A TRANSACTION COST ANALYSIS OF THE FRUIT SUPPLY CHAIN IN SOUTH AFRICA: A CASE STUDY APPROACH

Thesis presented in partial fulfillment of the requirements for the degree of MAgricAdmin. at the University of Stellenbosch

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DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and has not been previously in its entirety or in part been submitted at any university for a degree.

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Signed	Date

ABSTRACT

The agro-food sector is swiftly moving towards an internationally interconnected system with a large variety of complex relationships, due to year-round supply, product differentiation and developments in information technologies, with the aim of enhancing competitiveness. In this context, vertical linking in the agro-food business especially, vertical coordination has gained attention.

A case study approach is used to analyse two fruit supply chains – the table grape and citrus fruit chain. The study uses a transaction cost approach to analyse the supply chain of the fruit industry in South Africa. Transaction cost analysis (TCA) represents one possible approach to understanding and evaluating supply chain management and has the potential to be combined in an interdisciplinary setting with the insights provided by the marketing, logistics and organisational behaviour literatures.

By means of literature study, constructs are identified that help explain the choices made, with regard to governance structures and the sources of competitiveness of supply chains. The question of governance structures is addressed in transaction cost economics (TCE) where asset specificity is of major importance. The sources of competitiveness are addressed both in the literature study and from discussions undertaken with key industry representatives.

The empirical application of the TCE theory helped demonstrate the extent to which the exporter has adapted to changes in the global environment. The study revealed that for both supply chains, the role-players overcompensate to minimise their risk. Hence vertical integration rather than outsourcing takes precedence.

Bilateral contracting and strategic alliances should be given priority to enhance effective communication, commitment and collective decision-making. This growing recognition of the competitive advantage that can be gained through improving coordination in the supply chain is the starting point for SCM initiatives and, these are important signals that in the long run will determine the sustainability and competitiveness of the industry.

SAMEVATTING

Die landbou-voedsel sektor is vinnig besig om na 'n internasionale interafhanklike stelsel met 'n groot verskeidenheid van ingewikkelde verhoudings te beweeg, as gevolg van heel-jaar aanbod, produk differensiasie en ontwikkeling in tegnologie, met die doel om meer mededingend te wees. In hierdie konteks geniet vertikale skakelinge in die landbou-voedsel bedryf, en veral vertikale koördinasie, baie aandag.

'n Gevalle studie benadering is gevolg om twee vrugte waardekettings te analiseer – die tafeldruiwe en sitrus ketting. Die studie maak gebruik van 'n transaksie koste benadering om die waardeketting van die Suid-Afrikaanse vrugte bedryf te analiseer. Transaksie koste analiese (TKA) verteenwoordig een moontlike benadering om waardekettingbestuur te verstaan en te evalueer. Dit het ook die potensiaal om gekombineer te word in 'n interdissiplinêre omgewing met insigte wat deur bemarking, logistiek en organisatoriese gedrags literatuur verskaf word.

Konstruksies is met behulp van literatuur studies geïdentifiseer wat help om die keuses wat gemaak is met betrekking tot bestuurstrukture en die bron van mededingendheid van waardekettings. Die kwessie van bestuurstrukture word aangespreek deur transaksie koste ekonomie (TKE) waarin bate-spesifiekheid van groot belang is. Die bron van mededingendheid is aangespreek deur beide literatuur te bestudeer en deur besprekings met sleutel-figure in die bedryf.

Die empiriese toepassing van die TKE teorie help om die mate waarin die uitvoerder aangepas het tot veranderinge in die globale omgewing aan te toon. Die studie bewys dat firmas in beide waardekettings oorkompenseer vir transaksie koste deur vertikale integrasie in plaas van kontrakte.

Bilaterale kontrakterings en strategiese vennootskappe moet prioriteit geniet om effektiewe kommunikasie, verpligtinge en kollektiewe besluitneming te verbeter. Die groeiende erkenning wat gegee word aan mededingende voordeel wat gewen kan word deur koördinasie in die waardeketting te verbeter is die begin punt vir ketting initiatiewe en, dit is belangrike seine wat die volhoubaarheid en mededingendheid van die bedryf in die lang termyn sal bepaal.

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INTRODUCTION

1.1 INTRODUCTION

As the process of globalisation of the world economy progresses, the degree of international competition among enterprises increases as well, yet not all industries or branches are affected to the same extent by this development. By facilitating higher levels of mutual beneficial interaction between consumers and producers, factor owners and producers, and between producers, opportunities can be derived. These are derived from advantages that arise from "economies of scale, the gains of division of labour and increased specialisation, and comparative advantage, both natural advantages and acquired and endogenous competitive advantages" (Drennan, 2000; 2). These are some of the benefits that can be attained through good supply chain management strategies.

The agro-food sector is swiftly moving towards an internationally interconnected system with a large variety of complex relationships, due to year-round supply, product differentiation and developments in information technologies, with the aim of enhancing competitiveness. In this context, vertical linking in the agro-food business, especially vertical coordination has gained attention. In order to achieve a higher level of supply reliability, there has been a notable increase in coordination between actors in the supply chain.

This raises the issue of governance choice and several governance structures can be observed ranging from spot markets through alliances to full integration. All these structures serve the same goal, to improve competitiveness. Transaction costs are one of the most important factors that determine the governance structures that characterise firms or an industry and the extent to which it is competitive in the local or global market.

The overall purpose of this study is to use a transaction cost approach to analyse the supply chain of the fruit industry in South Africa. By means of literature study, constructs are identified that help explain the choices made with regard to governance structures and the sources of competitiveness of supply chains. The

question of governance structures is addressed in transaction cost economics (TCE) where asset specificity is of major importance. The sources of competitiveness are addressed both in the literature study and from discussions undertaken with key industry representatives.

In the following sections, an overview of the relationship between supply chain and transaction costs is reviewed. This is followed by a brief justification of the study and the methodology that is adapted. The limitations of the study are also highlighted, and the chapter concludes with a summary of the content of subsequent chapters.

1.2 SUPPLY CHAIN AND TRANSACTION COSTS RELATIONSHIPS

Supply chain management (SCM) is a rapidly evolving area of interest to academics and business management practitioners. Aspects of marketing, economics, logistics and organisational behaviour are all important for developing insights into how and why different SCM arrangements emerge and for understanding the consequences of these arrangements for industry efficiency and competitiveness (Hobbs, 1996a).

More than 40 years ago, Forrester (1958; 37) noted "management is on the verge of a major breakthrough in understanding how industrial company success depends on the interactions between the flows of information, materials, money, manpower, and capital equipment". The way these flows affect one another to cause change and fluctuation form the basis of anticipating the effects of decisions, policies, organisational forms and investment choices (Mentzer *et al*, 2001).

Mentzer *et al* (2001) note that over the past decade SCM has risen to prominence. The reasons for the popularity of the concepts are manifold. However, several specific drivers can be traced to trends in global sourcing, an emphasis on time and quality-based competition and their respective contributions to greater environmental uncertainty. Spekman *et al* (2001) note that the benefits that accrue to firms that effectively manage their supply chain partners range from lower costs to higher return on investment. In more tightly woven supply chain relationships, innovation is enhanced through joint development opportunities and an ability to inculcate skills and capabilities from one's partner.

Despite the popularity of the concept of SCM, there remains considerable confusion as to its meaning. Mentzer *et al* (2001) accentuate that the alternative definitions and the categories they represent suggest that the term presents a source of confusion for those involved in researching the phenomena as well as those attempting to establish a supply chain approach to management.

According to Hobbs (1996a), transaction cost analysis (TCA) represents one possible approach to understanding and evaluating supply chain management and has the potential to be combined in an interdisciplinary setting with the insights provided by the marketing, logistics and organisational behaviour literatures. Relating to this approach, Wilson (1996: 9) notes that the theory of SCM is concerned with the linkages in the chain from primary producer to final consumer with the aim of reducing the transaction cost incurred within. It seeks to break down barriers between each of the stages in order to achieve higher levels of service and considerable cost savings.

Transaction costs are simply the costs of carrying out any exchange whether between firms in a marketplace or a transfer of resources between stages in a vertically integrated firm, when the neoclassical assumption of perfect and costless information is relaxed (Hobbs, 1996b). Transaction cost economics recognizes that transactions do not occur in a frictionless economic vacuum thus costs of carrying out economic exchanges exist (Coase, 1937). Hobbs (1996a: 17) divides transaction costs into three main classifications:

i. "Information costs – firms and individuals face costs in the search for information about products, prices, inputs and buyers or sellers.

ii. Negotiating costs – arise from the physical act of the transaction, such as negotiating and writing contracts (costs in terms of managerial expertise, hiring of lawyers, etc), or paying for the services of an intermediary to the transaction such as a broker or an auctioneer.

iii. Monitoring or enforcement costs – arise after an exchange has been negotiated. This may involve monitoring the quality of goods from a supplier or monitoring the behaviour of a supplier or buyer to ensure that all the pre-agreed terms of the transaction are met."

