and foreign information on all aspects of product innovations; [2] applicability of local market business strategies to the export markets; [3] impact of foreign competition on the firms' export product innovations and upgrading; and [4] export price response of firms to exchange rate variability. The key objective was to ascertain whether competition in the domestic or foreign diamond was

² Literature on production efficiency suggests that errors in measurement stemming from poor fit between technological capabilities and the quantifiable indices used to measure such capabilities create these numerous interpretations and therefore CAD/MAD was deemed a good proxy for technology index.

a key factor that has led to increases in firm or the industry's international competitive advantage (DM3).

Theory on international marketing research suggests that the source (domestic/foreign) of strategic information is an important environment from which strategic decisions can be formulated. Directly linked to these strategies is the firm's export structure which supports those export strategies. Included in competitiveness strategies and structures are factors such as the firm's price response to exchange rate variability, firm ownership structure etc. This study focused on the factors that influenced the level of exchange rate 'pass-through' or absorption firms could implement. Although all these factors were regarded important they were measured at a lower level of 0 to 5.

7.4.5 Related and Support industries (RS)

This variable was defined using three elements, i.e. level of networking in the local industry, joint ventures in product development and the level of direct participation by importers/retailers on product change requirements. The support factor included trade credit, foreign agency assistance, the local industry's positive reaction to the firm's export product requirements and the extent such facilities are available from the local/foreign diamond. With regards to the networking factor the data sought was related to the sharing of foreign market intelligence, information on product innovations and developments in the foreign market and the existence of capable suppliers of input resources. For example data analysed included issues such as 'due diligence' prescriptions that importers in the UK market give to fresh food suppliers from Zimbabwe.

The diamond theory emphasises the existence, within countries, of internationally competitive support firms. Advocates of the double diamond framework extend such

support to include foreign firms. Therefore the analysis proceeded to seek comparative data on domestic and foreign diamond sources. This variable (**RS**) was measured on a 0 to 5 score.

7.4.6 Multinational Companies (MNC)

Based on Dunning's eclectic theory of MNC's (IOL) advantages and the spillover diffusion theory the MNCs effect on the local firm's drive for improving export capabilities was the focus. The drive for change was hypothesised to be instigated by the MNCs externalities and the pressure the MNC exerted on the domestic market competition. Literature suggests that different factors make the MNC's impact on an industry's 'diamond' system trigger that change process. These factors are; number of green-field investments (stand-alone, MNCGF); equity investment (FS); availability of technically skilled labour (TSKILLS); local firms' access to technology (TECACC); and MNC concentration levels (MNCCON). In this study these elements were used as factors through which the MNC's injection of spillover effects into an industry is achieved. Therefore the probability of local firms to adopt the MNC externalities and methods was defined in terms of both the MNC'S spillover influence and local firms' absorption capability. For this purpose the MNC's inward FDI was divided into green-field (stand-alone) MNCs and Foreign Shareholding (FS). As this factor was treated as implicitly covered by the rivalry variable in the diamond model it was measured on a similar interval scale of 0 to 5.

7.4.7 Government (Gvt)

This variable was included because of the seemingly increasing role of the Zimbabwean government in the establishment of international trade frameworks in regional markets. The governments' creation of an enabling environment within and

outside the national boundaries was the focus of this analysis. That focus was directed at policy issues that respondents could directly relate to their industries and the extent such government interventions promoted their export activities. It was necessary to limit the focus to export activities *per se* because a wider consideration would not have been possible to measure from the respondents' of such a limited study. Following the possible positive and negative interventions of the government its interventions were measured as either inhibiting (−2) or promoting (+2) firms' efforts to create international competitive advantage. A score of zero (0) indicated a non-participatory government.

7.4.8 Export Management Orientation (EMO)

One intervening variable was considered indispensable in the analysis of the diamond conditions. This was the degree of managerial orientation to export business, and this was analysed along the entrepreneurial-conservative continuum. This variable transcends all the other diamond facets although in this study the author chose to directly link it to the rivalry, strategy and structure facet.

According to management theory the ability of the decision-makers to identify key success factors and formulate executable strategies is fundamental to the success of the firm's competitive advantage drive. Assuming management adopted a contingency approach, their export orientation would be reflected in their degree of pro-activeness, innovativeness and export market risk disposition within the foreign market environment. For this study these three factors were analysed in the context of export business factors such as gathering and timely utilisation of new external information, learning from exposure in the foreign markets and the management's establishing of a learning organisation. In conformity with the FSSR variable (EMO) was also measured on a 0 to 5 scale.

7.5 Summary of variables Operationalisation

All the variables were defined and measured according to the methodology used by Porter (1990) and Cartwright (1993) and subsequently followed in other studies. In the present study the change has been a distinct separation of domestic from foreign dimension of each variable. Thus major variables such as firm strategy, structure and rivalry (FSSR); factor endowment (AF, NF); and demand (DM) were split into two and three dimensions respectively. Such a breakdown enabled data on specific variable components to be gathered. Following the study's precise objective of comparing the explanatory powers of the SD and DD/MD models such domestic and foreign factor separation and measurement was critical.

The introduction of imported technology and MNCs into the diamond system increased the number of variables from the five used in previous studies to eight, excluding the 'chance' factor. Table 7.2 below summarises the variables and their ideal score as used in this study.

Table 7.2 Variables listing and their Interval scales

Dependent	Causal Variable	Indicators	Variable labels	Interval scales
International Competitiveness	Natural Factor	Absent or abundant	NF	0 5
	Advanced factors	None or Strong	AF	0 10
	**Technology	None or Strong	TG	0 10
	Related & support industries	None Numerous and strong	RS	0 5
	Firm rivalry, strategy & structure	None or Strong	FSSR1 (H) FSSR2 (F)	0 5
	**Multi-national Corporations	None or strong	MNC	0 5
	♣Customer sophistication & discernment	None or strong	DM1	0 10
	**Orientation of firm goals, structures & management	None or strong	EMO	0 5
	♣*Internationalisation of Demand ³	None High	DM3	0 5
	♣Demand size/growth	None High	DM2	0 5
	Government is	Interventionist 'Hands off' or facilitating diamond	GVT	-2 0 +2

Source: Adapted from Cartwright 1993

*Internationalisation of demand added from M.E. Porter (1990)

** Additional variables to Porter's (1999)(based on Rajneesh Narula, 1993; and Dunning, J., 1993).

♣ Variable was part to other components forming the demand variable.

³ Internationalisation of demand refers to whether demand for an industry's output is restricted to the home nation or comes from multiple nations (Brouthers and Brouthers, 1997).

7.6 Methods of Data analysis

Various methods were used to test different hypotheses. The first step was to test for the possible inclusion of the Technology and MNC variables into the analysis of the sources of Zimbabwe's exports competitive advantage. The second set of tests dealt with the analysis and comparison of the explanatory power of the SD, DD and MD models. The last tests analysed the perceived direct role of the government's policies; the level of export product differentiation among Zimbabwe's various product categories and their comparison with those of China and Kenya; and the factors that affected the exporter's degree of exchange rate 'passthrough'. The methods used in these tests are detailed in sections 7.6.1 to 7.6.5.

7.6.1 Technology and MNCs

The imported technology variable was tested using regression analysis. This was aimed at establishing the level of association between the identified technology factors and the export supply capability of the firms. The principle of parsimony was applied during factor component analysis, and statistically significant factors were later applied to the country's technology index (TI) in order to establish the firms' technology capabilities. This (TI) index is therefore a decomposition of constituent elements of technological capabilities by function (Lall, S., 1987).

With respect to the MNC variable a Probit analysis was applied in determining the probability of the local firms to adopt the MNC induced changes. The fundamental assumptions of this technique are that; [1] all sample units weigh the variables identically; and [2] a combination vector of all factors is consistent across all sample units. Therefore the decision to adopt (1) or not to adopt (0) was a qualitative

dependent dummy variable that was measured using censored data, and either probability response is a cumulative density function of all the factors.

7.6.2 SD, DD and MD models Tests

This test was the main objective of this study and was based on the following hypotheses:

H1. *The 'Diamond' paradigm as stated by M. Porter (1990) fully explains Zimbabwe's export competitive advantage in the OECD or S. African markets.*

H2. *The 'Double-Diamond' and 'Multiple-Diamond' models explain Zimbabwe's export competitiveness better than the Single-Diamond model.*

To test both hypotheses H1 and H2 a t-test statistic was used. With data sets divided into two sub-sample groups this t-test enabled a two stage comparative analysis. The tests were; (1) how the various diamond models differed in the level of their explaining of the competitive advantage of the whole sample; and (2) whether such differences were according to groups' level of export product processing. Three methods were used to analyse the H1 and H2 hypotheses.

7.6.2.1 Hypothesis Testing (*Method 1*)

The model for the H1 and H2 hypothesis was based on the following equations;

$$\delta_{ijk} = m_i - a_{ijk} \dots\dots\dots 1$$

$$\bar{\delta}_{ijk} = \sum \delta_{ijk} / ij \dots\dots\dots 2$$

$$H_0: \delta_k = 0$$

$$H_1: \delta_k \neq 0$$

Where m_i = the ideal score for the i th variable,

a_{ijk} = is the judged impact score of the i th variable on the j th industry in group k .

$\delta = 0$ when the local industry's $\sum(a_{ijk})$ is equal to Porter's 'ideal' (maximum) score.

This is a two-tailed test that was designed to establish the level to which the competitiveness of the sample's two groups compares against the Porter 'ideal' score. This test was conducted on primary product exporters (GRP1) and final producer exporters (GRP2). Further tests were done to establish the statistical significance of the differences between the groups and their correlation to high or lower competitive advantage. These were tested as follows;

$$H_{21}: t_1 < t_2$$

$$H_{22}: d_1 > d_2$$

$$H_{23}: r_1 < r_2$$

where t_1 and t_2 was the calculated t - statistic of groups 1 and 2 respectively;
 d_1 and d_2 , the groups' respective magnitudes of the difference in the mean score levels; and
 r_1 and r_2 are their respective simple correlation coefficients.

7.6.2.2 Hypothesis Test (Method 2)

This was also a t-test but took into account the number of variables and the industries in each group. This alternative approach is more embracing in its computation of national competitive advantage. Following Brouters and Brouters, (1997) this model compares the mean value scores of the variables in Zimbabwe alone (SD), Zimbabwe and trading Partners (DD) and Zimbabwe in partnership with all OECD countries and S. Africa (MD). This model was stated as follows;

$$\delta_z = \sum (X_{viz} - \bar{X}_{viz}) / M_{vz} * N_{iz}$$

where;

- δ_z is competitive advantage of a country (z);
- X_{viz} is the optimal value 'diamond ideal' of causal variables, for industries (i) in country (z);
- $\bar{X}_{viz}$ is the actual mean value of causal variables (v) for industries (i) in country (z);
- M_{vz} is number of causal variables for country (z); and
- N_{iz} is the number of industries in country (z).

As in the case of the first method the smaller the difference between the expected and observed values is an indication of a stronger competitive advantage, i.e. the lower the value of (δ_z) the stronger is the country's competitive advantage. This method raises two technical points. Firstly, it computes the competitive advantage as a function of the number of variables and industries per group or sample. Secondly by considering the number of industries benefiting from the various diamond system variables it is possible to account for the effect of increases in variable numbers. Thus given mean

7.6.2.2 Hypothesis Test (Method 2)

This was also a t-test but took into account the number of variables and the industries in each group. This alternative approach is more embracing in its computation of national competitive advantage. Following Brouthers and Brouthers, (1997) this model compares the mean value scores of the variables in Zimbabwe alone (SD), Zimbabwe and trading Partners (DD) and Zimbabwe in partnership with all OECD countries and S. Africa (MD). This model was stated as follows;

$$\delta_z = \sum (X_{viz} - \bar{X}_{viz}) / M_{vz} * N_{iz}$$

where;

- δ_z is competitive advantage of a country (z);
- X_{viz} is the optimal value 'diamond ideal' of causal variables, for industries (i) in country (z);
- $\bar{X}_{viz}$ is the actual mean value of causal variables (v) for industries (i) in country (z);
- M_{vz} is number of causal variables for country (z); and
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differences of the variables a sector by sector evaluation of the diamond model's analytical power was deemed possible.

7.6.2.3 Hypothesis Test (*Method 3: Geographical sources of competitive advantage*)

A third alternative was used to establish what elements of the diamond determinants were accessed from within and outside the country. The main objective was to bring out those elements within each diamond variable which the firms could identify as providing international competitive advantage and the geographical location of such factors. The results of this method were based on observed mean scores (not mean differences between ideal and observed as in the case of the other two methods).

7.6.2.4 Alternative Test for Competitive Advantage

An alternative to methods 2 and 3 above was to ascertain the level of association between variables and each product's export intensity. Once again this would have used the three diamond alternatives in a Multiple-regression analysis. A simple regression for this test could be of the following model;

$$Y = a + \beta_1 x_1 + \dots + \beta_n x_n + e$$

Where Y = export sales

a = estimated constant

β_{1-n} = parameters for each predictor variables

x_{1-n} = predictor (diamond) variables whose variations are hypothesised as having an impact on the variance in the depended variable Y .

A good example of such regression analysis test is the Constant Market Share Analysis method. This method explains competitive advantage by taking into account the structural changes in the export market. The Constant Market Share Analysis (CMAS) is a decomposition technique that explains changes in market share as a result of two elements, viz. changes in the actual export volumes; and market structural changes. In that respect national competitive advantage measured in terms of an industry and country's share of world exports is perceived to be a direct result of these two changes. Following Richardson, (1971) the CMS model regression would be formulated thus:

$$\Delta q = \underbrace{s_0 \Delta Q}_1 + \underbrace{\{\sum_i s_{i0} \Delta Q_i - s_0 \Delta Q\}}_2 + \underbrace{\{\sum_i \sum_j s_{ij0} \Delta Q_{ij} - \sum_i s_{i0} \Delta Q_i\}}_3 + \underbrace{\sum_i \sum_j Q_{ij1} \Delta s_{ij}}_4$$

Where;

q, Q = total exports of the focus country and the reference groups;

s = q/Q = the export share of the focus country in a designated export market area;

Δ denotes discrete change and subscripts 0 and 1 refer to the beginning and end of the discrete time period.

1 is relative change;

2 is commodity effect between period t and $t-n$;

3 is the market effect; and

4 is the competitiveness effect of the product.

The CMSA approach assumes that; (a) base exports at beginning are maintained; and (b) export changes are due to competitiveness although residual elements may contribute to that change. This CMSA decomposition model explains sources of market share growth from both the country's competitiveness and from the foreign market's internal changes. It is ideal when we are interested in reasons for Zimbabwe's export market share growth and in particular when such changes in export levels may not be

correlated to changes in the strength of the diamond elements *per se*. For example the increased RCA of some of Zimbabwe's exports (1997) is in those areas where the world (OECD) shows a declining trend. The CMSA is a supplementary analysis that would enhance the diagnostic power postulated by the other models. However in the absence of time series data this technique could not be applied.

7.6.3 The Government Hypothesis Test

In the government variable the analysis centred on the magnitude of its involvement in the activities of the firms. The hypothesis was:

The Zimbabwe government is not directly and positively involvement in the export competitive advantage activities of various local industries.

The hypothesis model was:

$$H_0: \Phi \leq 0$$

$$H_1: \Phi > 0,$$

where Φ is the mean value of the government's perceived direct involvement in the export activities of the firms/industries.

Based on the minimum of -2 and a maximum of $+2$ any score above zero was perceived as positive and direct participation by the government in the export activities of that firm/industry. The government's involvement was defined in terms of its provision of international marketing information (country profiles and demographics); financial support (low cost pre-/post shipment finance); and provision of foreign

currency or subsidies for international market requirements, (Ndlela, D and Peter Robinson, 1995).

7.6.4 Product Differentiation and Exchange rate Effects

These two issues were analysed in the context of the theory of generic strategies of product differentiation and cost leadership, (Porter, M. 1985). As argued by Porter, M. (1985) product differentiation serves as a basis for creating competitive advantage. The analysis in this study was therefore focused on the level of Zimbabwe's 'own product differentiation' using commodity categories (SITC). The second part of the analysis dealt with factors that imposed limitations on firms' freedom to passthrough exchange rate variability effects. That level of exchange rate 'passthrough' affects the price competitiveness of the specific export product (profitability). By analysing product differentiation and exchange rate passthrough the study aimed to establish if Zimbabwe's exports are distinct (differentiated) within their categories and that the levels of such product differentiation were significantly distinct among competitors; and what exchange rate factors limit the exporters' profit margins.

7.6.4.1.1 Vertical and Horizontal Product differentiation

The extent of Zimbabwe's product differentiation was measured using the Hufbauer (1970) index (HI), and aimed at showing; (1) any form of product differentiation on specific product groups, (Lancaster, 1981); and (2) a comparison of similar products from Kenya and China. The Hufbauer index was used as a proxy that captures the coefficient of variation (CV) of the unit values of the exports. The underlying assumption of this proxy measure is that there is an inverse relationship between the level of product differentiation and price dispersion within a given product group, (Rodrik, D, 1988; and Saunders, 1986). Accordingly if the product exported is

standardised, the export prices will be clustered around the mean and the unit value index would be low. Conversely, if the products are differentiated the unit values are expected to be dispersed about the mean and thus the measure (HI) would be higher. In theoretical terms the model for this Hufbauer index is as follows:

$$HI=CV = \sigma_{ij} / \mu_{ij}$$

where σ_{ij} is standard deviation of export unit values of good i to country j , and μ_{ij} is the unweighted mean of those unit values.

Although Caves, (1981) and Helleiner, (1976) treated the (HI) proxy as a catchall measure it has inherent weakness. A common argument is that variations in export unit values may be caused by factors other than differentiation. For example the countervailing power of the importers and intensity of competition in a strategic group may affect the prices of these exports. Furthermore intra-industry or inter-firm trade indicates that export prices may not reflect the true cost of the products and thus they may misrepresent the actual unit values.

An alternative to the (HI) method is the 'Hedonic' price technique. The difference between the two is that the (HI) indicates the level of dispersion of mean unit values of exported product groups whilst the hedonic price index approach uses absolute price index differences as an indication of the product differentiation. The 'hedonic' technique employs regression analysis based on price variables because these are assumed to reflect the various characteristics of the products. Based on the Lancaster (1981) differentiation this method highlights the relationship between different prices and the product characteristics. Thus the estimated regression coefficients would be viewed as 'implied' price characteristics of the product. Another difference between the two

techniques is that the (HI) can be computed from either price index or unit values whilst the other method is limited to the use of price indexes only.