Four key concepts underpin TCA, namely bounded rationality, opportunism, asset specificity, and informational asymmetry. Loader (1997: 25) notes that "in a world where individuals are subject to bounded rationality (limited judgement)" – although they may intend to make a rational decision, their capacity to evaluate accurately all possible decision alternatives is physically limited. Hobbs (1996a) notes that bounded rationality poses a problem only in situations of complexity or uncertainty, where the ability of people to make a fully rational decision is hindered. Williamson (1979) defines opportunism as "self-interest seeking with guile." Firms and individuals sometimes seek to exploit a situation to their own advantage (Williamson, 1979).

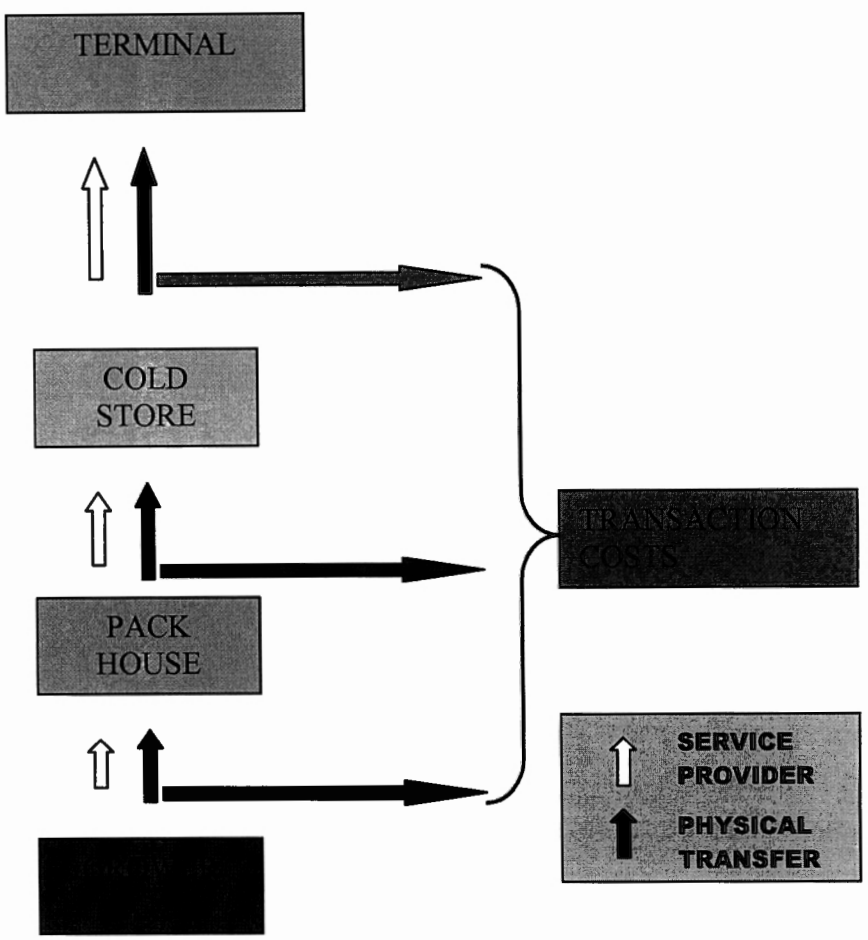
Asset specificity arises when a partner to an exchange has invested resources specific to that exchange which have little or no value in an alternative use. Drennan (2000) notes that asset specificity is generally regarded as the most important of the three attributes, because it creates market imperfections and allows asset owners to earn rents. It can take the form of physical assets related to location – an example can be the installation of specialised machinery in a production plant that is unique to one market. It can also be in the form of assets dedicated to a particular customer, or tangible assets that cannot be easily duplicated. Such investments face the risk that trading partners can behave opportunistically and set a lower price for the partner than the agreed one, knowing that the partner has limited alternatives.

Hobbs (1996a) notes that TCA allows for relaxation of the full or perfect competition assumption of neoclassical theory and recognises that many business exchanges are characterised by incomplete, imperfect or asymmetrical information. This refers to a situation where all partners to a transaction face the same but incomplete levels of information thus all face the same uncertainty. Opportunistic behaviour can occur in two ways – adverse selection and the moral hazard problem, terms that will be dealt with in greater depth in the following chapter.

1.3 SCOPE, AIM AND ASSUMPTION UNDERLYING THE STUDY

This study attempts to examine the supply chain of the fruit industry in South Africa. The linkages from the farm (growers or producers) through to the export are of specific interest. Below is a simplified diagram of the fruit supply chain to the point of exit for the destination market.

Figure 1.1: The Fruit supply chain to the point of exit for the destination market



The aim of the study is to use a transaction cost approach to supply chain management. It intends to identify and describe the inefficiencies that exist in the fruit industry. The study's goal is to analyse the transaction costs involved and to make recommendations on how these costs can be reduced.

The assumption underlying the study is that inefficiencies in the fruit supply chain are a source of transaction costs. The existence of transaction costs reduces the net price that sellers receive and increases the net price buyers pay, thereby

driving a wedge between the equilibrium prices for the buyer and seller. Wilson (1996) notes that there is a growing need to cooperate to reduce these costs and to try and alleviate the uncertainty of the market, efficiently producing the desired products and achieving higher levels of inter-firm communication.

In the South African fruit industry, the need to create efficiencies for and enhance the competitiveness of the industry has arisen. This has come in the wake of a strenuous period after the deregulation of the industry in 1997, which prompted a number of initiatives such as the establishment of SA Table Grapes (SAT), the Fresh Produce Exporters Forum (FPEF) and the current Fruit logistics infrastructure capacity optimisation study, to which this study is aligned. According to van Dyk (2003), there is a new vision in the fruit supply chain, namely a shift from "competition to co-optition" – a compromise between competition and collaboration. Spekman *et al* (1998) note that collaboration has become a popular topic as an integral facet of SCM sourcing strategies. Collaborative behaviour engages partners in joint planning and processes beyond levels reached in less intense trading relationships. Effective supply chain management suggests seeking close, long-term working relationships with one or two partners, both suppliers and customers, who depend on one another for much of their business. It also suggests developing interactive relationships with partners, who share information freely, work together, jointly plan for the future and make their success interdependent. Hobbs *et al* (1998) show that an efficiently organised supply chain can result in low transaction costs and a highly competitive industry in global markets.

By undertaking this study, it is hoped that the sources of transaction costs within the industry's supply chain can be identified and propose measures to curb or reduce the transaction costs. This will enhance the competitiveness of the South African fruit industry. Specifically, recommendations for the reduction of transaction costs in the industry will go a long way in ensuring that the costs and the prices are lowered, thus achieving higher margins than previously attained.

1.4 SOUTH AFRICAN FRUIT INDUSTRY

1.4.1 Historical background

The development of the fruit industry dates back to the beginning of the 19th century. Many factors influenced the growth of the industry. Rudimentary packing facilities, limited spraying material, primitive spray pumps and the 1933 depression restricted the growth of the industry. Exports came to halt upon the outbreak of the Second World War in 1939, and only resumed when the war ended. Before the Second Word War, producers exported their own fruit under their own trademark but after the war, under the Agricultural Marketing Act of 1937, commodity control boards were established to modernise and strengthen farming after the depression's adverse effect on many farmers. The Act gave the control boards powers to fix prices of their products and to gazette regulations of the overall control of the marketing of these products. As a result the fruit boards (Deciduous and Citrus Boards) were created in 1939 and given monopoly powers over the distribution of farm products (Broens and others, 2000). By the 1946/47 season all fruit was exported under a common label with the bulk of the crop being sold in the UK (Tregurtha and Vink 2002).

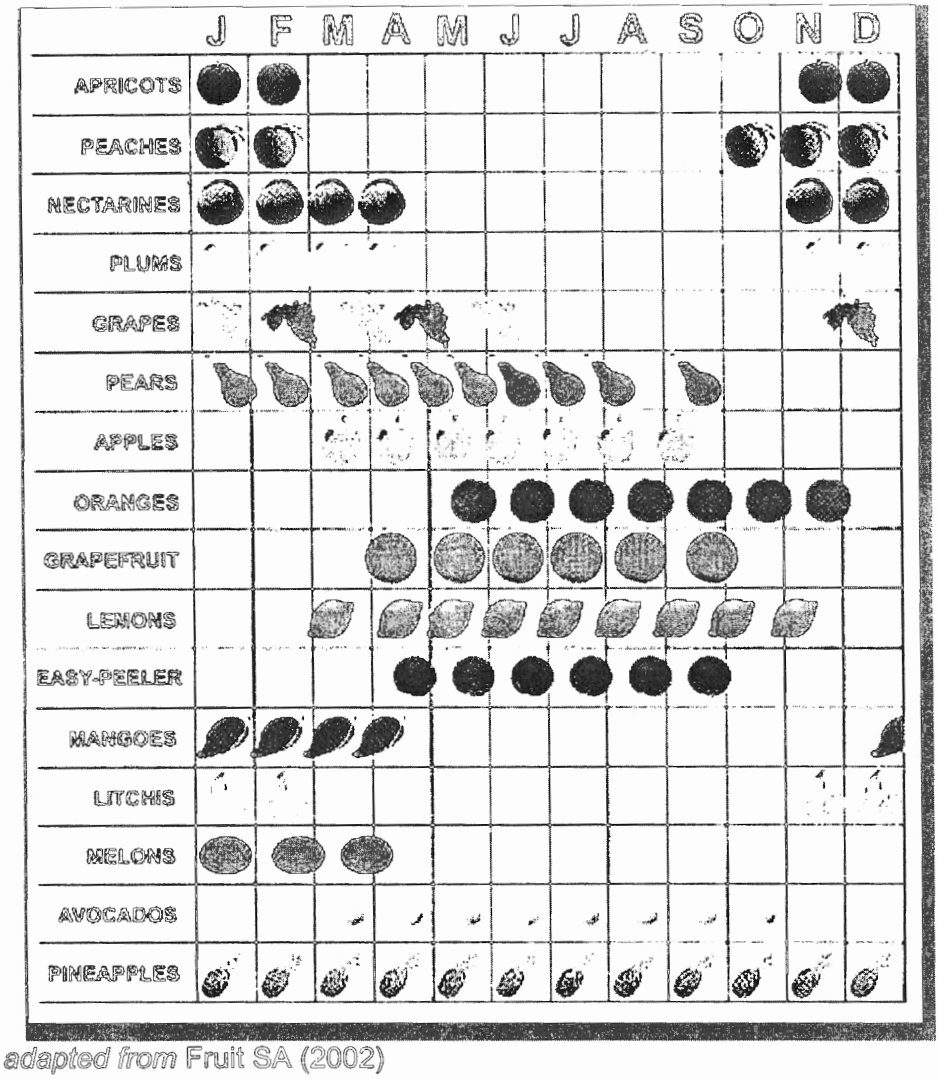
Tregurtha and Vink (2002) note that real marketing changes came about in the early 1970s when control over the domestic marketing of fresh fruit was abolished and export marketing power was delegated from the Citrus Board to Outspan (1970) and later from the Deciduous Fruit Board to Universal Fruit Trade (Co-operative) Limited (Unifruco) (1986). The disbandment of the fruit boards occurred in 1998 after a new Agricultural Marketing Act had been passed in 1996, which brought many uncertainties and an unfamiliar new dispensation. This led to a number of new initiatives such as the Fresh Produce Exporters' Forum in 1999 to include exporters of all fresh produce commodities (Broens *et al*, 2000).

1.4.2 Value chain structure

South Africa is generally regarded as a country of extremes in terms of its climate and topography. The variability in rainfall, temperature and soil types makes it extremely difficult to farm effectively and produce optimum yields of high quality (FABI website). However, the climate is ideally suited to fruit production and

therefore a wide range of fruit is grown in a number of geographically dispersed areas with a constant flow of fruit available for export (ISHS website). The fruit industry can be sub-divided into three divisions, the citrus, deciduous and sub-tropical industries that are discussed separately in the following sections. Table 1.1 below represents South Africa's fruit calendar.

Table 1.1: South Africa Fruit Calendar



Source: *adapted from* Fruit SA (2002)

a) The Citrus industry

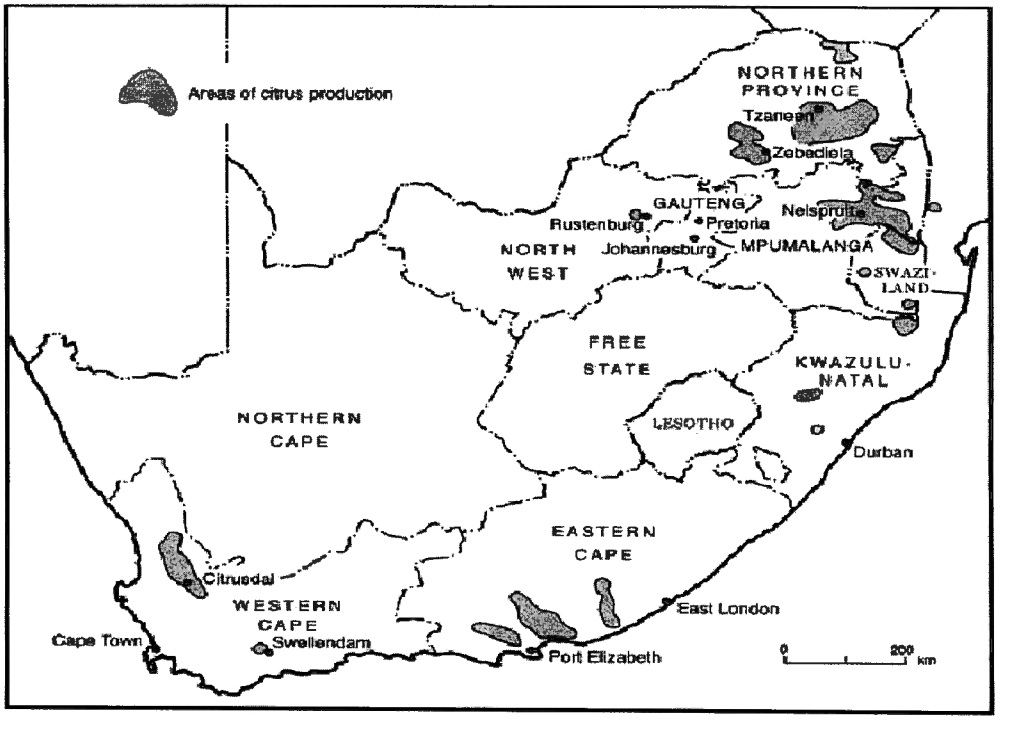
The term citrus fruits include different types of fruits and products. Although oranges are the major fruit in the citrus fruits group, accounting for about 70% of citrus output, the group also includes small citrus fruits (such as tangerines, mandarines, clementines and satsumas), lemons and limes and grapefruits. The leading processed form in the group is orange juice. The citrus fruit sector is evolving in a context of highly competitive global markets. Market signals to

changes in consumption patterns, particularly in the form of an increasing focus on the quality and the value-added aspects of the product have become crucial. In addition, there is the increasing power of global retail chains in fruit distribution as a consequence of the process of concentration and consolidation that they are undertaking. As a result, the citrus fruit market is evolving from a producer driven form to a more consumer oriented market (UNCTAD website).

South Africa's citrus industry, unlike much of the country's manufacturing sector, has always been outwardly focused and 'globally integrated'. Exports of citrus to the UK started in the first decades of the last century; by the 1960s, South Africa was exporting well over half of all southern hemisphere fresh citrus and was ranked amongst the top five fresh citrus exporters in the world. By the mid-1990s, the 40 million cartons of citrus exported to over 60 countries represented one third of the total local and export value of South African fresh fruit production (Mather, 2003).

According to Citrus Southern Africa, South Africa is the third largest exporter of citrus, after USA and Spain. South African citrus is grown in eight of the nine provinces (Fruit South Africa, 2003). Figure 1.2 below is a map of South Africa indicating citrus production areas.

Figure 1.2: Citrus Production areas in South Africa



Source: Mather (2003) *adapted from* Wits Cartography Unit (2002)

The industry was established in the early 1800s. However, it was not until 1926, with the founding of the South Africa Co-operative Citrus Exchange (SACCE), that the industry started realizing its enormous potential on the export market. Changes in the domestic regulatory environment have also played an important role in reshaping the industry. Between the 1940s and the mid-1990s, citrus exports were controlled by a single desk exporter – the South African Cooperative Citrus Exchange (SACCE). In 1996, new marketing legislation was passed and despite vigorous attempts by the single channel exporter to maintain an export monopoly, exports were liberalised and growers were now in a position to choose an independent exporter. Given South Africa's position as an important southern hemisphere exporter, the industry expected a strong 'private sector response' (Bayley, 2000). For growers, the impact of liberalisation since its onset has been mixed. Although they can now select an export agent, returns have declined and also appear to have become more volatile from season to season. In the third year after liberalisation (2000), the fruit export industry as a whole lost an estimated R1 billion in export earnings and the industry declared itself in crisis. Poor returns were blamed on quality, oversupply and the existence of too many inexperienced export agents. Since the 2000 season, there have been various attempts to privately regulate several specific citrus 'chains'. Despite its longer history of global integration, changes in international markets and the domestic regulatory environment have had a serious impact on the industry (Mather, 2003). Presently, the South African citrus industry is regarded as one of the largest agricultural industries in the country in terms of export earnings (FABI website).