Between the (HI) and the 'hedonic' price method literature is inconclusive on whether or not either method captures both vertical and horizontal differentiation in both technical and non-technical dimensions. Although McAleese, (1979) and Sorensen, (1975) argued that the (HI) captures both vertical and horizontal differentiation, Caves, (1981) and Helleiner, (1976) argue that it reflects more on vertical than the horizontal differentiation. However, since the purpose of this study was not aimed at identifying the distinct nature of product differentiation but instead on the evidence of some form of differentiation it was deemed prudent to adopt the catchall approach. By adopting the catchall assumption products from either sub-group (GRP1 and GRP2) of the sample could be considered irrespective of the influence of the nature of export composition or factor intensity

The hypotheses used to test for product differentiation was formulated in two parts. The first part tested for the presence of product differentiation; the second part compared the degree of product differentiation on four Zimbabwean exports and against those of two developing country based competitors. The hypotheses were as follows;

- Hypothesis: 1** *Export products from Zimbabwe are differentiated within each product category⁴.*
- 2** *The degree of product differentiation undertaken by Zimbabwean exporters is not equal to some of its major competitors in the Clothing and fresh produce exports.*

⁴ Kotler, P. (1995:pp 298) argues that product line variations per category "is ..no more than 10%", and for this research an arbitrary minimum (CV) of 10% was acceptable evidence of differentiation.

$$H1_0: CV_z > 0.10$$

$$H1_1: CV_z \leq 0.10$$

$$H2_0: CV_z - CV_{kc} \neq 0$$

$$H2_1: CV_z - CV_{kc} = 0 \quad \text{where } CV_z \text{ is the (HI) of Zimbabwe and } KC \text{ represents Kenya or China.}$$

Following Hufbauer, G.C (1970) the coefficient of variation was based on a five-digit SITC (1996). These were clothes (SITC 8423), fresh vegetables (SITC 05459); fresh flowers (SITC 29271); and Coffee (SITC 07111). Two countries that were used as comparators were mainland China (men's clothes), and Kenya (fresh vegetables, flowers and coffee). These were chosen because of their perceived non-wealth driven international competitive advantage, (Porter, 1990). Secondly these products were used because they either dominated Zimbabwe's manufactured exports to the OECD (clothes) or had the fastest growing export volumes (fresh vegetables and flowers, 1994-97).

7.6.4.2 Exchange rate 'Passthrough' Factors Test

Literature on international trade suggests that six factors influence and/ or limit the degree of exchange rate 'pass through'. These factors are;

- perceived countervailing power of the importers
- level of intra-industry trade and (exporter/importer) relationships;
- prevailing export market prices (elasticity);
- extent to which production/processing of exports depend on imported raw material inputs;

- extent of government's export tax or subsidies provision ; and
- level of product differentiation and substitutability.

In order to analyse the extent of the influence on these factors two key questions were advanced.

- A. Do these factors influence the Zimbabwe exporters' decision on the level of exchange rate 'pass through'?**
- B To what extent do these factors affect the firm's ability to 'passthrough' any such exchange rate movements?**

The focus of these questions was on whether local competitive advantage can be transmitted to the international markets (*SD approach*), against the background of an appreciated Zimbabwe currency (Z\$). An interval scale of 0-5, (*with 0 signifying not important and 5 most important*) was used. Any mean value above 2.5 was perceived as evidence of a strong influence and deemed to have the effect of reducing the price competitiveness of local exports.

All the above six factors were hypothesised to be linked to the diamond conditions. Firstly, with regards to the countervailing power, the foreign demand (DM3) as represented by the importer poses a restrictive influence in the exporter's decision to adjust his/her price following an exchange rate movement. Inevitably the influence of such importer power in areas such as distribution channels and logistics are key export factors. The second point is that Zimbabwe depends on imported advanced factors (AF) for her industrial production/processing, (Ndlela, D and Peter Robinson, 1995; Lall *et al*, 1997; Tyler Biggs *et al*, 1997; and Wangwe, S. 1997). Thus exchange rate related

increases in cost of imported input raw materials affect the price/cost competitiveness of such exports.

As argued in the networking paradigm, (Rugman, A., 1992) the nature of trade relationship between firms is either commercial or integral. In terms of an inter-firm or intra-firm trade an integral relationship (RS) restricts independence of local firms making strategic decision whilst a commercial relationship is more flexible. The influence of such inter-firm trade on the 'passthrough' rate (transfer pricing included) will therefore depend on the nature of that trade relationship.

The fourth point is the extent to which the foreign market price competition (FSSR2) inhibits the extent of the 'passthrough'. For countries like Zimbabwe, that are 'price takers', the external diamond competition is a key factor and the prevailing market prices in those markets serves as a ceiling or benchmark. Any price adjustments (passthrough rate) would therefore have to accommodate this market price. It was therefore expected that this factor would feature among the most influential elements. The fifth factor, product differentiation/substitutability, although not a key variable in the SD or DD/MD models is an intervening variable that has direct bearing on the transmission of local competitiveness to international competitive advantage of Zimbabwe's exports. The projected argument is that such product differentiation reduces product substitutability.

7.7 Summary

This chapter detailed the structure of the methodology used in this study. The chapter explained the data gathering methods, and problems encountered. The sample was defined by a criteria that derives from the measurement requirements of the diamond theory's definition of national competitive advantage. This was followed by the

operationalisation of the variables in the context of the diamond theory. In order to achieve comparative analysis the sample units were split into two groups. This was aimed at testing the SD and DD models on two sub-samples of exporters who had been separated on the basis of their export product's stage of processing.

Parametric tests and regression analysis were chosen as the statistical method of data analysis. These tests were grouped into five major sections as follows;

- tests related to the significance of imported technology to the local diamond;
- analysis of the probable MNCs influence on the local industry towards adopting international competitive strategies;
- the inclusion of the technology and MNC variables into the diamond framework;
- comparative analysis of the explanatory power of the SD, DD and MD models; and
- level of Zimbabwe's product differentiation as compared to that of China and Kenya, and the factors that limit the exporter's degree of exchange rate 'passthrough'.

The actual data analysis was done in Chapter 8.

Chapter 8**Data Analysis****8.1 Introduction**

This chapter details the data analysis and the results obtained. The first part details the clustering of the sample units into two groups, and a description of the sample respondents and their organisations. The second part deals with the analysis of imported Technology and MNCs as exogenous variables that could be included into the Diamond formulation. This is followed by a comparative analysis of the level of Zimbabwe's product differentiation, and the factors that affect the level of exchange rate 'passthrough'. These last two tests were deemed important because they analyse marketing factors that disclose the level of export competitiveness (profitability and differentiation) of local products.

The third part is a comparison of the SD, DD and MD models. This section dealt with the main objective of the research as outlined in Chapter1, i.e. the appropriateness of Porter's SD model in analysing the sources of international competitive advantage of Zimbabwe.

8.2 Preliminary Data Analysis

Questionnaire returns had only 53 usable responses and each was from a different organisation. The grouping of respondents into two sub-samples produced seven clusters. This was a sample of fifty-three units out of a possible two hundred (26.5%). Figure 8.1 below summarises the response rate.

Fig. 8.1 Questionnaire Response

Distributed	200	100%
Non-Response	(84)	42.0
Unusable	(43)	21.5
Partially Completed	(20)	10.0
Used	(53)	26.5

The highest response rate per sector was from the exporters of horticulture produce (fresh food, e.g. vegetable produce and fruit, and fresh cut flowers such as red Roses). Such products are exported mainly into the UK (fresh foods), and The Netherlands (flowers). The data also indicate either non-response or very low response from 'controlled products' that are exported only by government agencies, for example sugar, minerals, cotton lint and fertiliser.

The researcher identified and excluded from analysis firms that exported on quota basis and whose value added on re-exported products was less than 0.01%. The reason for such exclusion was that re-exports distorted the actual manufactured value added (MVA) of these products (SITC). Those that exported on quotas were deemed not competitors *per se* and to them the role of the diamond conditions particularly the demand and firm rivalry facets would not feature as important strategic issues.

8.3 Sample characteristics

The sample used covered the whole spectrum of Zimbabwean industries and exports, from exporters of pure commodities to those of pharmaceutical products. The sample units themselves were either direct exporters or they used handling agencies within

and outside Zimbabwe. The majority of direct exporters were mainly from the manufacturing sectors, e.g. non-electrical machines and iron products, processed tobacco, clothes and so on. Those who used the services of agencies were either new exporters or old suppliers that have found it profitable not to be direct participants in the end market.

8.3.1 Types of Organisations

The sample consists of firms from various industries. The largest group (62.26%) was from the private sector manufacturers (18 local and 15 MNCs firms). The second largest group was from produce farmers (15 %), and the rest is divided between commodity brokers, Produce Marketing Boards and Parastatals. The last two export organisations are regarded 'strategic products' authorities.

Among the sample units both MNCs and local firms were exporting to both upstream industries and downstream final consumers in the OECD markets. The MNC firms are involved in three main sectors, i.e. mining, manufacturing and farming (both horticulture and lumbering). In terms of the SITC (revision 2) sample units are in the following product groups; *Beverage and Tobacco, Fresh food, Textile and Clothing, Wood and Wood Products, Chemical, non-metals Minerals, Metal manufacturing, Art and Horticulture farming.*

8.3.2 Characteristics of Respondents

The characteristics of the respondents were not uniform. The most common characteristic is that they were all directly involved in the exports of their organisation's products. In the private sector firms these people were Marketing Directors, Managing Directors, Sole Proprietors, Exports Marketing Managers, Product managers and in

some cases Marketing Research Managers or Industrial Economists serving MNCs. In the horticulture industries some of these people were farmers that export directly to 'produce importers' in UK or dealt directly with retailers such as Marks and Spencer, Waitrose, Tesco, ASDA, Sainsbury etc. These farmers supplied shelf-ready packaged fresh-foods. With respect to these farmers the interview approach was also used to obtain collaborative data from M & S, ASDA and Tesco.

8.4 Score Computations on Variables

The country's twenty-five main export products, for the tax year 1997, were divided into two groups (Table 8.1). The products were defined by their SITC (rev.2), and as per the diamond theory they were put in clusters on the basis of the product's stage of process prior to exporting, (Chapter 7). For example food such as raw sugar was placed on the upstream group whilst refined sugar was in the downstream group; fresh vegetables that were exported ready for consumption were placed in the final consumer group (downstream) whilst fresh meat that required further packaging prior to retailing would be in the upstream group. Therefore the scores assigned by the respective firms only related to the diamond variables' contribution to the competitive advantage of the exported products.

Table 8.1 Variable scores by product

SITC		EMO	FSSR2	NF	AF	DM 1	DM 2	DM 3	TG	GVT.	MNCs	R/S	FSSR1
(Rev 2)		<i>Group 1 (Upstream primary industries' products)</i>											
07	Coffee	1	0	5	1	4	6	2	2	-2	1	4	6
3232	Coke	2	2	5	3	6	4	5	3	-2	1	7	3
24	Cork & Wood	3	4	3	2	6	2	6	7	-2	1	2	6
0263	Cotton Lint	2	6	5	2	7	4	6	3	0	0	4	4
652	Fabrics	1	7	5	2	5	4	8	1	-1	3	6	4
6716	Fero-Alloys	2	4	2	3	5	2	4	4	0	3	5	9
12	Flu-cured Tobacco	2	1	4	1	7	6	4	6	2	4	2	7
611	Leather	2	5	3	2	4	7	7	7	2	2	6	5
67	Iron & steel	2	0	2	1	4	7	5	7	2	1	6	7
6725	Iron Products	2	6	6	7	4	2	4	7	2	2	6	4
55	Chemicals	1	6	2	4	6	3	5	6	0	5	6	2
0611	Sugar	3	0	4	4	7	5	7	5	1	5	2	5
0741	Tea	2	2	4	5	6	6	1	4	-1	3	6	6
2482	Timber	1	1	3	5	6	4	3	5	0	3	7	4
651	Textile Yarns	2	6	2	4	4	6	8	5	1	2	7	7
683	Nickel	2	0	4	3	1	3	2	8	1	4	4	2
		<i>Group 2 (Industrial Support & Final Consumer Products)</i>											
		EMO	FSSR2	NF	AF	DM 1	DM 2	DM 3	TG	GVT.	MNCs	R/S	FSSR1
	Furniture	2	4	2	2	7	3	6	2	-2	1	6	5
562	Fertiliser	2	0	4	4	5	5	5	1	2	5	4	1
122	Manu. Tobacco	2	2	5	6	5	5	1	1	2	3	7	2
6521	Menswear	3	6	2	6	6	4	4	3	0	4	7	8
	Non-electric. Machines	2	7	3	5	4	6	6	5	2	4	5	6
05459	Hortic.-Fresh Veg.	1	7	5	7	1	9	5	5	2	3	8	3
2927	Hortic.-Fresh Flowers.	2	6	5	7	3	7	7	5	2	4	8	3
	Art	3	0	3	2	7	3	8	0	0	0	1	6
061	Sugar	1	0	2	5	6	4	1	2	1	1	1	1

Note: EMO, Export orientation of management; FSSR1, local competition; FSSR2, foreign competition; NF, Natural; AF, advanced factors; DM1, local demand; DM2, demand growth; DM3, foreign demand; TG, technology; MNCs, multinational companies; GVT, government; R/S, related and support firms.

8.5 Technological capability Hypothesis

There are various definitions for technology capability. In this diamond context technology capability was defined in terms of technology productivity and processing capabilities that influence the supplying of differentiated and cost competitive products. In order to establish the existence of such capability the researcher tested for the technology factors that related to the technological capability index of Zimbabwe. The hypothesis was that:

Zimbabwe's export supply capability is positively influenced by the availability in the local diamond of imported technology.

This hypothesis was tested on two levels. First tests focused on diamond elements that are associated with the technological capability index of the country. In this section local and foreign diamond elements were regressed on the technology capability index of the country. The model used to estimate the technology capability was as follows:

$$TECINDEX = AN^{b1}T^{b2}F^{b3}$$

$$TECINDEX = b1\log(N) + b2\log(T) + b3\log(F)$$

The independent factor analysis yielded three significant factors. The results suggest that only foreign equity, skills and imported physical capital were associated with technological capability of Zimbabwe, (Table 8.2).

Table 8.2 Dependent Variable: Technology Capability Index

Predictor	r	t-test	p-value
Age of equipment (Age)	2.866	1.473	0.147*
Foreign Equity (FINA)	0.394	3.277	0.002
Skills	0.333	2.059	0.045
Imported Capital (TECHIP)	1.241	2.071	0.044
(Constants)	21.055	5.301	0.000

F=6.570 Signif. F= 0.000

Adjusted R² = 0.300

*insignificant.

The estimated model showed as follows:

$$\text{TECINDEX} = 21.055 + 0.394\text{FINA} + 0.333\text{SKILLS} + 1.241\text{TECHIP}$$

(5.301) (3.277) (2.059) (2.071)

As this was a cross section survey the adjusted coefficient of determination (R^2) of 30% was acceptable. The signs of all the independent variables were positive as was expected and their coefficients are statistically significant at the 5% level.

The second test centred on the association between imported capital, skills, and foreign equity as related to technical export product intensity of each exporter. Export

intensity was used as the proxy dependent variable that captures the firms' export commitment and exposure to the technological demands of the DC markets. The results were varied, (Table 8.3).

Table 8.3 Groups Technology factors Analysis (Export Capabilities)

Dependent Variable: Export Intensity						
Predictor	Group 1			Group 2		
	r	t-test	p-value	r	t-test	p-value
Capital	0.1680	1.150	0.2609	1.931	1.050	0.3050
Finance	0.614	0.409	0.6859	2.229	3.856	0.0008
Skills	3.066	4.506	0.0001	-0.0786	-0.421	0.6775
(Constants)	9.5868	2.824	0.0090	0.5029		
F=20.30593	Signif. F= 0.0001			F=14.87214 Sig. F=0.0008		
Adjusted R ²	0.4169			0.3663		

In both cases the R ratio (F) was significant at 5% level. For a cross-section survey the adjusted coefficient of determination R² of 41.69% and 36.63% for GRP1 and GRP2 respectively were acceptable. However the factors that are significant in each group are different, SKILLS (GRP1) and FINA (GRP2). This could be interpreted as an indication of the differences in the key technology factors that have significant influence on the export performance of the two exporter groups. In either case the signs of the significant factors were positive as was expected.

Estimation of the above regression models included testing for multicollinearity and heteroscedasticity. The test for heteroscedasticity failed to indicate evidence of its presence (Goldfeld-Quandt test). Multicollinearity was tested using correlation analysis

and these were very low among the independent variables. The estimates of the tolerance of each variable to the effect of other independent variables was high for all the three variables and again indicating the factors' contribution to the model is high and independent. Low correlation coefficients and their high tolerance was evidence of lack of collinearity.

8.6 MNCs and Spillover Adoption Hypothesis

The central argument of this test is that the MNC's presence in the local industry increases the probability of the firms to adopt the MNC's strategies for competing in the international markets. Using this Probit technique with a binary dummy dependent variable Y_i , a latent variable Y^* was used as a threshold, wherein

$$Y_i = 1 \quad \text{if } Y^* > 0 \\ = 0 \quad \text{if } Y^* \leq 0.$$

The assumption underlying this Probit analysis was that there is a local firms' response of the form $Y^* = \alpha + \beta X_1 + \mu$; where μ is observable, but Y^* is an unobservable variable. The coefficient β relate changes in variable X_1 to changes in the probability of the adopt decision (1) and X_1 represents the characteristic of the alternatives and the decision made. Therefore if $\beta > 0$, X_1 increases the probability of $Y^* = 1$, and if $\beta < 0$ X_1 reduces the probability of $Y^* = 1$. In the above estimation the probability of local firms to adopt the new methods is thus a function of the independent variables that takes into account an error term that has a normal distribution. The result of the tests, estimated using MLE* are on table 8.4.

* The software used was the SPSS.

Table 8.4 Probit Analysis of MNC spillover adoption

Parameter Estimates (PROBIT model: (PROBIT(p)) = Intercept + BX):

	Regression Coeff.	Standard Error	Coeff./S.E.	Marginal effect
MNCGF	-0.51603	0.28079	-1.83778	0.2012
TECACC	0.58221	0.27568	2.11189	0.2678
TSKILLS	0.04429	0.01953	2.26806	0.7303
MNCCON	0.02475	0.01147	2.15864	0.6071
FS	0.03704	0.01766	2.09723	0.4984
Constant	0.13093	0.05143	2.54565	

X^2 67.782

DF = 47

P = .025

The Probit estimated coefficients of regression on table 8.4 cannot be interpreted directly. This is because most of the variables used were predominantly dummies, and the coefficient of determination is read as a cumulative density function. Therefore in order to estimate the effect of each variable the respective regression coefficients were adjusted to indicate marginal effects¹.

Estimations based on marginal effects suggested that firms that are within industries with a MNC (MNCCON) concentration had a positive probability of adopting the MNC's strategies. According to the 'contagion hypothesis' and the diffusion theory, *ceteris*

¹ The marginal effects to adopt the MNC strategies was calculated as the height of the normal density at mean values of the independent variables multiplied by their regression coefficient.

paribus, proximity to these MNCs stimuli increases the spillover diffusion. In the present study the positive signs of the estimated probability coefficient was supportive to that hypothesis. The probability of this variable to induce adoption was statistically significant and the magnitude of marginal effect of that variable's unit changes suggests a similar conclusion (60.71%). Closely related to this variable was that of geographical concentration of firms. Geographical concentration is a factor that promotes clustering and networking. However it was not possible to control for locational factors such as the natural resources attraction for firms' agglomeration, and neither could the researcher obtain data on regional product concentration. Therefore the geographical concentration tests could not be done.

The estimated coefficient of probability for green-field (MNCGF) investment was high, negative and not significant. Even the marginal effect of such type of inward FDI was low (20.12%). However with respect to equity investment (FS) the results were statistically significant suggesting a positive influence and its marginal effect was more pronounced (49.84%) than the green-field. This was expected since the external MNC's HQ forms an integral part of the local subsidiary firm. This may explain the technological leadership of local subsidiaries such as Anglo America Corporation and BAT (both tobacco and cigarettes); and Interflorah, (flowers and fresh vegetables). Externalities derived from that MNC's association with local investee firms was expected to give a positive likelihood to the adopting of MNC strategies.

The independent variable with the highest probability of affecting the 'adopt' decision was that of the local firms' access to MNC's foreign technology, (TECACC) i.e. computerised production/processing equipment, and IT and information availability. Both its estimated coefficient of probability and the t-statistic were significant. The marginal effect of any unit increase in the technological access would probably have 26.78 % effect on the decision to adopt such new technology.

With regards to technical skills it was hypothesised that the availability of technically skilled labour to augment expatriate labour would influence the skills development process, towards production efficiency in areas such as TQM, JIT and IT. The results showed a low (0.0442) but statistically significant probability of this factor to influence the 'adopt' decision. Its marginal effect on that decision to adopt suggests a high sensitivity (73.03%).

Overall the results are statistically significant at 5% and goodness of fit (Chi-square) is 67.78 %. This was evidence that we could not simply reject the argument that the MNC is a possible catalyst in the local industry's change process. Therefore, given the MNC's advantages in the local industries, the MNC induced changes would create the 'flying geese' phenomena where local firms would adopt foreign competitive advantage enhancing strategies with the MNC leading the sector or industry's competitiveness drive. For the local firms specific internal changes would take into account the probable impact of foreign equity participation in their organisations, access to knowledge on accessible technological drivers (information, equipment etc.). From these results it could also be argued that a government's promotion of inward FDI as a strategic industrial development policy for building an export capability base in an industry, should take into account the nature of that investment (greenfield, JVs or equity). These results clearly indicate a difference in the probable impact of equity or green-field form of inward FDI.

8.7 Government as a Higher level Variable

Based on the t-statistics tests the results showed that the null hypothesis that the Zimbabwe government does not directly participates in the firms' efforts to create international competitive advantage could not be accepted. The tests based on the hypothesis that;

$$H_0: \Phi \leq 0$$

$$H_1: \Phi > 0,$$

showed the following results, (Table 8.5);

Table 8.5 Government's perceived level of direct involvement in exports activities

	Mean (Φ)	t-tables	Sign. p-value
GRP1	1.5556	3.355	0.000
GRP2	0.8947	2.878	0.002.

This result suggests that although the diamond theory depicts the government as a peripheral factor, firms in Zimbabwe perceive its role as directly and positively assisting their endeavour to achieve greater competitive advantage. Any indifferent government would have been perceived to have $\Phi=0$. It is also noticeable that firms in GRP1 (lower product processors) seemed to receive more government participation than in GRP2. However, from such information the researcher could not conclude that such higher involvement in (GRP1) firms was evidence of the government's leading role in the

export development of these industries. Other reasons could be advanced for that higher involvement.

8.8 Product Differentiation test

The tests for the level of product differentiation on Zimbabwe's exports was based on the hypothesis that these exports are more than natural resources extractions, and are indeed processed to some level of vertical/horizontal differentiation. The first hypothesis tested was as follows:

$$H1_0: CV_z > 0.10$$

$$H1_1: CV_z \leq 0.10.$$

Using the Haufbeur Index (CV) this result show that Zimbabwe's level of differentiation was above the expected minimum of 10% dispersion (table 8 .6). This 10% was arbitrary set as a minimum coefficient of variation that captured unit value variance caused by factors other than production differentiation (i.e. horizontal and vertical).

Table 8.6 *Product differentiation of Exports from Zimbabwe, Kenya and China*

	Coffee	Vegetables	Clothes	Fresh flowers
Zimbabwe	28.19	15.60	16.09	18.67
Kenya	28.70	24.16	14.11	12.78
China	**	***	20.3	****

Source: Compiled by Author, 1999. (International Yearbook of Statistics, 1996, SITC)

Since this was a mere indication of the level of dispersion the critical point was whether such (HI) values were statically different from those of products supplied by competitors from other countries. In that regard the possible difference were tested as follows:

$$H2_0: CV_z - CV_k \neq 0$$

$$H2_1: CV_z - CV_k = 0$$

Four products were used to test the null hypothesis. The results showed that the null hypothesis could not be rejected. The coefficient of variation (CV) measuring the (HI) was different among these products and among the countries.

Table 8.7 *Coefficient of Variation (HI), significance test comparing four products (Zimbabwe Vs Kenya and China)*

$$CV_{\alpha=(.10\%)}=1.363$$

	Coffee	Vegetables.	Clothes	Fresh Flowers
CV_{cal}				
$CV_z \neq CV_k$	0.0464	0.7782	0.1800	0.5354
$CV_z \neq CV_c$	*****	*****	0.3827	*****

Source: Compiled by Author, 1999.

Further statistical tests, (*t-test at 0.10% level*) among the countries and their respective export products showed that the differences in the level of product differentiation were statistically significant at 5% level, (table 8.7). According to the (HI) technique Zimbabwe's exports of flowers and clothes are statistically more differentiation than those of Kenya, albeit the later exports more flowers than Zimbabwe (Horticulture Institute of Zimbabwe, 1997). The reverse is true with respect to differentiation of

vegetable produce. Compared to China Zimbabwe's exports of men's clothes are less differentiated.

Literature emphasises that horizontal differentiation reflects differences in product characteristics but identical technology and that leads to equal prices, (Greenaway, D: 1993; and Kierzkowski, 1985). Vertical differentiation on the other hand relates to the technological differences, that may be found in the level of diverging factor intensities and leading to different prices, (Flame, H. and Helpman, E. 1987). In this particular test it was not feasible to separate vertical from horizontal differentiation attributes. The conclusion to be drawn from such a cross-sectional analysis must therefore be limited by the fact that the (HI) catchall approach used simply provides some evidence of product differentiation and not its nature. With that conclusion it was necessary to bring into perspective the price competitiveness of these exports using the exchange rate factors.

8.9 Exchange Rate 'Passthrough' factors Analysis

The tests analysed the exporters' perceived limitations on complete exchange rate passthrough following currency appreciation. The six factors used to analyse the perceived influence on exchange rate 'passthrough' produced expected results (table 8.8 below).

Table 8.8 Exchange rate 'passthrough' factors by groups

Exchange rate items	Group responses				Total			
	1		2					
	No	Yes	No	Yes	No	%	Yes	%
Government subsidies	19	7	22	5	41	77.4	12	22.6
Product differentiation	10	16	8	19	18	34	35	66
Prevailing market price	11	15	2	25	13	24.5	40	75.5
Intra-industry exports	12	15	11	16	23	43.4	30	56.6
Restrictive Countervailing power of Importer	6	20	7	20	13	24.5	40	75.5
Imported inputs directly related to Exports	14	12	14	13	28	52.8	25	47.2
Totals (mean)	12	14	11	15	23	42.8	30	57.2

The researcher did not assume a linear transmission of such passthrough and literature also indicates that the factors used in this test also explain the reason for the short-run lagged passthrough (Thomas Klitgaard, 1999: Krugman, P. 1987: Goldberg, P. and M. Knetter, 1997). Results showed that close to 57 % firms agreed that these factors influenced their ability to 'passthrough' any exchange rate variations. Most of these firms were GRP2 firms that supplied fragmented markets. A factor analysis showed that prevailing market price and buyer power were most influential factors (75.5%) and the least influential was the government subsidies factor (22.6 %).

The results of the second tests indicated the extent to which each of the above factors affected the various firms' passthrough decisions (table 8.9). Using an interval scale of 0 for not important and 5 very important to indicate the degree of the factor's limiting influence the ranking of these factors was as on table 8.9 below. A low mean value indicates greater opportunity for a higher level of passthrough and vice versa.

8.9 The ranking and perceived extent of influence of endogenous and exogenous factors on the level of Exchange rate 'passthrough'

Exchange rate Passthrough items	Group 1 Mean	Rank	Group 2 Mean
Countervailing power of importer	2.6923	3	3.2222
Product differentiation	4.0192	1	4.2215
Imports as critical inputs to exports	1.9598	5	2.2211
Government subsidies	1.5769	6	1.7778
High percentage of exports are intra-firm sales	2.5385	4	2.7037
Prevailing export market prices	3.3846	2	3.3333

Scale 0 (not important) – 5 (very important)

The results show that both GRP1 and GRP2 firms similarly rank these factors. The factor perceived as most influential was the product's level of differentiation (**mean > 4**). In theory differentiation reduces the product substitutability, and *ceteris paribus*, differentiation and substitutability are elements that are closely associated with high and low exchange rate passthrough respectively.

The second important item was the prevailing market price. Given the fact that Zimbabwe exporters are price takers such a high influence of market price was expected. On the basis of a given export price ceiling the options available to the exporter is to adjust profit margins or product supply. However these two strategies theoretically depend on the importer's market power and unless there are high switching costs for the importer volume adjustments by exporters are deemed risky, (Tyler Biggs, *et al.*, 1996).

The countervailing power of the importers was the factor ranked third. This was expected because most of the exporters have not yet established their own distribution points in the export markets. The author agrees with both Cavusgil (1980) and Caves (1971) that this indication of the dominance of wholesale importers, buying houses and trade houses in the export markets is an impediment to implementation of the supplier's own market mix strategies. These test results show that such power is perceived as a major restriction to the passthrough rate.

The firms also agreed that intra-firm and intra-industry sales rank fourth among the important factors limiting the level of 'passthrough'. The other lower ranking factors are imported inputs material (5), and government subsidies (6). With the possible exception of the differentiation element all factors have a direct influence on the capability of the local firms to passthrough effects of exchange rate movements. Literature on exchange rate response strategies suggests that with high intra-firm trade there is high level of pricing to market and a low degree of 'passthrough'. Therefore in buyer dominated markets that are characterised by a degree of intra-industry trade (56.6%) Zimbabwe exporters have limited opportunity for a high degree of passthrough. Similarly, given the low ranking of the imported inputs factor this may mean a high short-run cost absorption (imposed profit margin adjustments). With a higher ranking for importer countervailing power and foreign market prices it is conceivable that such a profit adjustment would be a better option than increasing the export prices and risk losing any market share.

The result of this cross-sectional analysis indicates conformity with literature on the impact of exchange rate on exports profitability. In the first analysis the emphasis was on whether the Zimbabwean firms perceived these factors as important and limiting to their ability to passthrough impacts of exchange rate variability. In the second part each factor was analysed with respect to its perceived level of inhibition to that passthrough

decision. Overall the test results show that these factors are equally divided between those within the firm's controllable environment and those that are external. Product differentiation, the effect of government subsidies, and input costs factor are items whose influence on the passthrough decision are susceptible to domestic control. The other three, importer-countervailing power, level of intra-industry trade, and market price are outside the firm's controllable environment. It is therefore clear from these results that factors that are associated with exchange rate passthrough have direct effect on the cost/price competitive advantage of those firms that rely on foreign diamond factors and should not be ignored. The effect of such exchange rate passthrough limitation is greater for export competitiveness (profitability) that is based on the DD/MD than is the case with SD model approach, because the former interacts more with foreign diamond elements.

8.10 The Single Nation, Double and Multiple Diamond Hypothesis

The first part of this test dealt with the difference in the explanatory power of the SD and DD/MD frameworks on Zimbabwe. The second part analysed the extent of firms' dependence on the various geographical sources of competitive advantage.

8.10.1 SD model

The analysis in this section tested for the hypothesis that in Zimbabwe's case the DD/MD models explain the competitive advantage of the country's exports more than the SD model. The two hypothesis were stated in Chapter 3 as follows:

- H1. *The 'Diamond' paradigm as stated by M. Porter (1990) fully explains Zimbabwe's export competitiveness in the OECD or S. African markets.*

Using both methods 1 and 2 we could not accept the null hypothesis that the SD model fully explains Zimbabwe's sources of Competitive Advantage. The analysis concentrated on establishing that the value of (δ) was not zero. Statistical analysis shows the following results.

Table 8.10(a). Results of SD models tests

	E	O	$\bar{\delta}$	t-statistic	p-value
GRP1	8.1818	4.9558	3.2260	11.03	0.001
GRP2	8.1818	4.4697	3.7121	10.59	0.000
Mean differences ($\bar{\delta}$)		0.4861		1.03	0.306

The differences between the expected and the observed are statically different and significant at 5% level, suggesting that the SD framework could not be adopted in the current form. The analysis rejected the null hypothesis that the mean difference ($\bar{\delta}$) between Porter ideal and the sample scores observation was zero. Exporting firms whose products enjoyed an emerging and/or continued competitive advantage in the OECD had mean scores that were not equal to the Porter ideal. However the difference between GRP1 and GRP2 firms were not statistically significant suggesting similarity in the failure of the SD model. Comparative statistical analysis also shows that the mean

difference between the ideal and the sample is lower (more competitiveness) for the primary product exporters (GRP1) than the other group, (GRP2).

8.10.2 SD, DD and MD Comparison

The second part analysis compares the SD to the DD and MD alternatives frameworks.

The hypothesis used is,

H2. *The 'Double-Diamond' and 'Multiple-Diamond' models explain Zimbabwe's export competitiveness better than the Single-Diamond model.*

In applying the **DD** model three domestic variables were replaced by four foreign diamond variables. Those included were external demand, foreign rivalry and competition, imported technology and networking with external MNCs. The effect of that switching of variables was that the mean difference was reduced, (i.e. raise the overall impact scores of the reformulated diamond model, (**DD**). Applying the alternative testing approach, (method 2) to include variations in numbers of industries and variables the following results were obtained, (table 8.10b).

Table 8.10(b) Comparison of the SD, DD and MD models

Model		differ.	t-statistic	p-value
SD₁*	DD₁			
1.3014	1.0943	0.2071	3.465	0.013
SD₁	MD₁			
1.3014	1.0487	0.2527	4.396	0.005
DD₁	MD₁			
1.0943	1.0487	0.0456	2.434	0.051
SD₂	DD₂			
1.0563	0.9150	0.1412	3.267	0.014
SD₂	MD₂			
1.0563	1.1009	0.0446	0.605	0.564
DD₂	MD₂			
0.9150	1.1009	0.1859	5.304	0.001

* indicates group.

The test results in table 8.10 (b) show varied statistics. In the GRP1 firms the mean difference for the **SD** model was larger than the **DD** and **MD** formulations. These differences were also statistically significant between the **DD₁** and **MD₁**, with the **MD₁** showing more competitive advantage than the other two formulations.

Results from GPR2 showed that the **DD** formulation indicate a better source of competitive advantage than the **SD** and **MD** models. Whilst these differences were

statistically significant the difference in competitive advantage shown by the **SD**₂ and **MD**₂ were not statistically significant at 5% level.

The results of the comparison of simple correlation between the SD and DD model and exporter groups showed that these are different (table 8.10c). Using test method 1 the **SD** model is associated with the less competitive firms, (i.e. GRP1 **SD** mean 3.81 and **DD** mean 3.46 with correlation 0.753 and 0.934 respectively). For GRP2 **SD** 4.10 and **DD** 3.04, with correlation levels 0.694 and 0.677 respectively.

Table 8.10 (c)

		SD	DD	t-statistics
Mean differences ($\bar{\delta}$)	GRP1	3.81	3.46	3.285
	GRP2	4.10	3.04	4.971
Correlations	GRP1	0.753	0.934	
		(0.001)	(0.021)	
	GRP2	0.694	0.677	
		(0.07)	(0.009)	
*p-value in parenthesis				

In overall terms the **SD** showed a weaker identification of source of competitive advantage compared to the **DD** and **MD** models. The **DD** model showed best results in both the GRP1 and GRP2 firms. Following these results we could not accept the hypothesis that the **SD** model fully explains the sources of Zimbabwe's competitive advantage. The mean difference between the Porter ideal and the observed scores was not equal to zero. For the second hypothesis, the magnitude of the mean difference reduced when we applied the **DD** and **MD** models and therefore we had to accept the null hypothesis that both the DD and MD models were superior. The **DD** model has the most competitive advantage, followed by the **MD**.

8.10.3 Geographical Sources of Competitive Advantage

According to the diamond theory a firm's competitive advantage is a function of the domestic environment in which it operates. The argument for Double or Multiple diamond as sources of conditions for competitive advantage was an alternative that was investigated with the aim to establish the significance of the various geographical sources of competitive advantage. The analysis in this section was therefore confined to identifying and exploring a number of possible geographical sources of competitive advantage and specific characteristics of those advantages. In this section the height of the mean density of each factor indicated the geographical sources of the diamond elements. Results of the analysis are on table 8.11, below.

Under the **resources** facet of the diamond five factors were analysed, and these were innovatory capability, organisational capacity, managerial skills, technological access and marketing skills. Results showed that both groups of exporters perceived their innovation capabilities, organisational and managerial skills as enhanced from within Zimbabwe, ($\bar{\delta} < 3$).

Table 8.11 Geographical sources of Competitive Advantage

{{ $\bar{\delta} > 3$ } = foreign diamond or otherwise; Std Div. in parenthesis)

	All	Group 1	Group 2
Type 1			
<i>Access to resources</i>			
Innovatory capacity	2.72 (1.20)	2.32 (1.11)	3.04 (1.20)
Organisational capacity	2.72 (0.80)	2.32 (0.75)	2.50 (0.84)
Managerial skills	2.72 (0.99)	2.64 (1.08)	2.79 (0.92)
Technological resources	3.26 (1.06)	3.32 (1.07)	3.21 (1.07)
Marketing skills	3.92 (1.00)	3.60 (1.12)	4.21 (0.79)
Type 2			
<i>Consumer demand</i>			
Pressure for product innovations	3.38 (1.29)	3.44 (1.19)	3.32 (1.39)
Upgrading of product quality	4.02 (1.17)	3.80 (1.22)	4.21 (1.10)
Type 3			
<i>Competition/rivalry</i>	3.62 (1.27)	3.28 (1.28)	3.93 (1.21)
Type 4			
<i>Related firms</i>	3.23 (1.01)	3.16 (0.99)	3.29 (1.05)

However with respect to technological factors and export marketing skills the foreign sources of competitive elements were stated as important, ($\bar{\delta} > 3$). These results were similar in both groups and the variations are within 1.5 deviations). In respect of the

other three diamond determinants i.e. **demand, firm rivalry, and relationship** results showed that firms in both groups perceived their foreign components as important in the design of the firms' strategies for international competitive advantage.