The industry employs about 100 000 people in the production and packaging sectors, with a total of over 1 million people dependant on the South African citrus industry. Major export markets include Japan, USA, the EU, South Korea and Taiwan with new markets established in Thailand, Israel and China (Fruit South Africa, 2003). The industry is expected to export more than 60 million cartons of citrus worth R2.5 billion in this year (FABI website).

b) The Deciduous fruit Industry

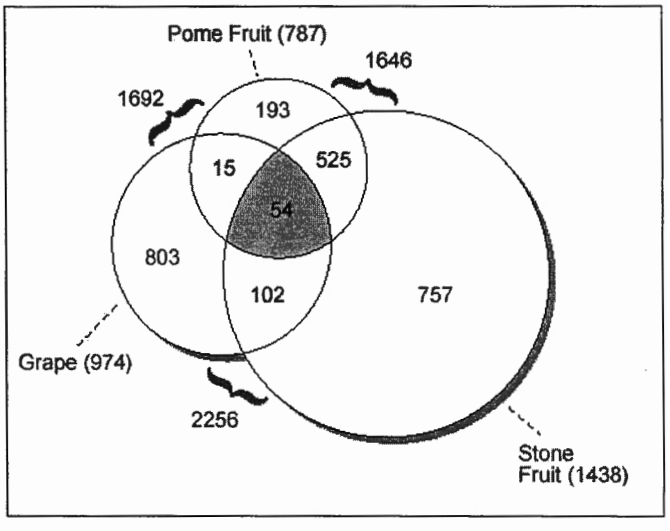
The fruit is classified under three categories, - grapes, pome fruit (apples and pears) and stone fruit (apricots, nectarines, peaches and plums). According to the DFPT (2002) the grape industry employs 33 000 people while the pome and stone fruit industries employ 29 000 (including packers) and 14 400 people respectively. A summary of data on employment, number of producers, and area planted is shown in figure 1.3 below.

Figure 1.3: Key statistics for the deciduous fruit industry

EMPLOYMENT

FRUIT		EMPLOYMENT
Pome Fruit	24 000	Production
	5 000	Packaging
Stone Fruit		14 400
Grapes		33 000

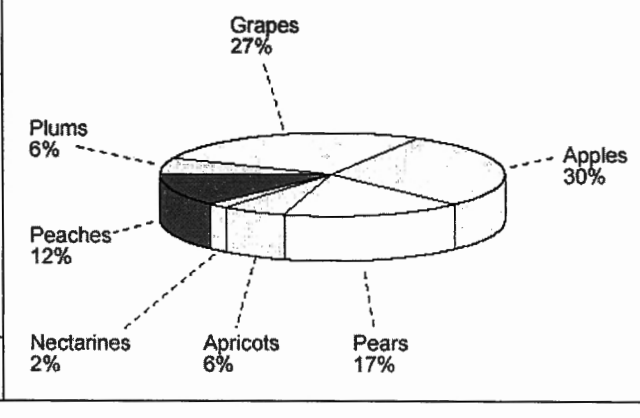
TOTAL NUMBER OF PRODUCERS



TOTAL AREA PLANTED

FRUIT	HECTARES
Apples	22 454
Pears	12 912
Apricots	4 751
Nectarines	1 379
Peaches	9 575
Plums	4 962
Grapes	20 643
Total	**76 676**

PERCENTAGE OF AREA PLANTED



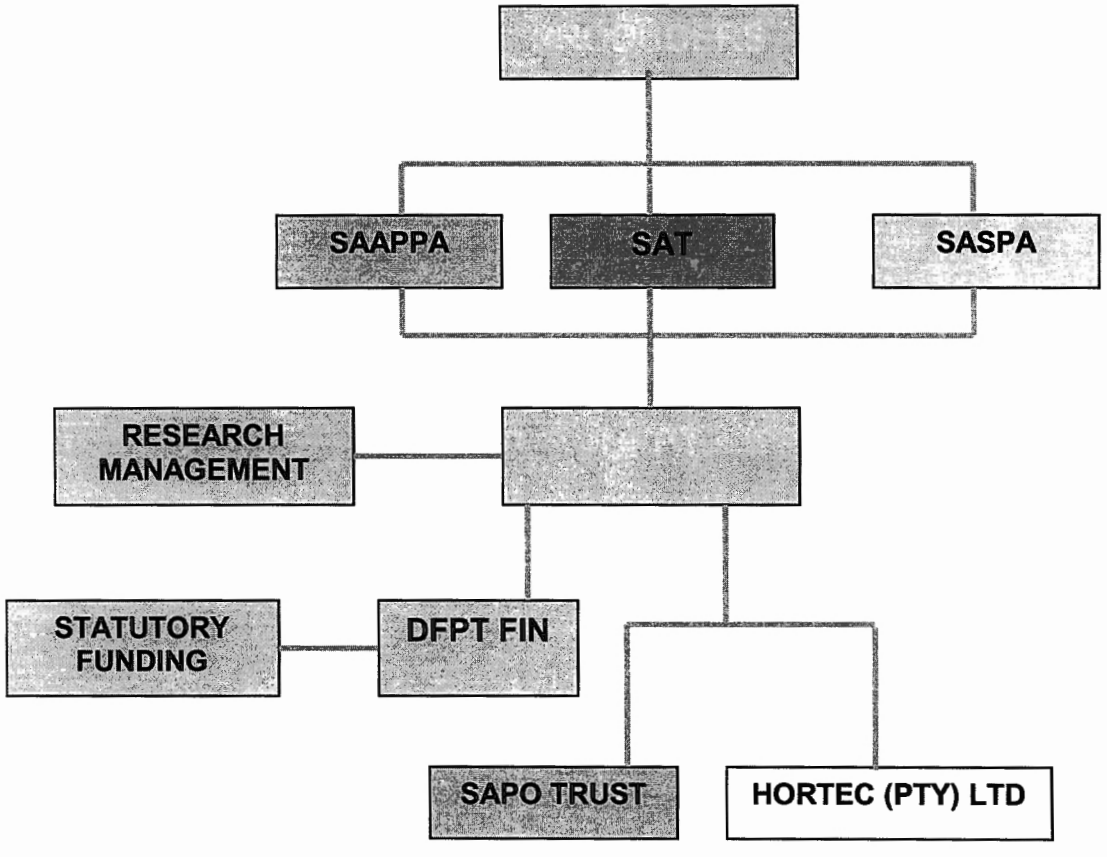
SOURCE: DFPT TREE CENSUS / SADRIN

In terms of total area planted, apples constitute 30%; grapes 27% while nectarines have the smallest area constituting only 2% (DFPT, 2002). The industry is export driven with major markets in central Europe (40%), UK (35%), Asia and the Far East (11%), the Middle East and Mediterranean (6%) while exports to the USA and

Africa contribute 4% each (Fruit South Africa, 2003). Estimates are that it earns about US$ 125-million in foreign exchange for the country a year (Sukazi, 2002).

The deciduous industry structure is comprised of farmers, the different fruit associations (namely South African Apple and Pear Producers Association (SAAPPA); South African Table Grapes (SAT); South African Stone-fruit Producers Association (SASPA)) and the Deciduous Fruit Producers Trust (DFPT) which is the umbrella organisation of the deciduous fruit industry. Figure 1.4 below summarises the structure of the deciduous fruit industry.

Figure 1.4: Deciduous fruit structure



Notes:

SAAPPA – South African Apples and Pears Producers Association

SAT – South Africa Table grapes

SASPA – South Africa Stone-fruit Producers Association

SAPO – South African Plant Improvement Organisation

Source: Adapted from Faure (2002; 5)

c) The Sub-tropical fruit Industry

Subtropical fruit types require warm conditions and are sensitive to large fluctuations in temperature and to frost. The particular climatic requirements of some types of subtropical fruit make the cultivation thereof possible in only certain specific areas of the country. The main production areas of subtropical fruit in South Africa are parts of the Limpopo, Mpumalanga and KwaZulu-Natal Provinces. Fruit such as granadillas and guavas are also grown in the Western Cape, while pineapples are grown in the Eastern Cape and KwaZulu-Natal.