Indeed the results indicated that competitive advantage derived from foreign sources (i.e. mean > 3) by group 1 and 2 firms was 83.82 % and 88.24% respectively. The highest mean indicator, (4.21) were in quality and marketing skills, and these were revealed from group 2 firms.

This geographical separation, although simplistic reveals the importance export firms attach to foreign diamond elements. These Zimbabwe results are not different from those of previous studies in New Zealand, Austria, Holland and Denmark. Analysed in conjunction with the tests on the applicability of the SD, DD or MD models these later results confirm what aspects of the diamond elements are domestic or out-sourced from trading partners.

8.11 Summary

In this chapter tests of various hypotheses were conducted. These covered the influence of imported technology and the probability of MNCs inducing local firms to adopt the MNC's international strategies for creating and retaining international competitive advantage. The analysis was divided into three stages. The first section concentrated on the analysis of the characteristics of the sample and their cluster groups. All sample units were separated into two groups on the basis of their level of product process prior to exporting. Both groups were either enjoying emerging or continued international competitive advantage in the OECD or S. Africa export markets.

The second section analysed the role of imported technology and MNC as exogenous additional variables. The results of the technology variable showed that Zimbabwe's

technology index was explained by the availability of foreign equity, (FS); finance for technical investment (FINA); physical technology (TECH); and technical skills (SKILLS) in the country. Regression of export supply capability on these variables showed that skills were significant in explaining the technical capability of the group1 (GRP1) firms whilst finance for technical investment was significant for the group 2 (GRP2) firms. On the basis of these findings we accepted and included imported technology as an exogenous variable for inclusion in the diamond conditions analysis.

The MNC hypothesis test centred on the probability of local firms adopting (spillover effect) the production/processing and international marketing methods that give the local MNCs their international competitive advantage. The hypothesis was that MNCs are catalysts for local firms in the adoption of foreign strategies that would enhance their international competitive advantage. Using the Probit technique the result showed that both groups of firms would adopt the MNC injected *modus operandi*. The results show local firms would adopt such MNC strategies in response to their industry's specific changes. On the strength of these findings the researcher deemed it justifiable to include the MNC as a variable in the diamond tests.

Two more secondary tests were conducted. These related to the establishment of the level of product differentiation done by Zimbabwe; and the exchange rate factors that are associated with the country's cost/price competitiveness in the OECD markets. Results show that Zimbabwe exports are differentiated and the level is not similar to its competitors Kenya and China. The hypothesised exchange rate factors were perceived as adversely affecting the rate of exchange rate passthrough and amongst the most inhibiting were degree of product differentiation, countervailing power of the importers and the prevailing market prices. Respondents were agreed on the ranking of the effect of these factors.

With both imported technology and MNC influence treated as additional variables the tests proceeded to test the comparative power of the SD, DD and MD models to explain the sources of Zimbabwe's competitive advantage in OECD and S. African markets. The two tests used to analyse the three model formulations showed that the DD gave higher impact scores (greater competitive advantage) than the SD the MD models. Test results of the geographical location of sources of competitive advantage showed that Zimbabwe's exporters used foreign diamond elements in addition to the home base factors, and the highest mean values (diamond looping) were with the GRP2 firms.

On the basis of these results the next section (Chapter 9) proceeded to discuss the limitation of diamond paradigm in the context of the Zimbabwe's capacity and capability to create international competitive advantage.

Chapter 9

Discussion of Results and Conclusions

9.1 Introduction

In this chapter the researcher discusses the results of the data analysis. The discussion is divided into two sections; (a) analysis of the research results, and (b) an outline of the policy implications of the results. In compliance with the research's objectives the first section of the discussion covers three areas. The first part discusses the impact of the inclusion of imported technology and MNC factors into the Zimbabwe's diamond framework. This is followed by a discussion of the importance of product differentiation as a by-product of the technological building capability of Zimbabwe' exporters.

The second part focuses on the exposition of the weaknesses of the Porter (1990) single nation diamond theory of sources of international competitive advantage, as interpreted in the context of the results obtained in this study. As argued by Porter (1990), the SD model is a local 'closed' system of determining conditions that inter-link towards the creation and sustenance of a nation's international competitive advantage. It is this 'home' base approach that was analysed in the background of Zimbabwe's export competitive advantage in the OECD markets.

The third part of the discussion centres on the comparative analysis of the explanatory power of the SD, DD and MD models. The analysis focused on identifying if the level of competitive advantage was explained more by local or foreign 'determining conditions', i.e. local or foreign conditions whose mean scores were closer to the Porter 'ideal'. It is

from this comparative analysis of these analytical frameworks that the research results were concluded.

9.2 Results of the Hypothesis tests

The tests for the various hypotheses were discussed in section 7.5.1 to 7.5.4. The results are summarised in sections 9.2.1 to 9.2.5. The outline of the results follow the procedure adopted in the data and statistical analysis, (Chapter 8).

9.2.1 Technology Variable

In order to explain the imported technology factor the initial analysis tested for the relationship between the country's technology capability index and firm or industry specific technology factor. The objective was to determine whether factors that are associated with the country's technology capability index (TECHINEX: *Table 8.1*) were significant in explaining the technological supply capability of the firms. According to the estimated model of Zimbabwe's technology index foreign investment (FINA), local skills (Skills) and physical imported technology (TECHIMP) were significant variables and they explained 33% of Zimbabwe's technology index, at 0.01 significance level.

$$\text{TECINDEX} = 21.055 + 0.394\text{FINA} + 0.333\text{SKILLS} + 1.241\text{TECHIMP}$$

(5.301) (3.277) (2.059) (2.071)

Results showed that out of the original nine factors only this estimated model of three factors was the best fit ($F=6.57$; Sign. 0.0001),

The link between the technology index of Zimbabwe and the groups' technology factor requirements was important because it provides a basis on which the specific

industry's existing technology background and potential for technology capability building could be assessed. Consequently the above three factors were further tested for their association or explanation of the variation in each group's export of technologically upgraded products. The hypothesis was:

Hypothesis: *Zimbabwe's export supply capability is positively influenced by the availability in the local diamond of imported technology.*

The result showed that each group's capability to supply technologically differentiated or upgraded products is not explained by the same or similar factors. Group 1 firms indicate that technical skills were a significant factor in their export supply capability than finance and physical capital. In GRP 2 finance was the key factor. However in both cases the technology supply factor had a coefficient of determination (R^2) above 35% and was deemed acceptable for a cross-section analysis, (table 8.2).

The fact that three imported technological dimensions finance, technical skills and physical equipment were identified in the country's technology index and also within the two subgroups was interpreted as evidence that these technology components are necessary foreign diamond factors that could enhance the current local technological capabilities. According to the estimated technology model these technology factors would improve the country's export intensity (technology based). However in the single diamond framework Zimbabwe could not build that technology capability because the country's level of R & D innovations is extremely low and that was confirmed by a statistically insignificant R & D factor result. Therefore given that the possibility of local technological innovations is very limited it is most reasonable to expect Zimbabwe to import appropriate technology, and this strategy has worked in NICs and elsewhere.

According to Porter's (1990) description of factors that drive a nation's export growth and also provide sustenance for future international competitive advantage Zimbabwe is among nations that are mainly driven by natural resources. The labour and natural resources intensive manufacturing that is associated with the revealed emerging comparative advantage is evidence of such resources based competitive advantage. However by importing and adding to existing low technology levels the country can move into technology driven competitive advantage (section 9.2.2 and 9.2.5 below). What is however fundamental is that such imported technology should be accessible in the form that is specific to each industry group or firms' requirements.

9.2.2 MNCs Variable

The hypothesis was that an introduction of inward FDI by Developed Country MNCs into Zimbabwe's exporting industries has a positive effect on the probability of local firms to adopt competitiveness enhancing strategies similar to those that give the MNCs their international competitive edge. The results of the Probit analysis showed that the local firms in Zimbabwe would adopt such strategies. The investing MNCs' elements that were significant and expected to have a catalytic effect on the local firms' adopt process were; local firms' access to MNC's technology (TECACC), local availability of technically skilled labour (TSKILLS), MNC concentration (MNCCON), and foreign equity holding (FS, ownership switching investments). The only factor that was negative and statistically not very significant was the greenfield investments, (MNCGF).

Table 9.1 MNC's Marginal Effects

	Coeffi.	t-statistic	marginal effect
MNCGF	-0.51603	-1.83778	0.2012
TECACC	0.58221	2.11189	0.2678
TSKILLS	0.04429	2.26806	0.7303
MNCCON	0.02475	2.15864	0.6071
FS	0.03704	2.09723	0.4984
Constant	0.13093	2.5456	
X^2	67.782		
DF =	47		
P =	.025		
Source: Compiled by author: 1999			

Four factors, technology accessibility, MNC concentration, skills and foreign equity investment had positive signs as was expected and their marginal effect on the decision of the local firms to adopt such MNC strategies were substantial (above 26%). This was interpreted as the necessary conditions that would make such MNC presence influence the local industry or sector change processes.

The skills factor showed positive effects in influencing the (1) adopt decision. However, it must be mentioned that literature on technical skills-spillover gives mixed conclusions. Blomstrom and Pearson (1983) found substantial evidence of diffusion of technical skills between MNCs and local firms and concluded that expatriate skills transfer seemed to occur. On another study Gershenberg (1987) found minor evidence of such technology skills transfer. In the case of Zimbabwe's exporters the results suggest that such a transfer of skills was possible given that the country has passed an

LDC technical skills threshold. The marginal effect for the skills factor was very high (73.03%) suggesting greater sensitivity of the firms to the presence or absence of this factor.

Proponents of the diffusion theory seem to base such skills transfer on the MNC's inter-firm knowledge sharing (internalisation) within the affiliates (SBUs) or through subcontracting, (*World Investment Report, 1998*). Furthermore literature also suggest that backward vertical linkages that permitted the training of local people through the MNC's involvement were more prominent in efficiency seeking MNC investments as opposed to market and resources seeking MNCs. In the case of Zimbabwe these MNCs are resources seeking, i.e. cheap labour or natural resources, (Riddel, R. 1996). Examples of such MNCs include *Anglo-America Corporation*, agriculture and mining; *BAT*, processed tobacco; *Interfresh*, tropical temperatures for flower, fresh vegetables and fruit growing etc).

With regards to the stand-alone greenfield investment (MNCGR) their effect was negative. This was interpreted as similar to inward FDI of MNCs that operate in exclusive export processing zones (or Export Exclusion Zones) and 74% of exporting firms indicated that their relationships as suppliers or sub-contractors to such MNCs was non-existent or at best commercial, (Ndlela, D. 1995). Most of the MNCs in these export-processing zones are assemble type firms and as Helleiner (1973:a) argued these MNCs have limited impact on the local firms. Therefore this probable absence of such spillover effect or diffusion was interpreted as an indication of lack of co-operative relationships.

Compared to the greenfield inward FDI equity investment (FS) indicated positive marginal effect (49.84%). This was expected and was interpreted as an influence of the foreign equity holders in the strategic changes within the organisations. According to

literature (Rugman, A. and D'Cruz, 1992; Dunning, J. 1996) inward FDI that include ownership transfer, create greater propensity for internal reengineering that embodies foreign ideas on competition and investment. As theorised in the eclectic paradigm Dunning (*ibid.*) makes this investment through FS a fundamental step towards internalisation and ownership of the MNC's core competencies. However given the statutory limitations imposed by Zimbabwe on the level of foreign equity holding in local firms (not more than 30% in strategic industries) the extent of influence by such FS form of investment is limited. It is therefore presumed that with a much liberal inward FDI policy this particular factor would indeed achieve the hypothesised change effect.

The results also showed that the marginal effect of increased concentration of MNCs in Zimbabwean industries was positive, high (60.71%) and significant in inducing a change in the industry. In theory an increased concentration of MNCs in a geographical area or their specialisation would coercively intensify the competition within the local industry. Compared to domestic competition culture, market structures and production factor intensity (labour intensive), such increased MNC concentration in Zimbabwe was perceived as a highly influential factor. However according to literature on the effect of MNC investments in LDCs such increased MNC concentration may have negative implications for weak firms in the local industries. This comes in the way of a 'crowding out' effect, leaving the MNCs with total industry or market control (World Investment report, 1995). Therefore although the result of this analysis suggest that such MNC concentration would induce the change it is presumed that such concentration has not reached the optimum level, and would still influence the decision to 'adopt' the changes.

Access to technology that is similar to what is used in the MNCs' production/processing showed a positive and statistically significant result, and this was as expected. With a probable marginal effect of 26.8% this factor is important. The key to internal and firm

specific reengineering was expected to be dependent on the availability of the relevant industry technology. The new technology that is introduced was hypothesised to trigger a reengineering process in the production/processing structures. However as was separately shown by the technology factor tests the 'adopt' decision is contingent upon the firms' access to appropriate skills and finance. In the background of very insignificant 'own' R & D in Zimbabwe such technology information and capital access would only serve as the first phase trigger of the change process. The continuous changes that would put the firm in concert with the specific industry competition would have to be spurred by access to developments in technology in DCs and own dynamic R & D, that goes beyond product adaptations, (Hobday, 1994).

The change process as discussed in Chapter 4 (section 6) present internal reengineering options for local firms and these include imitation of MNC organisational, managerial and performance standards, implementation of technology intensive production/processing and possible vertical/horizontal integrations. In overall terms the probability of the firms to adopt was explained by the MNC elements (67.78% at 5% significance level). It was on the basis of this result that the hypothesised role of the MNCs in Zimbabwe's national diamond was deemed a necessary addition to the Porter diamond conditions. This does not by implication suggest that such MNCs are a deterministic condition of Zimbabwe's competitive advantage, but rather that they play a significant role in the exports of many local and global industries (Dunning, J. 1996).

9.2.3 The Government Factor results

The analysis was testing for the theory that the government's activities in a national diamond are best limited to 'fashioning' of a conducive business environment within which firms can create and sustain their international competitive advantage. In this study the test included the foreign activities of the government and in particular its

direct influence on the establishments of beachhead linkages in the foreign markets. Government roles that include negotiating for lower tariffs, local firms' access to GSPs facilities etc, and national affiliations to trade agreements such as the Lome Convention (IV), all make it possible for local firms to retain competitive advantage beyond the domestic frontier.

The results of this test showed that the government of Zimbabwe was directly and positively participating in the efforts of the various firms to achieve international competitive advantage. The government was directly participating and is an integral factor in the exporting firms' current competitive advantage in developed country markets. In light of the new international trade theory that advocates for government interventions through non-discriminatory strategic trade policy interventions, this positive result was more than that emphasised in the SD model. The conventional trade theory on which the SD model projects the role of the government interventions is therefore not applying in the Zimbabwe case.

However the extent to which government can interfere with the rest of the diamond system depends on a number of factors. In Zimbabwe factors such as provision of foreign market information, a trade policy that promotes inward FDI for joint venture programmes in exporting firms, and provision of export subsidies, are important issues that require going beyond the limits of 'fashioning' the local business environment.

9.2.4 Product Differentiation, and Exchange rate Passthrough Factors Effect

The test results were divided into two parts; product differentiation and exchange rate factors that affect the degree of exchange rate passthrough. The analysis of product differentiation was focused on the degree of differentiation within each product

category; and the exchange rate factor was focused on the six factors that were hypothesised as impediments to a full exchange rate passthrough.

9.2.4.1 Product differentiation

The results show that Zimbabwe exports were differentiated above a basic minimum distinctiveness (coefficient of variation) of 10% in all products analysed. Although the test used could not distinguish whether this was vertical or horizontal product differentiation, it served to indicate that some degree of differentiation exists within each product category.

Comparative analysis based on unit values that were adjusted for exchange rate differences, (PPP), show that Zimbabwe's degree of product differentiation was different to that of Kenya (Coffee, Flowers and Fresh vegetables), and China (men's clothes). However the products used in the analysis are natural resources based, and therefore it cannot be proved that this level of product differentiation is not a reflection of the differences in natural comparative advantage.

In the context of the classical trade theory such comparative advantage would be one of the main reasons why these exports enter or find a market in the OECD countries. However, although in the SD framework of analysis the role of natural resources differences is not ignored such differences alone do not provide opportunities for long-term international competitive advantage. Success in the global markets lies in enhanced and focused product differentiation: production based (*cost efficiency and profitability*) or market oriented (*higher customer perceived value*). Therefore the level of Zimbabwe's product differentiation would be a significant factor if it originates from any of these two dimensions.

9.2.4.2 Exchange Rate Factors

For this specific analysis international competitive advantage was defined in terms of exports' profitability and/or market share retention in the background of an appreciating local (Z\$) currency. From the supplier's side maintaining export market profitability and/or market share, *ceteris paribus*, is a function of the level of exchange rate passthrough. In the case of Zimbabwe's exports the level of that exchange rate passthrough was affected by a number of factors.

Test results showed that Zimbabwe export firms depend on foreign affiliates or buying houses in the OECD markets and these have substantial influence on the end-market distribution and logistics, (Teitel, S. and Francisco E. Thoumi: 1994). This importer power was perceived to be very dominating (**mean >2.5**), and the results also show that this buyer influence is countervailing power (demand, DM3) that is perceived to militate against any attempts by exporter firms to passthrough a larger proportion of the exchange rate changes. In that background of buyer dominated markets it is concluded that there is a limitation on the local firms to transmit cost competitive advantage across international markets, without resorting to either export price or volume adjustments. However export supply inconsistency or volatility in volumes has been decried as amongst the supply constraints that make LDCs less reliable suppliers, (Biggs T. *et al.*, 1996). Consequently some Zimbabwean exporter firms adjust foreign prices in order to retain export market share. Evidence also indicates that some firms seek to guarantee such market share through contracted intra-firm and inter-firm sales (strategic *commercial* vertical networks) with downstream firms in DCs.

According to the results such sales are also a factor that adversely affects the exporter's ability to maintain profitability or foreign market share following such exchange rate movements. Literature on the impact of intra-industry sales suggests

that there is greater propensity for exporters to 'price to markets' and such a pricing strategy is associated with lower levels of exchange rate passthrough, (Krugman, P., 1987). Therefore with many firms indicating large inter-firm and intra-industry sales it was expected that such sales would inhibit a higher exchange rate passthrough. This is because in intra-industry and inter-firm trade local and foreign prices are linked, albeit agencies independently set these in terms of the price elasticity of their markets, (Thomas Klitgaard, 1999; Hamid Faruquee, 1995). The results of this study indicate that for a majority of exporters a strategic trade-off between lower profit margins and constant export supplies is a function of the level of that shared effects of the exchange rate movements. Consequently the local level of competitive advantage (profitability) *per se* cannot be achieved across international borders without circumventing such intra-firm or intra-industry sales constrains on exchange rate passthrough.

Results on the analysis of the impact of government subsidies for exchange rate adjustment (export tax relief) showed that this factor was not very influential. Such direct government involvement was not regarded important in the export price adjustment decision. The increased cost of imported raw material was also ranked low (5), albeit still considered integral to export price adjustment.

In summary, it is pertinent to analyse the competitive advantage derived from the SD framework of analysis in the context of statistically significant product differentiation and the perceived low exchange rate passthrough constrains. The SD model assumes that local competitiveness (differentiation or cost leadership) built from within the local system gets transmitted across international boundaries. Interpreted in the background of importer countervailing power, restrictive foreign market prices, and high levels of intra-industry sales and their resultant low exchange rate passthrough it is suggestive that local firms' competitive advantage within Zimbabwe cannot be assumed to smoothly transfer into the foreign market. Secondly, given the DD proposition and that

Zimbabwe relies on foreign advanced factors, imported technology factors and end-market export distributors it can be concluded that the ability to passthrough exchange rates variations is also a key influence in the creation of international or transmission of local competitive advantage.

9.2.5 SD, DD and MD models hypotheses

This was the main objective of the study and was specifically intended to establish if the diamond framework as defined in the Competitive Advantage of Nations theory can be applied in the analysis of Zimbabwe's sources of competitive advantage, with respect to exports that are destined to the OECD and S. African markets. It was also intended to indicate those areas in which Zimbabwe was dependent on foreign determinants of international competitive advantage.

The two hypotheses for this analysis were;

H1. *The 'Diamond' paradigm theory fully explains Zimbabwe's export competitive advantage in the OECD or S. African markets.*

H2. *The 'Double-Diamond' and 'Multiple-Diamond' models explain Zimbabwe's export competitive advantage better than the Single-Diamond model.*

9.2.5.1 SD model (H1)

The test for the H1 hypothesis was:

$$H_0: \bar{\delta} = 0$$

$$H_1: \bar{\delta} \neq 0$$

The results show a rejection of the null hypothesis that the existing competitive advantage of Zimbabwe's exports could be fully explained by the domestic conditions as defined by the SD model. The mean difference ($\bar{\delta}$) was not equal to zero and the t-statistic was significant at 5% level. Evidence from the study show that the major differences are in the absence of related and support industries (RS), weak competition within the local industries (FSSR1), limited advanced factors (AF), weak local demand sophistication (DM1) and its growth (DM2). The minimum and maximum difference levels also point to the same conclusion and the pattern is similar in both GRP1 and GRP2 firms.

Revealed Limitations of the SD Variables

Table 9.2(a)

Group 1

Variable	Mean* (difference = $\bar{(\delta)}$)	Std. Dev.	Minimum score	Maximum score
GVT	0.75	1.54	0.00	2.00
NF	1.83	1.27	0.00	3.00
EMO	4.50	1.88	2.00	6.00
RS	5.08	2.54	2.00	9.00
DM1	5.17	1.95	3.00	9.00
DM2	5.25	2.01	1.00	8.00
AF	5.42	1.83	3.00	8.00
FSSR1	5.92	2.35	2.00	9.00

* The higher the mean value the less competitive the factor i.e. difference from Porter's ideal.

Table 9.2 (b)

<i>Group 2</i>				
Variable	Mean	Std Dev	Minimum score	Maximum score
NF	1.33	1.23	0.00	3.00
GVT	1.33	1.67	0.00	2.00
EMO	4.17	1.47	1.00	6.00
FSSR1	4.67	2.02	1.00	8.00
RS	4.67	1.56	3.00	8.00
DM2	5.08	1.62	3.00	8.00
DM1	5.08	1.68	3.00	9.00
AF	7.33	1.44	5.00	9.00

Source: compiled by author: 1999

These results were further confirmed by the test for geographical sources method (table 9.3). This test measured the extent to which the exporters relied on external diamond elements for the enhancement of their international export competitiveness (*0= all domestic; 5= all foreign*). Taking each diamond facet at a time, results on the resources factor showed that marketing skills and technological resources were the highest foreign sourced elements (**mean > 3**). The results also showed that resources such as innovatory capacity, organisational capacity and managerial skills necessary for the export market competition were being developed from within the local diamond determinants.

The analysis of the demand facet was on two DC market competitiveness factors. These were pressures for new product innovations and quality discernment by consumers. The results showed an inclination towards the use of foreign diamond

elements, and this was interpreted as evidence of the importance of such external diamonds. Similarly results of both the competition factor and roles of the related and support industries also indicated that foreign demand was more influential to the firms' formulation of international markets competition strategies, than was present in the local industries.

Table 9.3 Geographical sources of Competitive Advantage

Access to Resources (NF/AF)	Mean	Std. Dev.
Innovatory capacity	2.72	(1.2)
Managerial skills	2.72	(0.81)
Organisational Capacity	2.72	(0.98)
Technological Resources	3.26	(1.06)
Marketing skills	3.92	(1.00)
Consumer Demand (DM1/DM3)		
Pressure for new product innovations	3.38	(1.29)
Upgrades of product quality	4.02	(1.17)
Competition/Rivalry (FSSR 1&2)	3.62	(1.27)
Related firms (RS)	3.23	(1.01)

Source: Compiled by author 1999.

This geographical sources analysis leads to one major conclusion. It reveals the inherent importance, at firm level, of the internal and external diamond factors. It also reveals the same argument projected by Rugman (1993) in which he asserts that firms

in one country (Canada) were directly benefiting from the better economic factors of the nation's developed trading partner (USA). For Zimbabwe such foreign linkages transcend all the diamond determining conditions. The above results clearly suggest that Zimbabwe's exporters seek and follow foreign demand standards. Therefore in order to achieve or sustain their international competitive advantage they design and implement strategies in the background of foreign market competition intensity and rivalry. This is then augmented by existence of competitive forward supply chains that are in foreign networks. All these factors are evidence that point to the fact that the SD model is not the best framework of analysing Zimbabwe's international competitive advantage.

9.2.5.2 SD, DD and MD Comparison (H2)

The results on the comparative analysis of the SD and DD/MD models were conducted in two parts. The first part (A) compared the SD to the DD/MD models and part (B) compared the DD and MD formulations. Both cases were tested by the following hypothesis:

H2. *The 'Double-Diamond' and 'Multiple-Diamond' models explain Zimbabwe's export competitive advantage better than the Single-Diamond model.*

$$(A) \quad H_0: \bar{\delta}_{dd/md} < \bar{\delta}_{sd}$$

$$H_1: \bar{\delta}_{dd/md} \geq \bar{\delta}_{sd}$$

$$(B) \quad H_0: \bar{\delta}_{dd} = \bar{\delta}_{md}$$

$$H_1: \bar{\delta}_{dd} \neq \bar{\delta}_{md}$$

With respect to the first part (A) the test result indicated that the null hypothesis had to be accepted, i.e. the DD and MD models frameworks show a better source of the country's international competitive advantage than the SD. Both methods used in the test indicated that the DD and MD models had lower mean difference than the SD model, and the difference was statistically significant at 5% level. This differences (δ) was further reduced when foreign diamond variables such as imported technology and MNCs are added to the number of variables in the SD model.

Comparing the DD and MD model the second part (B) results indicated that the null hypothesis had to be rejected. The results show that the DD was superior to the MD and different, for both GRP1 (5% significant) and GRP2 (5% significant) firms. Conditions provided by the diamonds of both S. Africa and other OECD countries' were used in the application of the MD model.

Based on these results it is evident that the Single Nation Diamond (SD) had limited exposition of the sources of Zimbabwe's international competitive advantage. Both the geographical source analysis and results from H1 and H2 hypotheses suggest the superiority of the DD model. These results also suggest that the degree to which the external factors are utilised is contingent upon the firm's requirement for specific input variables.

Evidence from these parametric tests show that although the local diamond is relevant in terms of providing the capacity base the actual capability to effectively compete in the foreign markets required access to or an injection of key factors from outside Zimbabwe. Access to S. African diamond elements such as imported technology and MNC investments showed an improved identification of the sources of existing level of international competitive advantage. The SD model although shedding insight into national sources of competitive advantage, in the case of Zimbabwe the home base

argument was inadequate as a premise on which to identify or explain the sources of that competitive advantage.

9.3 Conclusion

The results of these tests raised three issues with regards to the diamond theory. Firstly notwithstanding the subjectivity involved in the scoring of the variables, if Zimbabwe's domestic diamond had the technological factors similar to those provided by imported technology the SD model could have provided an improved explanation of the sources of the conditions that have contributed to Zimbabwe's competitive advantage. Results showed that imported technological factors would create an opportunity for a Hobday (1984) model of technology capability building. However in order to trigger or set into motion local R & D innovations that are relevant in the building of technological capabilities of various sectors a specific technological policy outline is required. Both the geographical resources analysis and technology factor elements analysis indicated that these capability building factors are sought in specific forms. Whether firms seek technology in the form of product upgrading 'hardware' or export marketing skills is contingent upon each sector or firms' requirements. Some of these foreign constituents could be provided from externalities that originate from networking with locally based MNCs.

Although the MNC results were based on probable effects of MNC inward FDI the hypothesised results were positive and expected. This was admissible evidence for the support of the theory that MNCs, as in East Asia and other geographical areas, can be positively associated with improvements in the competitive advantage of national diamonds. The nature and form of inward FDI elements that boost the change process in each industry would be dependent on each industry's growth pattern: mergers or

acquisition, regional agglomeration of MNCs in specific industries, and in strategic geographical areas, and so on.

Statistical evidence and inferences drawn from the tests suggest that in the absence of these factors within Zimbabwe the SD model could not fully explain the national competitive advantage of the country. Contrary to the SD model the DD and MD formulations reconfigure the domestic focus of the SD in explaining the sources of firm/industry competitive advantage, and by bringing exogenous and internal factors together these frameworks provided a more embracing analysis than the SD model. Therefore from these premises the researcher concluded that it is possible that the SD model and its theory's applicability depend on the particularity of each country's economic circumstances. That contingency makes intervention into the SD's closed system' framework an admissible proposition.

More on the criticism raised against the SD's choice of variables, the results from this research raise a question on the bundling together of technology and other factors at the expense of precision. By treating technology in its various forms the researcher was able to identify specific technological factors that were critical in each group of exporters. That approach allows management and policy makers to design 'diamond' development policies that are actionable and measurable. That makes it possible for management to comprehend the inadequacy of specific technological factors in the local diamond and what magnitude of outsourcing would create or sustain international competitive advantage.

The second issue revealed in this research is that in the case of Zimbabwe we cannot however totally dismiss the SD 'diamond' framework particularly in those sectors where the country has natural competitive advantage. Zimbabwe is endowed with natural resources. Consequently there is a need for a policy framework that seeks to promote

the transformation of natural competitive advantage in the production of commodities towards local processing of exportable final consumer products. The increasing exports of final consumer products such as fresh-food produce, which are exported into the EU retail markets, is just but one of such development patterns. The exposed limitations in the SD model only serve to point to the fact that in countries that compete in global markets the competitive advantage is no longer defined in terms of the country's endowment of 'factors of production', nor simply a consequence of 'own' technological innovations. The increased permeability of corporate and national borders as advocated in the new international trade theory demands an open and flexible diamond system that promotes the transmutation (for Zimbabwe from labour to technology intensive manufacturing) of some of the conditions that are identified as potential determinants of international competitive advantage. This 'open' framework, like the amoeba that configures towards a strategic fit, could indeed be a pentagon or any other form: and not necessarily a diamond.

A third conclusion deduced from the study results was that exporters seemed to face daunting challenges with respect to transmitting their domestic competitive advantage into the international markets. One of the key arguments of the diamond paradigm is that the 'flagship' firms in the national markets also tends to be successful in the foreign markets. This transmitting of local competitive advantage is revealed through competitively lower price and product differentiation in the export markets. Zimbabwe exports show a degree of product differentiation. Results proved that exports were differentiated within each product category (SITC). However country-to-country comparisons showed that Zimbabwe's level of product differentiation was not high in all the few products that were used for analysis. Kenya and China who also have natural resource intensive exports were better in fresh vegetables and men's clothes respectively. Therefore unless Zimbabwe's product differentiation lies in technological

capabilities (low unit costs) and better 'customer perceived value' the country's present strength in natural resources comparative advantage will be eroded.

Therefore three key issues critical to the applicability of the SD model were analysed and concluded in this research. These were the exposition of the weaknesses of the 'Single Diamond' framework; the compelling inclusion of the MNC variable in the analysis of the determining variables, and the need of a diagnostic separation of the technology factors from the determinacy of the other determining variables.

9.4 Policy Implications of the Results

The study although limited to a small African country produced results that were similar to those of small-industrialised European countries, and in either case the SD model was limited with respect to revealing key sources of the country's international competitive advantage. In the present case the characteristic of such a small nation as represented by Zimbabwe are;

- (a) an internal market of about 10.5 million people that are exposed to DC product qualities;
- (b) a low-middle income economy (GNP below US\$1000);
- (c) a government that can implement strategic trade policies whose outward oriented trade regimes promote export competitiveness;
- (d) an emerging and dynamic private sector that has the potential to absorb imported technology;
- (e) a comparative advantage in natural resources;
- (f) attractive inward FDI policies that are supported by an 'open' trade policy; and
- (g) has some form of relationships with regional economic integrations such as SADC, and EU.

In the context of regional or trade cooperation it is suggested in various studies that small nations that trade or co-exist within the same economic integrations with DCs tend to absorb the DC spillover, (Guntlach and Nunnemkemp, 1996; and Braunerrheimjelm and Svensson, 1996) and the diffusion path of such DC spillovers emerges as a transformation of old domestically produced goods into new FDI-related products (Krugman, 1979). A key factor in that development pattern is the role played by local industry-specific 'diamond' characteristics in determining the incidence of productivity spillovers.

Although in the context of the SD model there is no suggestion for a policy of restrictive networking between firms in different nations the major source of contention is its (SD) apparent lack of emphases on the direct advantages, which such spillover relationships give to the small or less developed nations. The significance of foreign sources of alternative drivers for export share growth (international competitive advantage) is thus understated. In the case of Zimbabwe that weakness was apparent and the researcher agrees with Kenichi Ohmae's (1995, pp62) comment that in export business,

"Growth depends on inviting the global economy in, not keeping it out. It depends on creating and leveraging value-added economic linkages that ignore political borders, not ruthlessly stamping them out in the name of national interest".

It is in this reality of global competitiveness that the DD framework is seen to offer a more comprehensive tool of analysis than the SD model. In the present research one of the reasons for its (DD) superiority is that whilst the SD model would seek to attribute Zimbabwe's competitive advantage to the country's abundance of natural resources, the DD framework encompass other determining conditions. These include such internal natural resources and their resultant synergy with imported advanced

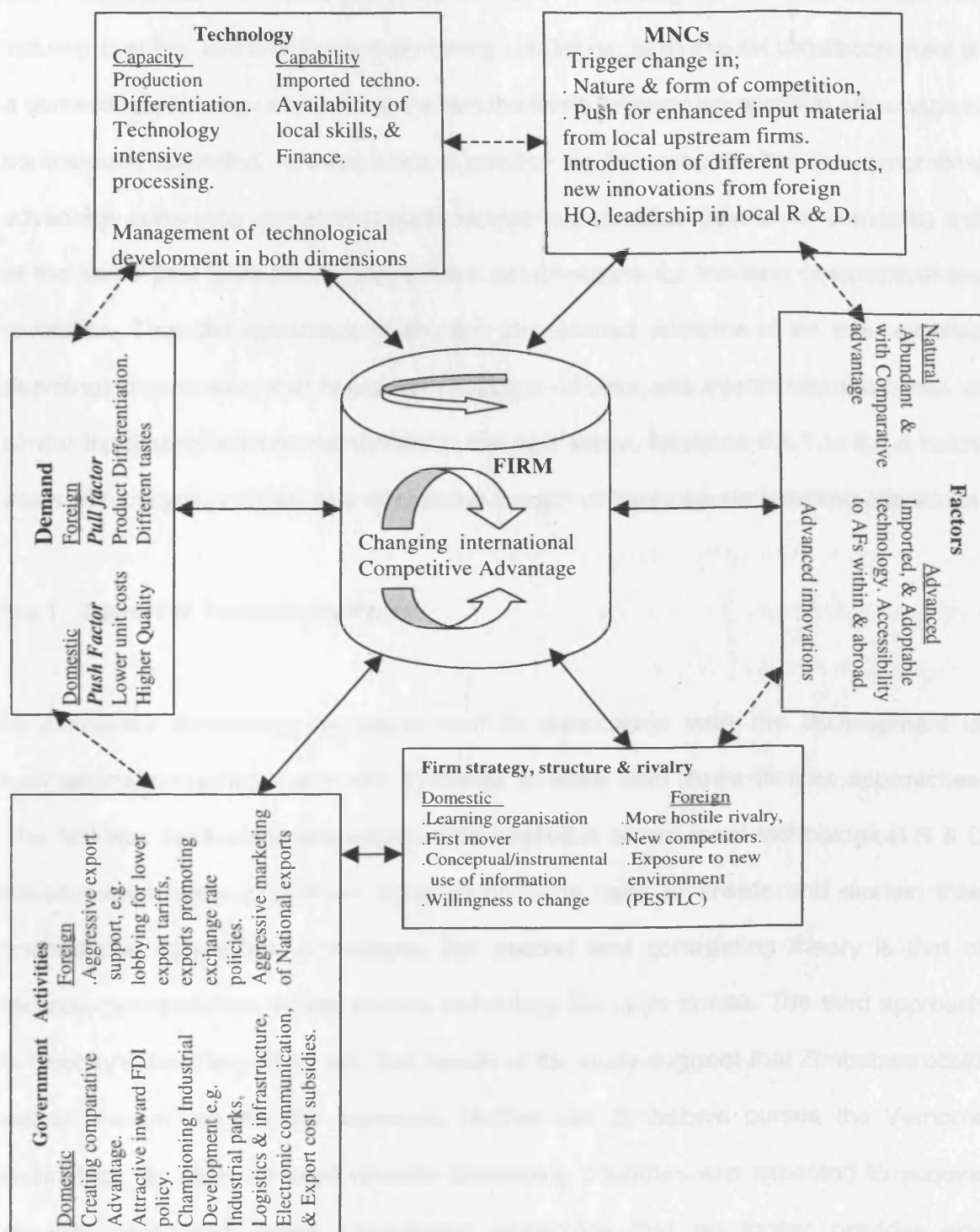
factors; influence of more sophisticated foreign demand; and the impact of value-added content of inward FDI-related production and productivity that is associated with MNCs externalities.