Measured in terms of the value of production, the subtropical fruit industry earned R761 million in 2001/02, an increase of 6% on the 2000/01 figure of R718 million. Table 1.2 below gives a summary of production volumes of subtropical fruit during the period between 1997 and 2002.

Table 1.2: Production of subtropical fruit from 1997/98 to 2001/02

Fruit type	1997/98	1998/99	1999/2000	2000/01	2001/02
			'000 tons		
Avocados	57,1	79,9	68,9	69,5	57,2
Bananas	215,7	226,9	249,8	260,1	273,8
Pineapples	146,5	146,8	160,2	161,2	160,8
Mangoes	41,7	50,6	40,8	48,0	58,1
Papayas	22,4	23,2	23,6	20,3	22,6
Granadillas	0,7	1,1	0,9	1,2	1,4
Litchis	6,4	7,3	5,0	7,5	4,6
Guavas	28,6	18,1	21,9	23,9	24,3

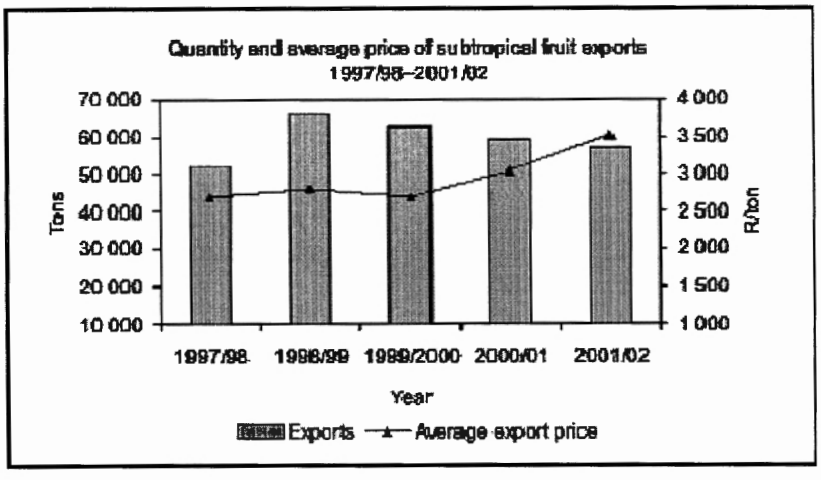
Source: National Department of Agriculture (2002)

During the season from 1997/98 to 2001/02, an average of 3,7 % per annum increase in total production of subtropical fruit can be noted. In the 2001/02 season bananas, pineapples and avocados contributed 45, 27 and 9,5% respectively to the total production of subtropical fruit.

During the same period between 1997/98 to 2001/02, total exports of subtropical fruit decreased by an average of 1% per annum, while export prices for all subtropical fruit increased on average by 7 % per annum. The main subtropical fruit type exported is avocados and during 2001/02, exports of avocados contributed 50% to the total value of exports of subtropical fruit. Other subtropical fruit types exported were mangoes, pineapples and papayas (National Department of Agriculture, 2002). Figure 1.5 gives a summary of the export volumes and prices

for the period 1997/98 to 2001/02.

Figure 1.5: Quantity and average price of Subtropical fruit exports for 1997/98-2001/02 season



Source: National Department of Agriculture (2002)

1.5 METHODOLOGY

The theory of supply chain management is concerned with linkages in the chain from the primary producer to the final consumer with the incentive of reducing the transaction costs incurred within. This entails breaking down barriers between each of the stages so as to achieve higher levels of savings and cost savings.

In this study, due to the complexity of the fruit industry, a case study approach is used to analyse transaction costs in the fruit industry. The study includes multiple site visits to the exporter's operating location, thus affording the researcher insight into the causal processes involved in a complex environment. Such hands-on exploratory case research is recommended by several authors as essential (Clark *et al*, 2001) for understanding the complex interactions between procurement and distribution. As the study involves an area that is not well understood, case study research is often the most useful approach, enabling researchers to develop frameworks and models that can later be tested and validated (or refuted) using more quantitative research methodologies (Clark *et al*, 2001).

It is important to note that the case study approach involves a single exporter dealing with multiple producers and importers, and all the information gathered in

this study is from the perspective of Colors Fruit (SA) Pty Ltd, which is a private exporting firm. The approach bases on how activities are handled in this particular firm. This study deliberately focuses on the producer/ exporter and exporter/ importer interfaces with special focus on the exporter's role with the producers and importers.

Two key fruit supply chains form the focus of the analysis, namely, the table grape chain and the citrus chain. The rationale behind the choice is the high value and large volume attributes for the respective supply chains.

A consultation with industry representatives is undertaken to:

i. Map the supply chain for two fruit chains
ii. Identify linkages in the chain
iii. Identify inefficiencies
iv. Identify transaction costs resulting from the inefficiencies

Analysis of the transaction costs is done and parties are asked for possible solutions. The solutions are tested with an expert panel comprising of experts from different sectors related to the industry to determine which solutions are realistic.

1.5.1 Mapping the supply chains

The mapping activity helps identify links in the chain where exchanges are made. These linkages are where inefficiencies and hence transaction costs are incurred. The map also shows, graphically, where an organization's time and efforts would be best spent. It also enables identifying the appropriate linkage between a supplier and its customers for maximum benefit, including internal supply matter relationships throughout the organization (Roberts, 2003)

1.5.2 Identifying linkages

Linkages in the chain show the activities and roles played by the different participants in the supply chain. For organisations to realise a profit margin depends on their ability to manage the linkages between all activities in the value chain (Recklies, 2001). The motivation for supply chain optimization is sustainable

competitive advantage for all players in the value chain gained through lower costs and/ or greater differentiation. Upstream links are largely dependent for their survival on the competitive position of firms or links satisfying the ultimate end-user. Similarly, the competitive position of downstream firms is largely dependent upon their supplier's costs and actions. Recklies (2001) notes that these linkages are crucial for corporate success. The linkages are flows of information, goods and services, as well as systems and processes for adjusting activities. The relevance of linkages in transaction cost analysis emanates from the fact that it is between these interfaces or linkages where transaction costs are incurred. In most industries, it is rather unusual that a single company performs all activities from product design, production of components, and final assembly to delivery to the final user by itself. Most often, organizations are elements of a value system or supply chain. Hence, there are a lot of exchanges that occur between production and delivery to final end user and as such transaction cost minimisation becomes crucial if the objectives of profit maximisation and competitiveness are to be attained.

1.5.3 Identifying inefficiencies

For the purpose of comparative institutional choice, instead of assuming the pre-existence of the market, the need to identify inefficiencies in a supply chain becomes important. According to Coase (1937; 394) a question that can be raised is "Why is not all production carried on by one big firm?" In answering this question, transaction cost (TC) theory puts forward two main factors that limit a firm's expansion. The first factor is that bounded rationality gives rise to finite spans of control, and expansion requires that additional hierarchical layers be added (Williamson 1975). This complicates internal communications and may lead to top-down control losses. On the other hand, the second factor concerns the question of 'who guards the guardians' (Tsang, 2000). That is, who monitors those in positions of authority to ensure that their self-interest does not endanger the collective interests of the firm? Tsang (2000) notes that increasing firm size leads to taller hierarchies which in turn result in a greater distance of most subordinates from their ultimate superiors, and hence less information about the opportunist behaviour of senior management. Moreover, stockholders' control over

management becomes more difficult when a firm grows in size and complexity (Williamson 1975). All these inefficiencies imply that transacting through markets would gradually take over. Therefore, the need to identify inefficiencies in this study will allow for the identification of transaction costs associated with a particular institutional choice or governance mode, thus enabling the identification of an efficient institutional choice or governance mode.

1.5.4 Identifying transaction costs

A large amount of effort often goes into choosing, organizing, negotiating and entering into even the most mundane contracts. The costs associated with these efforts (called transaction costs) are generally independent of the price of the contracted product or service itself. The conjecture underlying this study is that inefficiencies within a chain result in transaction costs which manifest in uncertainty, bounded rationality, opportunism, asset specificity and risk in conducting an exchange or business. Against this background, the aim is to identify inefficiencies that result in transaction costs taking into consideration that not all inefficiencies ultimately lead to transaction costs.

1.6 LIMITATIONS

The major problem with transaction cost analysis is that the successful measurement of transaction costs is neither easy to separate from other managerial costs, nor readily measurable. Although one may realise the existence of inefficiencies (that induce transaction costs) in the supply chain, it is difficult to measure these costs in financial terms. Another limitation stems from the case study approach involved. This approach faces data limitations and in addition it has been criticised because the results are not necessarily representative of the wider economic environment (Hobbs, 1996a).