Therefore given the results of this study the researcher joins those who subscribe to the view that the SD model needs to be refocused. Its (SD) applicability should be subjected to a macro level SWOT analysis wherein the four conditions are evaluated in terms of internal sources of competitive strength for both foreign and domestic opportunities. Any revealed weaknesses on any facets of the evaluated SD framework would serve as the basis upon which the DD or MD frameworks are configured. This must include a determination of how the competitive advantage of local products could be transmitted to the international market: either evolutionary as in Vernon's product life cycle sense or revolutionary through industry specific strategic trade policies.

The researcher's views take abode the realisation that in seeking the reality of global competition the Zimbabwe case suggests that two exogenous factors, imported technology and MNCs, were variables that could not be treated within the local 'factor' condition. In similar arguments Dunning, J. (1993; 1996); Rajneesh Narula (1993); and Kenichi Ohmae, (1995), posit that such technology factors are readily available in the industrialised economies, and their mobility has contributed to the end of nation state diamond advantages. The researcher agrees with Kenichi's argument that this theory of a 'self-reliant' SD framework is an obsolete theory that puts modern policy makers into an operational gridlock, and in particular when political borders are being replaced by the emergence of regionally integrated economies. Therefore for Zimbabwe and possibly similar countries the researcher presents policy outlines that are based on an 'open system' approach to analysing the sources of a country's competitive advantage. Figure 9.1 below is an illustration of the DD determining conditions as revealed in the present study and from which originating policy implications are discussed.

Fig. 9.1

Domestic and Foreign Elements that make the Zimbabwe Double-Diamond



(Foreign and Local factors that have been revealed as contributing to the creation or sustaining of Zimbabwe's Export Competitive Advantage in OECD and S. Africa markets)

Source: Compiled by Author, 1999.

Like in the Porter SD model the fundamental assumption is that the above conditions of the country's DD framework have worked as a reinforcing system and the 'firm' or industry is at the centre of these determining conditions. In all the six conditions there is a domestic and foreign element from which the firm's evolving competitive advantage is continuously upgraded. At every contact position the firm reaches into the competitive advantage enhancing elements of each determining condition (foreign or domestic) and at the same time deposit into that system specifications for the next competitiveness revolution. Thus the dynamism of the firm is projected in terms of an ever evolving (learning) organisation that feeds from these conditions and injects into them new or similar input specifications demanded in the next stage. Sections 9.4.1 to 9.4.6 below deals with the policy issues that are related to each of these six determining conditions.

9.4.1 Imported Technology Factor

In Zimbabwe technology ownership and its association with the development of international competitiveness was theorised to arise from three distinct approaches. The first was the internal innovations (SD) approach where local technological R & D advancement forms a platform upon which firms seek to create and sustain their international competitive advantage. The second and contrasting theory is that of technology importation, in the Vernon technology life cycle sense. The third approach is Hobday's direct import model. The results of the study suggest that Zimbabwe could not at present use the SD approach. Neither can Zimbabwe pursue the Vernon's technology life cycle concept wherein developing countries are expected to acquire cheaper, mature or nearly obsolescent technology that no longer provides any competitive edge in OECD countries. Results presented in this study supports the Hobday (1984) model of technology capability building and a Schumpeterian conceptualisation of technological changes.

The search and basis for competitive advantage improvements was revealed to be in new technology acquisition; an emphasis on learning and the accumulation of technological skills; and availability of competitive financial resources to support such technological investments. These three factors provide a basis for improving local exporters' capacity and capability to;

- (a) consistently produce/process internationally competitive exports at lower unit cost;
- (b) create a greater technological base for product differentiation; and
- (c) create opportunities for the re-engineering of the existing activities from labour intensive into technology intensive export compositions.

In the background of the low R & D activities it is arguable that the present policy (SD approach), as practiced by the country's major international trade agencies (Zimbabwe Investment Centre; *inward FDI* and Zimtrade; *export promotion*) has inherent weaknesses. The researcher argues that their approach excludes enforced institutional networking between the public and private sector in the area of technology R & D development. Neither do the efforts of the local Quality assurance agency to focus on ISO 9000 quality management issues go beyond the agency's monitoring of firms' voluntary quality tests. Although the research results indicate that firms are given export-marketing support, other surveys (World Bank, RPED 1995,1998) indicate that SMEs are still not being supported by cheaper industrial finance and vital technical extension services.

An incentive policy framework that promotes technology capability building and involves the direct joint private and public sector strategic networking is imperative. Such a technology development policy has to embrace three dimensions; (1) an incentive framework that originates from the product demand pressure and conditions in the DC markets; (2) supply factors which are dependent and supported by local

skills, finance and technology information; and (3) the organisational capabilities of the various sectors.

This argument for intensified building of industrial technological institutions that can foster increased private sector R & D investments is presented on an assumption that Zimbabwe has access to and knowledge of technology developments in developed countries. This policy guideline also recognises that the OECD markets are largely technology dominated. Zimbabwe should therefore seek to import each sector's relevant technology, as this would positively contribute to a more rapid transformation of its exports, from natural resources based (agricultural) comparative advantage to technology based (manufacturing) competitive advantage. This will achieve a broader sector-by-sector capability building and perhaps development of the technological capacity to manufacture vertically differentiated export products for the present and future DC markets. That process includes importation of appropriate technology; re-engineering of local processes; and innovating within the enhanced capability and capacity provided by such adapted technology. Evidence from this research suggests that in the context of the DD framework this is possible, as it was for the NICs Singapore, Taiwan and S. Korea.

9.4.2 Foreign Demand Factor

The research results show the weakness of using the local demand sophistication in planning for international competitiveness. Zimbabwe has to continue to develop its international competitiveness on the basis of demand developments in the foreign markets. Both the geographical sources and DD frameworks suggest that the export firms are influenced by demand (DM3) sophistication in the foreign markets. Firms also revealed that domestic pressure is not perceived as equally important in the foreign market activities, although at any point in time the sophistication in the local

demand changes as foreign product standards (lower unit costs and different quality levels) filter into the domestic markets.

From a policy outline perspective it is important to consider the effects of such foreign demand and the response capability of both the GRP1 and GRP2 firms. Firms that are primary commodity product (GRP1) exporters have always tended to supply semi-processed (industrial) products, towards further reprocessing. However the technology gap between Zimbabwe and its DC trading partners pose production/processing response capability constrains in local firms. Any quality differentiation changes in DC markets do not necessarily meet with ready technological capability in Zimbabwe, (Teitel, S and F. Thoumi, 1994). The GRP1 firms indicated that the physical technology factor for that production/processing was a significant competitiveness factor. In the case of the GRP2 suppliers their end-market retail segments have a more unstable demand and therefore product quality and variety specifications changes require a far greater technological adjustment capability.

Therefore a policy designed to support the building of quick and consistent response capability in firms should incorporate a consistent monitoring of potential constrains to supply responsiveness. For example, the response capability of GRP2 firms that supply fast moving consumer goods (FMCGs) requires the presence of reliable communication (so called *e-commerce*) facilities, packaging material that meets environmental requirements, etc. In this study investment finance for the acquisition of such communication technology was significant. Therefore provision of financial resources at interest rates that are conducive to the acquisition of these factors is a key macroeconomic policy factor. With regards to firms that supply to the DC industrial markets a similar foreign demand response capability should be considered.

It must however be stated that the response capability pressure mentioned above obtains because of the higher level of sophistication in the target (OECD) markets. This situation is likely to be different if poorer countries such as Mozambique, Malawi or Tanzania were the markets used in this analysis, and in which case the SD framework's local demand (DM1) could be an adequate planning framework. Therefore one is persuaded to conclude that the international competitive advantage of local firms in the OECD markets is partly a reflection of their foreign demand response success, and cannot be guaranteed unless continuous changes are built into the processes.

9.4.3 Government, Regional Co-operation and Diamond Paradigm Alternatives

In global markets inter-border export organisations are linked in a nonsymmetrical matrix and the emergence or existence of economic integrations such as the EU, SADC and NAFTA provide platforms on which value-chain activities are internationally sparsed. These value-chains are organised horizontally across nations, by issue: procurement, R & D, marketing and so on. Consequently regional growth patterns that derive from clusters of SBUs are no longer limited to political boundaries. For example the framework of economic co-operation within NAFTA, EU and APEC has created an environment within which each nation's diamond conditions provide resources for other member countries. Similarly Zimbabwe's co-existence with S. Africa within the SADC and COMESA, but outside the SACU sub-regional co-operation, gives them a wider trade border in which such value-chain activities are spread out of the national diamond system. In theory therefore these trade organisations have extended Zimbabwe's diamond and as is envisaged in the SADC framework the member countries aim to avoid the duplication of large investments where national borders are small economies. Governments have created all these macroeconomic and trade infrastructures as trade

support services, more specifically to enhance the competitiveness of their local industries.

The government of Zimbabwe's role beyond the 'domestic umpire' status is favoured to create further comparative advantage out of the existing natural resources. Her ability to raise the comparative advantage of such natural resources partly rests on the country's macroeconomic stability and the increased 'openness' of its international policies towards its trading partners. Although macroeconomic stability *per se* cannot ensure competitive advantage it is generally accepted that inconsistent and non-coherent macroeconomic policies have a high potential to hurt export development and competitiveness. This is because instability sends negative signals to both domestic and foreign investors and consequently may hamper long-term investment in collaborated inter-border networking such as joint ventures.

As correctly stated by M. Porter (1990) national competitive advantage means the ability of a country to use its location-bound resources in a way that would enable it to be competitive in the international markets. Zimbabwe has resources that give her the potential to gain from the DD approach, and all depending on two capability issues: ability to create a positive investment environment; and the degree to which such international positioning attracts private sector investment. According to the emphasis by OECD (1992, pp237) national competitive advantage is;

“ the degree to which, under open market conditions, a country can produce goods and services ***that meet the test of foreign competition*** while simultaneously maintaining and expanding domestic real income”.

Although the emphasis was additional, both the OECD and Porter's working definitions focus on the country's '*ability*' and '*degree*' to compete in the international markets. In

that regard the potential or ability of Zimbabwe to attract inward FDI, increase MNCs participation in the economy, increased technology importation, (*attractiveness strategy*); and (*aggressive*) access to international information on export competition exists in the local management capability, (see *table 9.2* geographical sources results). However the 'attractiveness' of Zimbabwe as a host of inward FDI and 'aggressiveness' in export promotion cannot be described as of a high degree, (Lall et al, 1998).

Lack of a policy credibility that has been cited on several World Bank surveys (1987, 1998) suggests that Zimbabwe has an image problem. Adopting consistent and 'attractive' inward FDI policies that promote both import and export development of local industries should therefore form a broader government policy framework. Furthermore, and in contrast to Porter's (1990) argument, MNCs' outward FDI are becoming pluralistic in their motives and mode of involvement and their contribution to national export development is significant in DCs. Zimbabwe has the potential to harness such MNC factors. The new international trade theory advocates for such government interventions, not as a prelude to autarky, but as part of an industry development and support programme. The government's aggressiveness in lobbying for lower export tariffs within regional economic integrations and export oriented management of exchange rate is an example of such a structural policies that should be applied.

These elements of government's industry capacity and capability building policies should be emphasised and embodied in its incentive and structural policies. Zimbabwe's competitive advantage, in the ambit of government sponsored trade relationship with S. Africa, UK, or the EU should cease to be constrained by protectionists industrial and trade policies. It must be become a product of market forces that pressure local firms to outsource advanced R & D, procurement and

distribution from outside the Zimbabwe gridlock. Local export firms would achieve higher competitive advantage where such government policies or fiscal interventions promote national exports.

9.4.4 Competition within and abroad

Given the high CR4 ratio and oligopolistic markets in some of the exporting sectors the potential for fierce domestic competition was reflected as weak. According to the analysed data the level of existing local competition suggests that there is limited pressure to trigger the emergence of dynamic and fierce sectoral competition. Therefore the expected pressure for very developed competition strategies cannot arise from within. Firms emphasised that foreign competition was presently providing that pressure.

The firms' long-term survival within such varied foreign competition demands a wider framework of analysis and strategic planning. In the context of the DD model as shown on fig 9.1 above, for every 'circle' the firm confronts different competition levels (from domestic and foreign sources) and an internal re-engineering process is immediately set into motion. Whilst the local diamond system provides its local level competition input, the extent to which such competition input and strategic 'battles' serves the firms in their foreign markets depend on the psychic distance between domestic and international industries or markets. For example, between Zimbabwe and S. Africa such psychic distance is low and therefore competition, as was revealed in the study, remains high. Similarly more exposure to *modus operandi* in other DC markets will influence the present inward oriented business culture that was created in the sanctions period and further strengthened during the Import Substitution era.

For Zimbabwe exporters' benchmarking on foreign market competition pressure means firms have to have access to foreign information that include profiles of other OECD suppliers, structural market changes in the export segments, networking developments and logistics. Other Sub-Sahara African countries, and Kenya and S. Africa in particular present fierce competition on the country's major exports to OECD markets. This is a desirable substitute for low local competition rivalry. It is therefore arguable that S. Africa's (DD) will continue to provide Zimbabwe exporters with greater competition pressure as they fight for the regional markets of the SADC and that in the OECD. Additional competition comes from lower labour unit cost producers such as China who have access to greater technology from Taiwan and Hong Kong. Evidence from the product differentiation differences and Zimbabwe's limited opportunities for higher level of exchange rate passthrough point to the existence of that foreign competition pressure.

From a policy outline perspective it is therefore prudent that the government should directly assist targeted sectors by means of foreign information facilities. On the basis of such foreign public information firms can gauge their sources of competitive advantage vis-à-vis those of foreign rivals, or what strategic changes are necessary in order to retain/gain market share. This institutionalised government policy should also encourage fair competition within the local industries. Such a policy approach will make the impact of MNC activities less dominating; create opportunities to reduce local artificial mobility barriers in various sectors; and encourage the emergence of SMEs and entrepreneurial development.

9.4.5 Inward FDI

Inward FDI represented by MNCs has often been viewed as having both negative and positive effect on the ADCs export performance. Investments by MNCs in Zimbabwean

industries similarly suggest that not all externalities of MNC advantages would spillover and act as a catalyst to expedite the hypothesised upgrade of the industries/firms' *modus operandi*. The research result suggests that Zimbabwe firms are receptive to MNC inward FDI that is in the form of greater equity investments, and increased concentration of MNCs in local industries. In order to achieve spillover diffusion this should be complimented by the local firms' efforts to gain greater access to MNCs' technology, and a continuous training of local skills to meet the challenges presented by such new imported technology. From a technology convergence (absolute or conditional) perspective these elements are envisaged to derive from MNC externalities.

At this point the question of whether MNC inward FDI causes or is caused by export growth is not critical, albeit still important. The policy issue is whether in the present case the MNCs activities can cause contagious changes in Zimbabwe's local diamond system. Zimbabwe industries benefit from increases in MNC concentration because the later may increase both the scope and scale of competition (FSSR 1 & 2). Secondly these MNCs exerted pressure for the availability, in Zimbabwe's diamond system, of advanced factor inputs and processing (AF). One example of such pressure is the requirement that local suppliers have to conform to either the International Standards Organisation (ISO 9001-5 series) or British Standards (BS) regulations, with respect to production and product specifications. Consequently labour intensity activities are structurally replaced by technology intensive production.

Furthermore the MNCs demand for upgraded input material (DM1) that are supplied by subcontracted local firms means that internal vertical integration that are sometimes prevalent in internalised supply chains is replaced by local support industries (RS). Within such relationships technology diffusion from downstream firms combined with direct technology import upstream increases the scope for broader technological

building and a base on which local labour intensive industry can develop or change to technology intensive.

However whether a DD or MD framework provides a better inward FDI 'catchment' area will depend on the type of investments activities, magnitude of the spillover and diffusion of the various MNC externalities, and the ability and willingness of local firms to change. Therefore an inward FDI policy framework should embody an incentive instrument that fosters networking relationships between MNCs and local firms. Secondly the absorption capability of the local firms must be developed towards specialised sectoral clusters, as these generally tend to attract MNCs. Such an inward FDI policy must also minimise restrictions on importation or exports of the MNCs resources (*profits and capital*).

9.4.6 Advanced Factors Condition

The 'production/processing' factor that is deemed critical in this DD framework is the advanced factor element. With regards to the existing level of exports composition Zimbabwe has comparative advantage in labour intensive activities. Literature dealing with export led economic growth is abound with arguments that such comparative advantage in natural resources can only be converted into international competitive advantage if the capacity and capability of the local firms is driven or supplemented by appropriate advanced factors. In the case of Zimbabwe a 'bundle' that encompasses all technology dimensions and their management was used as a proxy for these advanced factors.

In 1998 Zimbabwe's advanced technology exports and major natural resources based exports were already indicating a declining RCA. The magnitude of decline was greater than the gains in labour intensive activities. Therefore the nature and level of advanced

factors that could contribute more to the existing level of competitive advantage and/ or reverse the decline have to be determined from a diagnosis of each sector's requirements vis-à-vis changes in the export markets. Based on the country's lack of developed advanced factors and limited innovations a policy framework for Zimbabwe should treat competitive advantage development from an imported factor perspective.

As correctly argued by Porter (1990) the government in conjunction with industry formulate strategic macro and micro frameworks within which relevant advanced factors can be made available to the industries. For example the firms' capability to acquire advanced factors must be enhanced by the provision by the government of low cost finance and information on the appropriate advanced factor development in DCs. This must be linked to the technology development agenda.

9.4.7 Summary

In order to summarise the policy implications of the study it was important to treat the six determining conditions in the background of the country's local sources of competitive advantage and secondly in the framework of the DD and MD models. Firstly the regime of competitiveness resources that are obtained from outside the local diamond system largely dependent on each industry's needs vis-à-vis the competitive challenges they face in both domestic and foreign markets. Secondly research results showed that within EU (MD framework) these external factors were mainly limited to sophisticated demand; exposure to foreign competition; technology information and inward FDI. In the SADC (DD) Zimbabwe firms were looping to sophisticated demand, MNCs influence to local firms, international competition, and advanced factor imports and networking with downstream firms. All these factors lead to the conclusion that in building production/processing capabilities, export marketing capabilities and linkages

capabilities the home base perspective (**SD**) does not provide an adequate framework of analysis of the fundamental issues.