1.7 SEQUENCE OF CHAPTERS

In Chapter Two, the theoretical framework for the analysis and application of economic theory to the concept of transaction costs in the fruit supply chain is reviewed. Theory from the new institutional economics, especially transaction cost economics, will be used to explain how the transaction cost approach to supply chain management can be used to enhance the competitiveness of the fruit industry in South Africa. Against this background, the case studies of table grape and citrus fruit chains are analysed in Chapter Three while Chapter Four concludes the study with emphasis on incentives, penalties and safeguard measures to minimise transaction costs. Recommendations are also discussed in this chapter.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1 INTRODUCTION

The study is about identifying and analyzing transaction costs in the supply chain of the fruit industry in South Africa. It endeavours to determine how inefficiencies in the supply chain which result in transaction costs can be reduced in order to enhance the competitiveness of the South African fruit industry. In this chapter the theoretical foundations of the transaction cost economics paradigm, with a brief overview of branches of the New Institutional Economics (NIE) and institutions is reviewed. The concept of transaction cost economics which is the centre of the study is also examined. This is followed by an overview of transaction costs and their importance to supply chain management in the fruit industry. The governance structures that characterize the industry, alternative governance structures and efficient governance mechanisms are also reviewed. The chapter ends with a review of studies that have been conducted globally and within the region.

2.2 FOUNDATIONS OF THE TRANSACTION COST ECONOMICS PARADIGM

Transaction cost economics (TCE) is a branch of the New Institutional Economics (NIE) which is a large and relatively new multidisciplinary field that includes aspects of economics, history, sociology, political science, business organisations and law (Kherallah and Kirsten, 2002). Thus, the NIE represents an "expanded economics" that focuses on the choices people make, while at the same time it allows for factors such as pervasiveness of information and human limitations on the processing of information, evolution of norms, and willingness of people to form bonds of trust (Clague, 1997 *cited by* Makhura, 2000; 26). At the core of this paradigm are transactions and their related costs that constitute the force that unifies the sub-fields that have developed (Ménard, 2001). According to Loader and Hobbs (1996), this suggests that an economic system (or sub-system, chain or

filière[1]) is constituted by a series of transactions, and that the economic actors aim to effect those transactions as efficiently as possible. Thus, the approach is firmly rooted in the microeconomics of exchange, concentrating on the implications of individual transactions for the organisation of a system.

Makhura (2000) notes that the NIE has moved to the centre stage of economics during the last two decades and just as TCE, Ronald Coase is known to have pioneered the NIE paradigm with his famous 1937 article "The Nature of the firm" while Oliver Williamson coined the phrase, the "New Institutional Economics". Coase (2000) notes that the phrase was intended to differentiate the subject from the old institutional economics, pioneered (Paarlberg, 1993) by Commons and Veblen. The old institutional paradigm argued that institutions were a key factor in explaining and influencing economic behaviour but there was little analytical rigor and no theory in this school of thought. It operated outside neo-classical economics and there was no quantitative theory from which reliable generalisations could be derived or sound policy choices could be made (Makhura, 2000).

According to Williamson (2000), the NIE had its origins in good critics of orthodoxy who believed that institutions were both important and susceptible to analysis. Key proponents in the development of this paradigm include six Nobel Laureates – Kenneth Arrow, Friedrich Hayek, Gunnar Myrdal, Herbert Simon, Ronald Coase and Douglass North. Other influential figures – Armen Alchian, Chester Barnard, Richard Cyert and James March add to the long list.

Williamson (1996), notes that the NIE offers not one, but several (related) perspectives, operating at two levels – macro and micro. At the macro-perspective is the institutional environment that is concerned with the political and legal rules of the game while the institutions of governance (arrangements), which is more a micro-perspective deals with firm and market modes of contract and organisation.

According to Makhura (2000), the purpose of the NIE is both to explain the operations of institutions and their evolution over time, and to evaluate their determinant impact on economic performance, efficiency, and distribution. Kherallah and Kirsten (2002) note that this new paradigm of economics considers

[1] The term filière is derived from the work of francophone economists on food systems and refers (as do the other terms) largely to vertical value adding systems (Loader and Hobbs, 1996; 26)

that the cost of transacting – determined by institutions and institutional arrangements (governance) is the key to economic performance. Makhura (2000) notes that there is a two-way causality between institutions and economic growth – on the one hand, institutions have a profound influence on economic growth, and on the other hand, economic growth and development often result in institutional change. The usefulness of NIE arises from its ability to deal with whatever forces exist in contrast to mainstream economics that focus on a select few while others are held constant. It becomes increasingly useful, according to Paarlberg (1993) with more rapid institutional change – a characteristic of modern times. He notes that (p826) "it can deal with expectation and attitudinal changes on the part of public, forces resulting from the drive for full employment, regulatory activity, international quotas, exchange controls, the shift from hard to soft money, the rise of special interests, the growth of government, and the advent of endemic inflation". However, it must be noted that not all institutional changes are beneficial (Makhura, 2000). By influencing transaction costs and coordination possibilities, institutions can either facilitate or retard economic growth, which explains why for example countries have different paths of economic development.

2.2.1 Branches of the New Institutional Economics

As mentioned earlier, NIE is by definition a multi-disciplinary field of study and since it is relatively new, there is (Kherallah and Kirsten, 2002) still some debate as to what falls under the NIE banner but there seems to be some agreement that the study fields depicted in figure 2.1 below are part of the NIE. Nabli and Nugent (1989; 1333) note that the pioneering contributions that constitute the NIE are noteworthy on several grounds: -

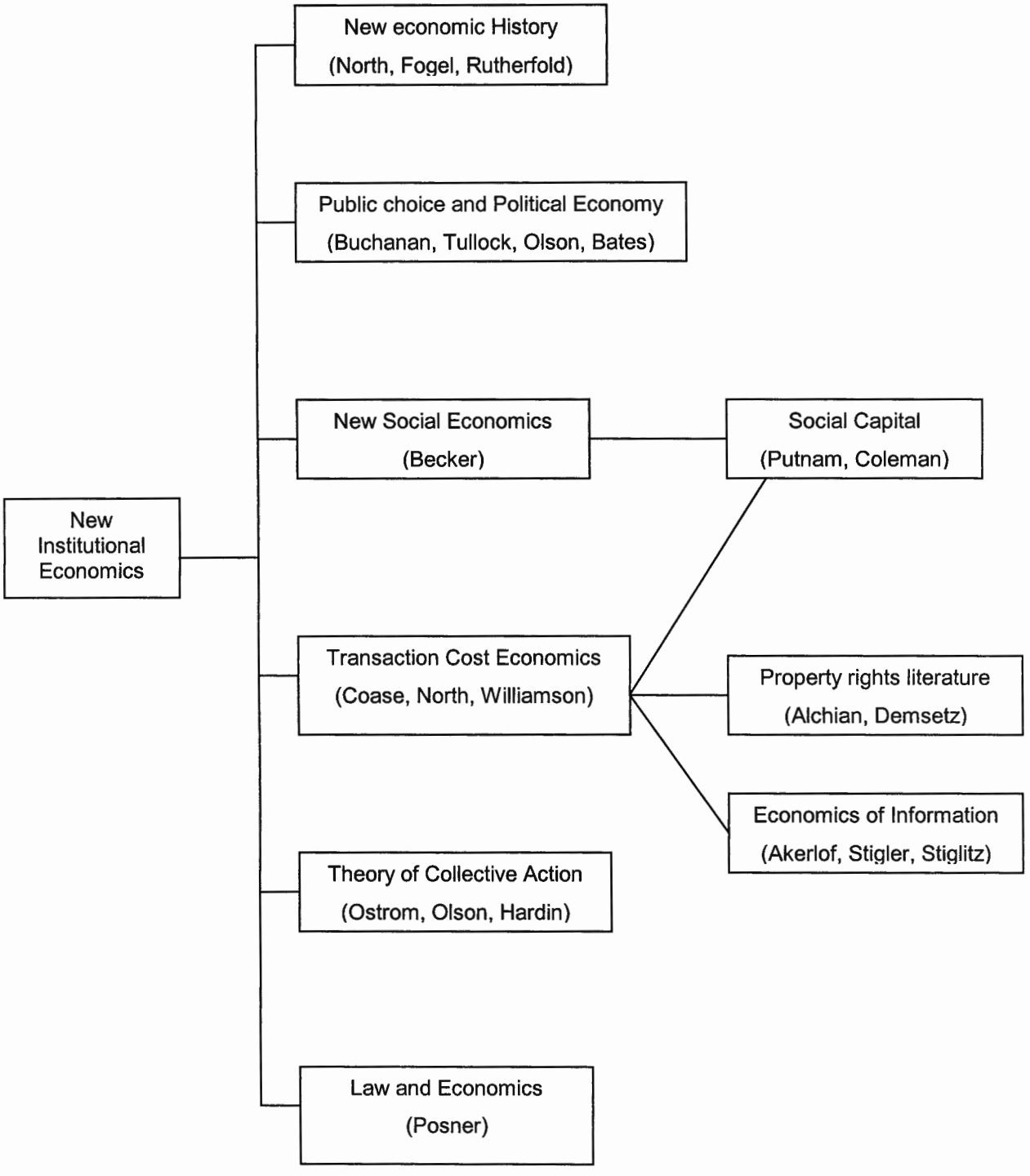
i. "The institutions and their determinants that are the subject matter of NIE have long served as battle grounds among alternative leading paradigms, namely Marxian, neo-classical, and socio-biological.