However moving towards the DD or MD frameworks should represent an understanding of the country's comparative advantage and the magnitude of the firms' resources capabilities that could convert and transmit such comparative advantage into international competitive advantage. With their limited technological capability and capacity for advanced technology based competition an attempt to restrict direct importation of resources, and / or reduced linkages with DC based downstream firms would continue to hinge ADCs to exports of natural commodities. Increased exports to the developed North by the sub-Sahara Africa countries will thus remain an elusive target.

Therefore the policies were framed in the background of the superiority of the DD model, or the MD alternative. This is because Zimbabwe does not necessarily have to be driven by its own natural resources endowment advantage alone. Weaknesses in the form of limited production technology and R & D innovation capabilities all militate against any policy that focuses on natural resources based export development, particularly when the global markets are rapidly being driven and transformed by communication technology. A policy of joint public and private sector technology development is imperative. Such a policy framework must embody structural incentives that favour both technology and advanced factor import, and greater investment in local R & D, and information facilities to supplement the private sector efforts.

The government's involvement needs to be focused more on setting broader sectoral frameworks that make the local industry an 'attractive ' investment target. Such a policy should also be directed at marketing the image of Zimbabwe as a stable and competitive exporter. This requires macro and micro economic policies that are

consistent, transparent and non-protectionists. Local firms require a strategic trade policy that is non restrictive, and promotes both fair competition and export growth.

9.5 Implications for Future research

In analysing the sources of national competitive advantage literature suggests that it is the firms and not the nation that compete. In that regard a major limitation of this research was in not distinguishing the firms' specific competitive advantage in the background of specific collective comparative advantage. Zimbabwe's national diamond system could provide and be used to explain local comparative advantage in superior farming practices, mining and textile skills, and labour intensive manufacturing and so on. However unless these are augmented by firm-specific analysis of international competitive advantages in the context of domestic or foreign determining conditions associated with such advantages the results from this study is just a step towards a conclusive debate. An empirical analysis of the contribution of national collective comparative advantage and the firms' competitive advantage capabilities as two joint determinants of international competitive advantages is necessary, and is therefore an important area that requires research.

The methodology used in the sample selection although wide and representative was focused on products that are marketed in the OECD and S. African markets. A more embracing analysis that would include exports to both developed and least developed markets may lead to an identification of a more generalisable geographical source of conditions that are contributing to Zimbabwe's competitive advantage. By being focused on a specific market area the results of the SD, DD and MD models may just be reflecting Zimbabwe's diamond system's characteristic weaknesses or strength in relation to that specific market area. In as much we could argue that Porter's Diamond theory was based on cases of firms in developed or industrialised countries and thus

only reflective of those countries' characteristics, this study has not bridged that gap. Further research that includes firms from both LDCs and DCs and operating in similar markets will move the debate over the SD framework towards a generalisable conclusion. Limiting the research groups to either DCs or LDCs that have huge disparities in economic and factor intensity capabilities will not achieve that generalisation.

The study also suffers from the exclusion of the service sector. Although analysis focused on the exchange rate passthrough factors the limits that are imposed by an undeveloped financial infrastructure were not analysed. Further research to diagnose the possible direct impact of lack of developed financial structures on the development of national diamond factors is required, particularly in the background of the crippling third world debt repayments.

The present study also suffered from a lack of data that directly relate to the competitive strength of each of the facets of the national diamond. Unavailability of time series data denied this study the benefit of cointegration analysis. Such analysis could have been used to deduce trends of variations in competitive advantage that are caused by changes in competitive strength of the various local diamond conditions. Given that competitive advantage is a fleeting concept it is natural that sources of and conditions for a firm's advantages at point X_t may be different at point Z_t . Similarly countries A and B can have different levels of competitive advantage that derives from possession of similar factors, for example production technology. From that perspective the researcher argues that by using techniques such as Probit or Tobit we could only achieve a probable estimate of the likelihood effect on local firms to adopt MNC injected changes in their various industries. A direct measure of the relationship between spillover or diffusion and changes in export competitive advantage would have given more insight.

Notwithstanding, the results were contributory to the scholarly debate on how ADCs in the sub-Sahara Africa region and who export into the developed countries markets can evaluate the domestic and foreign determining conditions that contribute to their national competitive advantage. A strategic trade policy to build national export capabilities or firm specific strategies to build greater export capacity and capability in the background of a weak domestic diamond would be realistic if it adopted an open and wider framework: the DD or MD approaches. Further research should develop from a diagnostic understanding of the exposed limitations of the single nation Diamond paradigm.

Statistical methods Used in the study

This appendix provides details of statistical procedures and tests used in this study. These parametric tests included regression analysis, correlation analysis and t-tests, F-tests, Probit analysis and principal factor analysis. Below is a summary of the specific methods used.

Regression analysis

In using the regression analysis we seek to identify the relationships between dependent variables and the predictors. That relationship looks at the possible impact of a unit change in each independent variable on the dependent variable or more specifically it provides a basis upon which all the estimate variables can be used to predict or explain the variations in the dependent variable. The main property requirement of the regression analyses is that the parameters used are from a randomly selected sample, are normally distributed and are independent. The error terms associated with each variable are also assumed to be independent from those variables and on their own remain normal and independently distributed with mean zero and variance σ^2 . The random terms serve two purposes:

- (1) capture the effect of all other influences other than that of specified variables;
- (2) capture any approximation errors that arise because of a linear function form that we assume to approximate the reality. In a large sample the error term has a mean of zero.

The regression model estimates used in this research are based on the ordinary least square (OLS) estimates that are meant to minimise the squares of the vertical distance between the variable's dispersion point and the line of best fit.

The normal linear model used was $Y = F(x)$

$$= F(\alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_m x_m + \varepsilon)$$

Technology regression

The econometric analysis of Zimbabwe's technological capability involved three stages. These were; (1) estimating a general model based on a technology based supply capability index (TECINDEX) as the dependent variable. In that model the researcher assumed non-lag effects on the predictors. The second part (2) involved conducting F-tests on the estimates in order to drop insignificant variables. This was followed by (3) re-estimation of the model using the OLS method. This test was done on two samples of 28 (group1) and 25 (group 2) firms, and with 9 regressions used to drop factors that were highly correlated. This was done using the SPSS software's Principal Factor analysis.

All the regressors of the technology capability index were expected to have positive signs, (Evenson Westphal, 1994; and Lall et al., 1990). The Stepwise method showed that only three out of nine factors were statistically significant in explaining TECINDEX. After testing for multi-co linearity three variables that captured the overall explanation of TECINDEX were derived, viz. physical capital (CAPI), SKILLS and Finance (FINA.). Low correlation coefficients among all these factors suggested no evidence of multi-co linearity among these predictor variables.

*Technological Capability Factors***Correlation, 1-tailed test**

	Group 1			Group 2		
	CAPI	FINA	SKILLS	CAPI	FINA	SKILLS
CAPI	1.000 (0.000)	0.137 (0.267)	0.362 (0.472)	1.000 (.0000)	0.071 (0 .009)	0.327 (.055)
FINA		1.000 (.000)	0.093 (0 .319)		1.000 (0.000)	0.161 (0.010)
SKILLS			1.000 (0 .000)			1.000 (0.000)

(P values are in parenthesis)

(CAPI), SKILLS and (FINA.) variables were then used to test for the influence of technologically superior production/processing equipment, availability of financial resources for export finance investment, and trained skills that could be used in the management and operation of the hi-tech equipment, on supply capability (EXPINT). This approach was used because we assumed that factors such as skills and finance would need to be in place prior to making the imported technology an integral and significant variable to the technology supply capability.

SKILLS variable was expected to have a positive sign. As argued by both Porter (1990) and Kogut (1991) skilled labour that is combined to internationally competitive technology enhances the ability of the firms to produce or process differentiated exports that can compete in the foreign market.

FINA, being a proxy for the firms' liquidity with regards to physical capital investment and trade finance was expected to have a positive effect on the technological capability of the firms. The financial support by MITI to Japanese firms exemplifies the importance of such finance to the capability of the firms to engage in the international markets. The researcher deemed such finance as a critical element.

In order to analyse the technology based supply capability export intensity was used as a dependent variable. This is because high export intensity is an indication of the firm's ability to compete in technology-dominated markets. That export intensity was defined as a ratio of technology intensive exports to total sales. This is an alternative to employee productivity, (Lall et. al: 1997) and it has the advantage of relating directly to the exports.

MNC Probit analysis

In this Probit model the researcher assumed an underlying latent variable for which one observes a dichotomous realisation of the dependent dummy variable with value of 1 (adopt) or 0 (otherwise). A Probit model was chosen because of the small size of the sample, otherwise a Logit model was a fitting alternative. Compared to these two a third alternative was Tobit and this was not preferred because its dependent variable could not be restricted, i.e. it takes any value between 0 and 1.

The cumulative distribution function Probit model used was as follows;

$$F(x) = \Phi = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{-\frac{(u - x\beta)^2}{2}} du$$

where $\Phi = F(x|\beta)$ is the standard density function .

This specification merely states that the probability of exports production/processing or marketing behaviour change in the industry depends on the cumulative density function of vector x_i . In the context of the spillover effect these changes representing external and internal firm/industry change states discussed in Chapter 4(B). The model assumes that the probability of change {Prob.(Y)} is normally distributed and the error term is independent and also follows a normal distribution.

Dependent Variable

Decision to Adopt (1) or otherwise (0)

The dependent variable was defined as a dummy variable. It either had a value of 1 (adopt) or 0 (not adopt). The latent values of Y^* regressions gave the result that Y was **(0.74745)**. The results were estimated using the maximum likelihood method. The maximum likelihood method was preferred because it is consistent, asymptotically normal and efficient when dealing with a sample whose distribution could be non-normal. The estimation of $F(x) = \Phi$ and the restrictions for the Probit were conditioned using the maximum-likelihood estimates of a functional form of

$$F(x) = \frac{1}{\sqrt{2\pi}} e^{-1/2(x-u)^2} \dots\dots\dots 1$$

With index Y (dependent) as an estimate regression:

$$Y_i = \alpha_0 + \alpha_1 X_{1i} + \alpha_2 X_{2i} + \alpha_3 X_{3i} + \alpha_4 X_{4i} + \dots + \alpha_m X_{mi} + \mu_i \dots\dots\dots 2$$

Note: Prob. ($Y_{it} = 1$) = Prob. $\{\mu > a_0 + a_1x_{1i} + a_2x_{2i} + a_3x_{3i} + a_4x_{4i} + \dots + a_mx_{mi}\}$

This probability holds because the error term affects the value of the constant, (Finney .D.J (1971).

Independent Variables

MNCCON This was the CR4 of MNC in each sector. This variable was expected to have a positive sign. A high density of MNCs was in theory expected to increase the probability for increased pressure on local firms to adopt the injected exogenous production/processing methods. Following Hobday (1984) and 'O' Sullivan (1969) such industry changes manifest themselves in the local firms' adopting the multinational flagship firm's strategies and structures in order intensify their challenge in both local and international markets.

MNCGF This represented one of the two forms of inward investment. This is an independent (no linkage with local firms, MNCGF) and is mainly associated with resources seeking MNCs. In that regard the FDI variables were used to test for the influence of the MNC's inward investment in an industry or firm and the probability for its catalytic effect. The MNCGF form of FDI was defined and measured as a dummy variable with 1 indicating purely foreign green-field FDI product exporter in the industry and 0 otherwise.

- FS** This is the ratio of foreign investment to total equity. It was assumed that a holding firm ($FS > 51\%$) or an associate investor ($23\% < FS < 51\%$) had influence on the activities of the investee firm. That influence was perceived as inward inflow of external information that would positively influence change towards international standards similar to those of the locally based MNCs. However an arbitrary minimum cut-off point of 10% equity was imposed as a non-influential investment. A positive sign was expected on this variable, and the variable was measured as a dummy with any equity exceeding 10% of total ordinary shareholding (**1**) or otherwise (**0**).
- R & D** This was measured as a dummy variable, and indicated the firms' own R & D in product upgrading and production/processing. Firms engaged in such R & D were assumed to have greater propensity to 'catch up' with MNC factor intensification and the introduced *modus operandi* within the industry (Bernstein J.I, 1991, pp.125). However its probability was insignificantly low ($r = 0.002$; $t\text{-static} = .58510$) and was therefore dropped from further analysis.
- TSKILLS** Literature is inconclusive on the subject of the MNCs' skills spillover. However in this case it was hypothesised that a technical skills base in each industry was an important factor that was critical in the in-house training of local employees. This was a variable that represented the potential of technically trained employees to augment the change process developed as firms re-engineer towards technology intensive manufacturing. The measure used on this factor was the ratio of technically skilled employees to total employees. This definition was preferred because of two reasons. Firstly human resources

augmentation seems a plausible outcome of inward FDI given that Zimbabwe has passed the human resources development threshold (World Bank, RPED, 1998). Therefore expected technology transfer is promoted by a high ratio of such technically trained employees. Secondly majority of firms exporting from Zimbabwe are not technology or capital intensive and therefore a measure that related both technological propensity and ability was ideal (Maddala, G.S. 1992).

GEOCON Geographical concentration of clusters of same product exporters was measured as a dummy variable, (1) concentrated and (0) otherwise. Geographical concentration was expected to be a factor that is conducive to a higher spillover incidence (Kokko, A. 1994). In Zimbabwe exporting firms are sparsely located and indeed the t-tests showed this variable as statistically insignificant.

Model validation

Probit model assumes that $F(\beta x_i)$ is a cumulative normal distribution that would not introduce the bias that is possible in predictions that use OLS estimation, (Stopher and Meyburg, 1979). In our case OLS was deemed inappropriate as it was inefficient and inconsistent as the error terms are not identically and normally distributed. Therefore Maximum Likelihood Estimate (MLE) was preferred because of its iterative process that seeks the best model. Within the Probit approach the probability (P) is a functional form wherein the standard normal distribution function is used to transform the original data to the binary model. Furthermore Probit compels the error term to be homoscedastic since the probability function depends on the distribution of the difference between the error terms associated with one particular result and another, (Amemiya, 1981).

T-statistic Analysis

A t-test is used to test hypothesis about a single mean of a sample that is too small to use the Z-test. As suggested by the Central Limit Theorem the t-test is based on a t-distribution with a common variation. T-distribution is symmetrical with mean zero and variance $\sigma^2 (n/n-2)$, and in a sample where $n>30$ the statistical value of a t-test is equal to that of Z and a Z-test is ideal. However as the sample becomes larger ($n>30$) the t-distribution becomes indistinguishable from a normal distribution.

The most common purpose of the t-test is to make inferences about differences between two population groups using their sample means, and whether such differences are statistically significant. The test application assumes that the inference is based on randomly sampled units. This is a very important point because the inferences are based on the mean values of the observations. The formula for t-test is basically the ratio of a standard normal variate of the form;

$$t = (\bar{X} - \mu_x) / (s_x / \sqrt{n}).$$

where $\bar{X}$ is mean of the sample

μ is mean of the population

s_x is the standard deviation of the mean and

n is the number of observations.

In this study the t-test was used to test the null hypothesis on the SD model analysis. The test was further used to compare the differences shown by the SD and DD/MD models.

The model of the hypothesis was based on equations 1 and 2 below.

$$\delta_{ijk} = m_i - a_{ijk} \dots\dots\dots 1$$

$$\bar{\delta}_k = \sum \delta_{ijk} / ij \dots\dots\dots 2$$

$$H_0: \delta_k = 0$$

$$H_1: \delta_k \neq 0$$

Where m_i = the ideal score for the i th variable,

a_{ijk} = is the judged impact score of the i th variable on the j th industry in group k .

$\delta = 0$ when the local industry's $\sum(a_{ijk})$ is equal to Porter's 'ideal' (maximum) score.

$$H_{21}: t_1 < t_2$$

$$H_{22}: d_1 > d_2$$

$$H_{23}: r_1 < r_2$$

These t-tests help in explaining whether the observed results were significant and where they are used with their p-value, the non-chance of occurrence is reasonably ascertained.

F-test Analysis

The F-test is another method of hypothesis testing that involves multiple parameters and is frequently used in regression analysis. The F- distribution is determined by two parameters, the degrees of freedom in the numerator and in the denominator of the ratio. The f-test is ideal when we wish to test if the variance in the dependent variable

of a model (R^2) is significantly greater than we would obtain by chance. Thus the F-test is another method of variance analysis that takes into account the significance of the results (p-value).

The formula used was $F = \frac{(SSE_R - SSE_U)/J}{SSE_U/(T-K)}$,

Where SSE_R and SSE_U are the sums of squares of the least squares residuals from the restricted and unrestricted models, respectively.

J is the number of hypothesis that are being jointly tested, e.g.

($H_0: \beta_1 = \beta_2 = \beta_3 = 0$);

T is the sample size; and

K is the number of parameters estimated in the unrestricted model.

This test was also used to test for heteroscedasticity (GQ-test) and as well as the factor component tests for the technology regression model. The GQ formula used was

$$\sigma^2 A / \sigma^2 B - F(T_1 - K_1)(T_2 - K_2),$$

where T= number of observations per sample

K=number of coefficients.

The GQ method assumes the following;

1. errors are normally distributed
2. the ratio of the estimated coefficients follows the f-distribution.

Zimbabwe's 25 of the 50 Largest Manufactured Exports

	1990	1991	1992	1993	1994	1995	% change 1991-95
Science-based products	3114.6	2849	5411	5807.6	4961	6016.20	48.23
Differentiated products	11982.9	7195.6	8698.5	7049.3	10200.2	25042.20	52.15
Scale Intensive	222655.8	184227.9	188285.9	177283.7	156729.6	270729.60	17.76
Labour intensive	118944.2	123040.3	150704.5	211293.7	257283.4	255307.4	53.41
Resource Intensive	41281.7	34404.2	43594.2	59578.6	84598.1	126328.4	67.32
Total 50 largest exports	397979.2	351717	396694.1	461012.9	513772.3	683423.80	41.77

Source: Lall et al (1997)

Domestic Exports by Rank (1997)

Rank	Product	Value US \$' 000	Stage of Processing
1	Flu cured & Unmanuf. Tobacco	6134296	Primary
2	Ferro-Alloys	2127833	"
3	Cotton Lint	1314476	"
4	Nickel	969453	"
5	Raw Sugar	773805	"
6	Vegetables & Fruit	505541	"
7	Cut Flowers	455340	Final Consumer
8	Coffee	435715	Primary
9	Cork and Wood Manufacturers.	417497	"
10	Non-electrical machinery & wire	352587	"
11	Other Chemicals	337213	"
12	Furniture & Accessories	304866	Final Consumer
13	Tea	288919	Final consumer
14	Iron Products	288800	"
15	Timber	278800	Primary
16	Coke	261358	Primary
17	Men's outwear(suits, jackets etc.)	260457	Final Consumer
18	Refined Sugar	258772	"
19	Fabrics	229492	Primary
20	Manufactured Tobacco	218561	Final Consumer
21	Yarns and Threads	218042	Primary
22	Works of Art	186571	"
23	Leather pieces	151188	Primary/final consumer
24	Iron and Steel	144691	"
25	Manufactured Fertilizer	111463	Final Consumer

Source: UN Trade Statistical Year book, 1997

Appendix C (Variables Used for each Model)

Variable applied	SD	DD	MD
Natural resources	√	√	√
Advanced Factors	√	√	√
Local Demand	√		
Growth of Demand	√		
Foreign Demand		√	√
Government's role	√	√	√
Related industries	√	√	√
Imported technology		√	√
Networking with foreign MNCs		√	√
Local Competition	√		
Foreign Competition		√	√
Managerial Export orientation	√	√	√

Formula used for Method 2 calculation of the Country's Competitive advantage

$$\delta_z = \sum (\chi_{viz} - \bar{\chi}_{viz}) / M_{vz} * N_{iz}$$

Results based on observed scores by group and from each the 3 model formulations.

SD1	DD1	MD1	SD2	DD2	MD2
1.18	1.18	1.09	0.84	0.54	0.53
1.25	1.00	0.90	1.28	1.23	1.52
1.42	1.16	1.15	1.09	1.02	1.28
1.38	0.98	1.01	0.91	0.81	0.97
1.17	1.13	1.08	1.05	0.97	1.14
1.33	1.21	1.19	1.13	1.03	1.31
1.38	1.00	0.91	1.34	1.28	1.50
			0.81	0.44	0.56

**Technological capability Score
Results**

Value Criteria	<i>Investment Capability Score</i>	<i>Production Capabilities Score</i>	<i>Linkage Capability Score</i>	<i>Overall</i>
Quality control	.65	.60	.62	.62
Search for new Equipment	.20	.42	.32	.31
Upgrading Existing Equipment	.36	.31	.25	.31
Training	.18	.32	.42	.31
Process R & D	.56	.36	.12	.35
Copying foreign technology	.35	.25	.24	.31
Supplier Linkages	.36	.42	.31	.36

Source: Compiled by Author, 1999.

The system used in the table above applies a general scoring criteria to rank the technological capabilities of various firms, (Westphal et al, 1990; Lall, S (1998). The method allows for the separate identification of capabilities. An average technological capability was calculated from the three technical dimensions, and the value criteria was based on the definition of the technology factor used in the research analysis.

The items used in describing the technological factors were arbitrary. Therefore a degree of bias may be contained in the estimates of the overall technology capability. However for the purpose at hand that does not really matter because the focus of analysis is on the level of technological capabilities. In a comparison between countries or among firms such a value criteria has to be standardised. The correlation of these value criteria factors was low (below 0.22).

Export Competitive Advantage Research Questionnaire

(Please circle or tick (✓) the appropriate response where applicable; 1 lowest : 5 highest)

A General

1. In which of the following industrial sectors does your organisation belong to?

- | | | |
|------------------|----------------|--------------------------|
| Horticulture: | Food & Flowers | ☐ |
| Manufacturing- | Clothing | ☐ |
| | Engineering | ☐ |
| Service Industry | Airline | ☐ |
| | Other- specify | ☐ |

2. Please indicate how long your organisation has been exporting to any of the following countries

Years	(0-3)	(4-6)	(7-9)	(10-12)	(13-15)
S. Africa	☐	☐	☐	☐	☐
UK	☐	☐	☐	☐	☐
Germany	☐	☐	☐	☐	☐
Japan	☐	☐	☐	☐	☐
USA	☐	☐	☐	☐	☐
Holland	☐	☐	☐	☐	☐
PTA/SADC	☐	☐	☐	☐	☐
Any OECD country	☐	☐	☐	☐	☐

B Demand

3. What percentage of your total sales is exported in the following years?

1990	(a) 0-15%	(b) 15-30%	(c) 30-45%	(d) 45-60%	(e) 60+%
1991	(a) 0-15%	(b) 15-30%	(c) 30-45%	(d) 45-60%	(e) 60+%
1992	(a) 0-15%	(b) 15-30%	(c) 30-45%	(d) 45-60%	(e) 60+%
1994	(a) 0-15%	(b) 15-30%	(c) 30-45%	(d) 45-60%	(e) 60+%
1996	(a) 0-15%	(b) 15-30%	(c) 30-45%	(d) 45-60%	(e) 60+%
1998	(a) 0-15%	(b) 15-30%	(c) 30-45%	(d) 45-60%	(e) 60+%

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4. What percentage of your exports is determined by quotas?

(a) 0-15% (b) 15-30% (c) 30-45% (d) 45-60% (e) 60+%

5. Is your organisation's value added on re-exports more than 10% of the (c.i.f.)?

Yes [] No []

6. From the following list please indicate (✓) how many times your organisation sends complete export orders in a month.

(1-2) (3-4) (5-6) (7-8) (9-10) (11-12) (13-14) (15-16) (17-18)

7. Please indicate how important was your organisation's exposure to the each of the following factors;

		not at all	neither	slightly	quite	very
		1	2	3	4	5
Customers' quality	Foreign	[]	[]	[]	[]	[]
	Domestic	[]	[]	[]	[]	[]
Intensity of competition	Foreign	[]	[]	[]	[]	[]
	Domestic	[]	[]	[]	[]	[]
High-tech production	Foreign	[]	[]	[]	[]	[]
	Domestic	[]	[]	[]	[]	[]
Related & Support Industries	Foreign	[]	[]	[]	[]	[]
	Domestic	[]	[]	[]	[]	[]
Access to new industry Technology		[]	[]	[]	[]	[]
Multinationals in your industry		[]	[]	[]	[]	[]

8. Would you describe the tastes of Zimbabwe's consumers / users of your products as having influenced the quality and choice standards of your export products?

Yes [] No []

C Information

9. Please indicate the level of usefulness of the following sources of information;

	not Useful	slightly useful	average	quite useful	very useful
Your own market research	1	2	3	4	5
Your own sales force	1	2	3	4	5
Your overseas branches	1	2	3	4	5

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Agents in foreign markets	1	2	3	4	5
Local Chambers of commerce	1	2	3	4	5
Trade associations	1	2	3	4	5
Foreign Market research agencies	1	2	3	4	5
Other – please specify	1	2	3	4	5

10. Please indicate how important, if at all, each type of information is to your decision to engage in export activities;

	very	quite	neither	slight	not at all
	1	2	3	4	5
Foreign Market size	1	2	3	4	5
Foreign Market growth rate	1	2	3	4	5
Government aid to exporters	1	2	3	4	5
Favourable currency Exchange fluctuations	1	2	3	4	5
Legal requirements in the foreign market	1	2	3	4	5
Competitive products in the market	1	2	3	4	5
Buyers preference in the export market	1	2	3	4	5
Product advances in the export market	1	2	3	4	5
International competition in the export market	1	2	3	4	5

11. To what extent has information obtained from the following countries been useful in your export market decisions?

	None	Very low	Moderate	High	Very High
S. Africa	[1]	[2]	[3]	[4]	[5]
UK	[1]	[2]	[3]	[4]	[5]
German	[1]	[2]	[3]	[4]	[5]
USA	[1]	[2]	[3]	[4]	[5]
Malaysia	[1]	[2]	[3]	[4]	[5]
France	[1]	[2]	[3]	[4]	[5]

12. With regards to your export market growth how would you rate the importance of information/knowledge/experience obtained from your foreign market activities?

	not at all	neither	slightly	quite	very
	[1]	[2]	[3]	[4]	[5]
Information	[]	[]	[]	[]	[]
Knowledge	[]	[]	[]	[]	[]
Experience	[]	[]	[]	[]	[]

13. With regards to your export market growth how would you rate the significance of information/knowledge/experience obtained from your local market activities?

	not at all	slightly	neither	quite	very
	[1]	[2]	[3]	[4]	[5]
Information	[]	[]	[]	[]	[]
Knowledge	[]	[]	[]	[]	[]
Experience	[]	[]	[]	[]	[]

D Business relationships

14. Using the following factors please indicate how you would rate the support from your suppliers in terms of fulfilling your international buyer(s) expectations? (**1:lowest; 5:highest**)

Trade Credit support	1	2	3	4	5
Export Training	1	2	3	4	5
Provision of foreign market information	1	2	3	4	5
Advise on foreign competitors	1	2	3	4	5
Quality improvement aspects on your products	1	2	3	4	5
Responsiveness to product change requirements	1	2	3	4	5

- 15(a). Please indicate how you would rate the support your organisation receives from foreign importers on the following factors.

Product modifications	1	2	3	4	5
Product distribution	1	2	3	4	5
Foreign market intelligence	1	2	3	4	5
Other suppliers' marketing strategies	1	2	3	4	5
Development of export marketing skills	1	2	3	4	5

- 15(b). Would you get similar export support from organisations in Zimbabwe?

	Yes	No
Product adaptations	[]	[]
Product distribution	[]	[]
Foreign market intelligence	[]	[]
Competitors marketing strategies	[]	[]
Development of exporting & marketing skills	[]	[]

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16. Would you agree that your organisation's increased export market share was a direct result of your networking with retailers / importers in the export market?

Yes []

No []

17. To what extent does your importers' specifications serve as knowledge for future use in the same or different foreign markets?

not at all	low	moderate	high	very high
[1]	[2]	[3]	[4]	[5]

18. To what extent has the importer's or foreign agent's assistance on the following marketing factors contributed to your product(s)' competitive advantage in the foreign markets?

	not at all	very low	low	high	very high
Delivery Reliability	[]	[]	[]	[]	[]
Consistency of quality/supply	[]	[]	[]	[]	[]
Production Flexibility	[]	[]	[]	[]	[]
Export product specifications	[]	[]	[]	[]	[]
New production/processing Technology	[]	[]	[]	[]	[]

19. How supportive are your export distributors to your supply change requirements?

Never	Not always	Always
[]	[]	[]

20. How frequent does your distributors participate in your export logistics decisions?

Never	Occasionally	Very often
[]	[]	[]

E Firms rivalry and Competition

21. Using the following criteria, how would you describe your organisation's export marketing programme?

	not at all	weak	low	high	extremely high
Innovative	[]	[]	[]	[]	[]
Pro-active	[]	[]	[]	[]	[]
Risk taking	[]	[]	[]	[]	[]

22. Using the following characteristics how would you describe your current export market(s)'s hostility?

	very low	low	equal to home	High	Very high
	[1]	[2]	[3]	[4]	[5]
Intensity of competition	[]	[]	[]	[]	[]
Market turbulence	[]	[]	[]	[]	[]
Risk	[]	[]	[]	[]	[]
Further Opportunities	[]	[]	[]	[]	[]

23. How important are the following factors in your organisation's search for improvements in your competitive advantage in the export markets?

	not at all	neither	slightly	quite	very
	[1]	[2]	[3]	[4]	[5]
Intensity of Export Market Competition	[]	[]	[]	[]	[]
Intensity of Domestic Market Competition	[]	[]	[]	[]	[]
Local product innovations/upgrading	[]	[]	[]	[]	[]
Improved supplies from foreign competitors	[]	[]	[]	[]	[]
Own re-engineering of production/processing	[]	[]	[]	[]	[]
Imported or new production technology	[]	[]	[]	[]	[]
Foreign Distribution services	[]	[]	[]	[]	[]

24. With regards to your exported products how would you rate their domestic market competition?

	very low	low	marginally lower	equal to foreign	Higher than
	[1]	[2]	[3]	[4]	[5]
Intensity of competition	[]	[]	[]	[]	[]
Market turbulence	[]	[]	[]	[]	[]
Product Development failure risk	[]	[]	[]	[]	[]
Market Opportunities	[]	[]	[]	[]	[]

F Technology

25. How would you rate your organisation's access to the following sources of your industry's production/processing technology?

	Very low	low	average	high	very high
Foreign Direct Investment (FDI)	[]	[]	[]	[]	[]
Licensing	[]	[]	[]	[]	[]
Turnkey Projects	[]	[]	[]	[]	[]
Purchases of Technical Assistance	[]	[]	[]	[]	[]

26. How would you describe Zimbabwe's public and private sectors' efforts to upgrade local skills in the use of advanced Computer Aided Designs (CAD) or Computer Aided Manufacturing (CAM) relevant in your industry?

None	very	low	moderate	Strong	Very strong	weak
[0]	[2]	[4]	[6]	[8]	[10]	

27. Using the following criteria please indicate how you would rate your production technology capability

	None (0)	very limited (1)	High (2)
Quality Control	[]	[]	[]
Maintenance of Equipment	[]	[]	[]
Copying of imports/buyers technology	[]	[]	[]
Existing Product improvements	[]	[]	[]
Introduction of new products	[]	[]	[]
Supply linkages	[]	[]	[]
Training	[]	[]	[]
Process R & D	[]	[]	[]
Upgrading of existing Equipment	[]	[]	[]

28. What is the age of stock of technical plant and equipment used in your production/processing?

	More than 3 years	close to 3 years	Less than 3 years
Latest	[]	[]	[]
Industrial average	[]	[]	[]
International average	[]	[]	[]

Appendix E

29. How would you rate your organisation's technological strength compared to that of your competitors in the following countries?

	Very Low	low	marginally weaker	equal to	higher than
	[2]	[4]	[6]	[8]	[10]
UK	[]	[]	[]	[]	[]
S. Africa	[]	[]	[]	[]	[]
Other OECD countries	[]	[]	[]	[]	[]
German	[]	[]	[]	[]	[]

30. Has your organisation's export competitiveness improved through your technological linkages with your buyer/ suppliers in the following countries?

Zimbabwe	[]	[]	[]	[]	[]
S. Africa	[]	[]	[]	[]	[]
UK	[]	[]	[]	[]	[]
Other OECD countries	[]	[]	[]	[]	[]

31. What percentage of your staff is involved and is technically trained in Quality Control of exported products?

0-10% 11-20% 21-30% 30-40% 41+%

32. Using the following classification how would you rate the availability of local technical skills in your industry?

(Very low=1; very high=5)

	1	2	3	4	5
Technological Design and Engineering	[]	[]	[]	[]	[]
New Product innovations	[]	[]	[]	[]	[]
Management in high-tech processing	[]	[]	[]	[]	[]

G Finance & Exchange rate factors

33. Which of the following sources of industrial finance has your organisation often used for its export activities?

	1994	1995	1996	1997	1998
Local Merchant Banks	[]	[]	[]	[]	[]
Foreign Equity	[]	[]	[]	[]	[]
Ordinary Commercial Banks	[]	[]	[]	[]	[]
State Corporations e.g. CGC	[]	[]	[]	[]	[]
Own resources	[]	[]	[]	[]	[]

34(a). What percentage of your equity is held by foreign investors?

0-10%	11-20%	21-30%	31-49%	50% plus
[]	[]	[]	[]	[]

34(b). Following a temporal appreciation of your national currency against that of your export destination how does your organisation respond?

	Yes	No
Absorb cost increase/decrease	[]	[]
Pass cost increase/decrease to customers	[]	[]
Share cost /price increase/decrease with customers	[]	[]

34(c). Following an appreciation of the Zimbabwe currency do the following factors influence your organisation's export prices adjustment?

	Yes	No
Price competition from countries with similar products	[]	[]
Importer's resistance to price increases	[]	[]
Dependence of exports on imported input material	[]	[]
Government's export tax concessions	[]	[]
Dependence on contracted importer	[]	[]
Uniqueness of your export product	[]	[]

34(d). Does your organisation's exports require imported material inputs

Yes [] No []

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34(e). Outside transport and similar costs do you charge the same mark-up for all your exports destined for different international markets?

Yes	No
[]	[]

34(f). To what extent would you rate the influence of these factors?

(1 not significant, 5 very significant)

1	2	3	4	5
---	---	---	---	---

Price competition from countries with similar products	[]	[]	[]	[]	[]
Importer's resistance to price increases	[]	[]	[]	[]	[]
Dependence of exports on imported input material	[]	[]	[]	[]	[]
Government's export tax concessions	[]	[]	[]	[]	[]
Dependence on contracted importer	[]	[]	[]	[]	[]
Uniqueness of your export product	[]	[]	[]	[]	[]

35(a). Do the bulk of your exports go to the following?

	Yes	No
(i) Contracted importer	[]	[]
(ii) Your overseas branch	[]	[]
(iii) Any retailer/importer	[]	[]

35(b). Does your organisation have any influence on the marketing strategies that the importer uses in the export market?

Yes	No
[]	[]

35(c). Do you agree that the demands placed upon your organisation by importers or foreign retailers largely influence your operational strategies for that specific foreign market ?

Yes	[]	No	[]
-----	-----	----	-----

35(d). Would you agree that your importer/buyer in the export market exercises restrictive measures of the following nature?

	Yes	No
(i) exclusive dealership	[]	[]
(ii) buyer approved product modifications	[]	[]

Appendix E

H Skills

36 (a) How many people did your company employ last year ?

(1-50) (51-100) (101-150) (151-250) (250+)

36 (b) How many of your staff are dedicated to exports ?

(1-5) (6-15) (16-40) (41-150) (150+)

36 (c). Does your organisation use expatriate labour for in-house technical training?

Yes No
[] []

I Government

37. Using the following factors how would you rate the government's support to your drive for international competitiveness?

	Negative		Not at all		Positive
	-2	-1	0	+1	+ 2
Provision any direct export of subsidies	[]	[]	[]	[]	[]
Monetary and exchange rate Policies	[]	[]	[]	[]	[]
Trade Policies	[]	[]	[]	[]	[]
Industrial and technology Policy	[]	[]	[]	[]	[]
International Marketing-facilitating policies	[]	[]	[]	[]	[]

J Multinational Companies

38. What level of influence does the following factors have on your future export growth?

	1	2	3	4	5
Export activities of Multinational Firms in Zimbabwe	[]	[]	[]	[]	[]
Networking with MNCs and distributors	[]	[]	[]	[]	[]
Imported advanced production/processing technology	[]	[]	[]	[]	[]

39. Please indicate to what extent the foreign firms' use of the following factors has influenced your organisation's production/processing methods

	not at all	very low	low	high	very high
	1	2	3	4	5
Equity shareholding	[]	[]	[]	[]	[]
Technology	[]	[]	[]	[]	[]
Access to New Technology	[]	[]	[]	[]	[]
Expatriate skilled tech. Labour	[]	[]	[]	[]	[]

40. How would you rate the extent to which your organisation has been affected by production functions that are sub-contracted to it by foreign firms?

	Very Low 1	2	3	4	Very high 5
Access to foreign information	[]	[]	[]	[]	[]
Pressure to upgrade skills	[]	[]	[]	[]	[]
Pressure to use advanced technology	[]	[]	[]	[]	[]

41. Would you agree that competition from foreign firms in your industry positively influence your organisation in its:

	Yes	No
Inter-firm relationships	[]	[]
Perception of foreign quality	[]	[]
Preference to foreign production inputs	[]	[]
Perception of international competition	[]	[]

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