ii. NIE represents the culminating intersection of a number of different lines of investigation, each interesting in its own right, including the analysis of behavioural norms, the integration of persons with different tastes and preferences into voting coalitions, interest group formation, the problems of

the prerequisites for (successful) collective action, transaction costs, organisation theory, limitations on the rationality of human behaviour, the emergence of rules of thumb for the firm decision making, the determinants of firm structure, coordination problems, rent seeking behaviour, technological change and its relationship to institutional change and the determinants and effects of property rights.

iii. Many of these individual lines of investigation within the NIE are interdisciplinary, allowing for cross-fertilisation and mutual simulation among historians, sociologists, political scientists, psychologists, lawyers, and economists".

Figure 2.1: Branches of the New Institutional Economics



(Source; Kherallah and Kirstern, 2002; 115).

The focus of this chapter is on the transaction cost economics branch, and to put transaction costs in their proper context, a brief definition of institutions is crucial.

2.2.2 Institutions

The consensus on the centrality of institutions to development has not been matched by one on its definitions. According to Nabli and Nugent (1989); different authors have used quite different definitions, each emphasizing different aspects or characteristics of the more general phenomenon. Among the characteristics or aspects of institutions that vary are the degree to which they are (Nabli and Nugent, 1989; 1334): -

i. "organisational, that is, the extent to which organisations and institutions coincide,
ii. formal,
iii. created at a specific time and place by a specific means, as opposed to having evolved from more diffuse sources,
iv. embedded in, as opposed to differentiated from, other institutions,
v. universal, as opposed to particularistic, in the interests they serve,
vi. creating, as opposed to simply maintaining, a certain public good, and
vii. technology linked".

Despite the differences and numerous definitions, a number of characteristics can be identified that are useful for this study. As Langlois (1986; 17) puts it, citing Andrew Schotter, "a social institution is a regularity in social behaviour that is agreed to by all members of society, specifies behaviour in specific recurrent situations, and is either self-policed or policed by some external authority". According to North (1990), institutions are the rules of the game that prohibit, permit or require certain actions. North (1990) notes that they comprise arrangements among economic agents (laws, rules and customs) that attempt to decrease uncertainty and costs in exchange and ownership. Hence they limit and define the choice set of neo-classical theory (North, 1989). According to Ortmann (2000), institutions arise in a world of uncertainty, costly information and transaction costs.

Ortmann (2000) notes that good institutions promote market exchange by securing property rights and predictable rules of law. Good governance relates to government policies and institutions that promote competitive markets and

efficiency by defining the rules of the game that allow transaction costs to be reduced and so enlarge the effective flow of goods and services. In the absence of the rule of law, transaction costs and uncertainty increase. North (1989) elaborates by noting that the function of institutions is to provide certainty in human interaction, and the inherent features of rules and norms accomplish this. The rules are typically nested in a hierarchical structure, each more costly to change. He further explains that the "norms of behaviour" are the most important sources of stability in human interaction due to their tenacious survival ability and because they become an integral part of habitual behaviour. In consequence the reduction of uncertainty makes possible human interaction, but does not imply that the institutions are efficient.

According to North (1990) institutions can either be formal or informal. Formal institutions consist of laws and regulations (e.g. property rights and contractual law) while conventions and codes of behaviour (e.g. community norms) fall under informal institutions.

Kherallah and Kirsten (2002) try to distinguish institutions from organisations, noting that organisations are a structure of roles and that many institutions are organisations (for instance households, firms and cooperatives) while other types of institutions such as money or the law are not.

The origin of institutions is explained by Aoki (2000) citing North's sharp distinction between the rules of the game and the players of the game (organisations and their political entrepreneurs) who can act as agents of institutional change, that is, as rule makers. Aoki (2000) notes that the existing rules of the game shape the incentives of players (organisations) as to how to transact and what to innovate, ultimately generating an effective demand for new rules in response to changing conditions. The new rules will then be negotiated and determined in the political market that is structured according to political rules. North (1995) notes that it is the polity that defines and enforces the economic rules of the game. Informal norms of behaviour come from socially transmitted information and thus constitute a part of the cultural heritage.

2.2.3 The concept of transaction cost economics (TCE)

According to Kherallah and Kirsten (2002), the general hypothesis of this strand of the NIE is that institutions are transaction cost minimising arrangements that may change and evolve with changes in the nature and sources of transaction costs. As noted earlier, Ronald Coase first came up with an explanation for the fact that firms and markets are alternative governance structures that differ with respect to transaction costs. In his original proposition, the cost of organising an exchange in a market surpasses the cost of coordinating the exchange in a firm under certain conditions. Williamson (1975) added considerable precision to Coase's argument by identifying the types of exchanges better conducted within the boundaries of a firm than within a market. He argues that economic actors will attempt to organise their overall business such that the costs of undertaking exchange with other system members (or transaction costs) are minimised.

Williamson (1996; 25) describes transaction cost economics as "relentlessly comparative", (i.e. organisation forms are always examined in relation to alternative feasible forms), "micro-analytic" (action resides in details) "discrete structural" (alternative forms of governance differ in kind, and so it is impossible to replicate markets by hierarchies or the reverse), and preoccupied with economising, principally with reference to organisation rather than technology. TCE's distinctive orientation is its focus on reducing costs through *ex ante* selection of governance mechanisms appropriate for the antecedent conditions (Williamson, 1985). The level of analysis in Williamson's TCE theory is the transaction or contract[2]. Williamson (1985) identifies three attributes of transactions that have cost implications, namely the asset specificity associated with the transaction, uncertainty surrounding its execution and its frequency. Table 2.1 splits transaction costs into six categories and identifies the sources of such costs and clearly illustrates the hidden nature of such costs, but also highlights how important they may be in terms of time and effort to monitor and screen contracting situations.

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[2] When two or more parties agree to exchange or transfer goods or services, the transaction can be seen as a form of contract. Costs associated with that transaction include the costs of setting up the agreement or contract, then monitoring and if necessary enforcing its performance. Moreover, Williamson (1975) suggested that transaction costs include not only the direct expenses of the

Table 2.1: Transaction cost sources and tangible forms

Type of cost	Source/ origin of costs	Tangible forms of transaction cost
Search costs	Lack of knowledge about opportunities (e.g. products, prices, demand, supply trading rights, market outlets)	Personal/ personnel time, travel expenses; communication costs; advertising/ promotion costs;
Screening costs	Uncertainty about reliability of the potential suppliers/ buyers; uncertainty about the actual quality of the goods/ services offered	Consulting/ service fees; costs of credit rating checks
Bargaining costs	Conflicting objectives and interests of transacting parties; uncertainty about the willingness of others to trade on certain terms; uncertainty over transactor rights and obligations	Licensing fees; insurance premiums
Transfer costs	Legal, extra-legal or physical constraints on the movement / transfer of goods	Handling/ storage costs; transport costs; bribery and corruption expenses
Monitoring costs	Uncertainty about transactor compliance with specified terms; uncertainty about possible changes in the quality of goods and services	Auditing fees; product inspection charges; investments in measurement devices
Enforcement costs	Uncertainty about the level of damages/ injury to a transacting party arising from contractual non-compliance; problems in exacting penalties through bilateral agreements or through use of third parties	Arbitration, legal court fees, costs to bring social pressure

(Source: Loader and Hobbs, 1996; 27)

transaction, but also the possible opportunity costs of inferior decisions.

In contrast to the orthodoxy "firm-as-production function approach" that treats technology (economies of scale, non-seperabilities) as the main determinants of the natural boundaries of the firm, TCE approaches the firm and market organisation from an efficient contracting or comparative organisational perspective (Williamson, 1996). TCE adopts the proposal made by John R Commons in 1934 that the transaction be made the unit of analysis and moves the argument forward by asking what the critical dimensions are on which transactions differ. Ortmann (2000) notes that transaction costs vary by product and or type of agent in the marketing chain. According to Coase (1937), firms emerge to economise on the transaction costs of market exchange and the "boundary" of a firm or the extent of vertical integration will depend on the magnitude of those transaction costs. Whether a firm makes or buys, that is, produces for its own needs or procures a good or service from an outside supplier (i.e. in the market), depends largely on the transaction costs of managing the transaction in the firm as compared with mediating the transaction through the market. Which transactions go where depend on the attributes of transaction, on the one hand, and the costs and competence of alternative modes of governance on the other.

Menard (2000) notes that this approach provides a theoretical framework for understanding the trade-off that continuously occurs at the microeconomic level between alternative modes of organising transactions and also offers tools for analysing interactions between these organisational forms (or governance mechanisms in Williamson's terminology) and the institutional environment in which they are embedded. In the work of Williamson (1985) on the economics of organisation and contracts, the concepts of bounded rationality and opportunistic behaviour (which manifests itself as adverse selection, moral hazard, cheating, shirking and other forms of strategic behaviour) are used to explain contractual choice and the ownership structure of firms. According to Williamson, a trade-off between integrated forms of economic organisation and more decentralised structures depends on the magnitude of transaction costs.

Three modes of governance or governance structures through which the trade-off is carried out simultaneously or sequentially have been identified in the governance branch of TCE. Rousset (2003) notes that the virtue of integrated forms of economic organization (the "hierarchies" in Williamson's terminology) is to reduce

the costs of hold up in situations of asset specificity and high uncertainty requiring medium-term adjustments, lower the "costs of change" (Langlois, 1991) in innovating organisations, as well as the costs due to informational asymmetry between actors and the problem of measurement of the characteristics of the goods that are traded. On the other hand, according to Williamson (1975), the advantage of markets is that they allow economies on the costs of bureaucracy and control, and that they ease transmission of price incentives. Beyond these advantages, markets also have the virtue that they aggregate demand, mechanically lowering production costs (Rousset, 2003). The rational entrepreneur uses the market when the assets implied in the transaction are generic or slightly specific and it constitutes the most effective governance structure (least expensive) in such situations. Between the two polar forms, the hybrid form combines these properties with a variable intensity. It corresponds to situations in which the degree of specificity is medium – it is high enough to trigger a bilateral dependence that requires coordination and mutual control, but it is not high enough to justify a centralized integrated organization, the cost transactions of which might take over the gains in transaction costs made possible by the organisation. In Table 2.2 below the comparative advantages of the governance structures based on the transaction cost economics framework (Ghertman, 1994; Barzel, 1982; Langlois, 1992); Williamson, 1991) adapted by Rousset (2003) are presented.

Table 2.2: Comparative advantages of the three canonical governance structures

Governance Structures / Characteristics	Market (spot)	Hybrid	Hierarchy
Ghertman (1994) — *Behavioural Attributes *Asset specificity *Instruments of management			
Barzel (1982) — Measurement costs[3]		(?)	
Langlois (1992) — Dynamic transaction costs[4]	Could be prohibitive	(?)	Low
Williamson (1991) — Intensity of incentives	Strong	Semi-strong	weak

Low transaction cost (~0); intermediate transaction costs; high transaction costs

(Source: adapted from Rousset, 2003; 6)

The conceptual framework is useful to conjecture and understand a firm's choices and identify what kind of transactions command vertical integration, stable relationships with suppliers or the use of the market

[3] Focuses on the problems linked to the cost of measuring the characteristics of transactions – a cost that can make standard trade inefficient. See also Kenney and Klein (1983).

[4] These constitute a type of costs that are linked with asset idiosyncrasy – where both parties to the transaction are mutually dependent, for example in a situation of missing markets or in the case of technical paradigm change. See example of Ford Motor and the automobile industry in Langlois (1992).

2.3 TRANSACTION COSTS AND SUPPLY CHAIN MANAGEMENT IN THE FRUIT INDUSTRY

The great variety of fruit, the geographical dispersion of production and the high perishability inherent to fruits makes this specific trade one of the most complex among agricultural products (Carvalho *et al*, 2000). To deal with such complexity, producers and traders of fruit have empirically adopted several different managerial practices. The relevance of this section is to illustrate how supply chain management can help to shape the contours of transactions in a specific sector. The fruit industry can be classified under the agro-food sector, which represents an exceptional domain that presents a great variety of modes of organisation and of contractual arrangements accompanying these modes. The approach that is developed in this section as mentioned previous section follows the transaction costs economics framework developed in the direction opened by Coase, North, Williamson, with additions by Langlois and Barzel. This approach provides a theoretical framework for understanding the trade-off that continuously occurs at the microeconomic level between alternative modes for organising transactions, for example, between making a product or a service within an integrated firm and choosing to have it provided through markets. In subsections to follow, this framework is applied to the agro-food sector under which the fruit industry falls.

2.3.1 Characteristics of the governance structures in the fruit industry

Carvalho *et al* (2000; 478 *citing* Coase) pointed out that "operation of markets costs something and forming an organisation and by allowing some authority (an entrepreneur) to direct the resources, certain marketing costs are saved". If successful, the organization(s) tend to grow, resulting in more transactions to be coordinated, and, as the firm grows its size will be limited mainly by competition with other firms, competition with other forms of transactions and by its own capacity to manage the bigger volume of transactions. Coase (1937) notes that all changes that result in improved managerial techniques will tend to increase the size of the firm, thus emphasising the important role of management. As transaction costs of using the open (spot) market system rise, there is a tendency towards closer vertical coordination, that is, more transactions are carried out

under the auspices of a strategic alliance, through contracting or within a vertically integrated firm (Coase, 1937; Williamson, 1979; Hobbs and Young, 2000).

According to Wilson (1996), the slow growth of the perishables industry is causing producers and traders to seek product flow that create greater efficiencies and economies as a means of increasing their margins. Partnerships and joint ventures, with open shared information and communication, have been seen as the new form of competition. Cooperative business competes with supply chain versus supply chain, with players along the line working together. Companies strategically position themselves relative to others to maximize the benefits that collective power can bring.

This becomes critical in the internationalisation of fresh fruit produce, which requires a greater degree of coordination. The value of fresh fruit on the open market depends on availability (quantity, quality and or timing) and the costs of production (Hobbs and Young, 2000; Wilson, 1996). As such, open market procurement may not sufficiently guard the firm against risk or other exploitation and thus leads to contractual or integrated procurement as an alternative since perishability is a significant factor for commodities. As Wilson (1996) puts it, contractual or integrated arrangements are more common in perishable commodities than storable commodities, thus a low level of uncertainty lends itself to the spot market transactions, and, as uncertainty increases and goods become more asset specific, movement along the vertical coordination spectrum towards vertical integration is experienced.

Hobbs and Young (2000) constructed a generic model (Table 2.2) of the forces behind closer vertical coordination in agro-food supply chains. In this model they argue that changes in transaction characteristics alter transaction costs, thereby influencing vertical coordination. The model represented in Table 2.3 depicts the relationships between generic product features and transaction characteristics, all other factors held constant while uncertainty is broken down into four components.

Table 2.3: Generic model of the relationship between product characteristics, drivers and transaction characteristics

	Transaction characteristics						
	Uncertainty for buyer: quality	Uncertainty for buyer: reliable supply (timeliness and quantity)	Uncertainty for buyer and seller: price	Uncertainty for seller: finding a buyer	Frequency of transaction	Relationship specific investment	Complexity of transaction (variety of outcomes)
Product characteristic							
Perishability							
Product differentiation							
Quality variable and visible							
Quality variable and invisible							
New Characteristics of importance to consumers		Sometimes					
Regulatory drivers							
Liability						Sometimes	
Traceability							
Technology Drivers							
Company-specific technology							Sometimes

(Source: adapted from Hobbs and Young, 2000; 133)

Table 2.3 suggests that the product characteristics listed affect the characteristics of the transaction, thereby influencing the vertical coordination outcome. Hobbs and Young (2000) give an example of product perishability, implying that it creates uncertainty for the buyer with respect to product quality and the reliability (quantity) of supply, and creates uncertainty for the seller in locating a buyer since perishable products must be moved quickly to the marketplace to avoid deterioration, leaving sellers unable to store the product awaiting favourable market conditions, which means that transactions occur frequently. Perishability adds to the complexity of a transaction because the quality of the product can deteriorate, thus imposing sorting or information costs on buyers and also increases negotiation costs as procedures are required for establishing which party (buyer or seller) is responsible for product quality at different stages of the transaction[5].

2.3.2 Alternative governance structures

The transaction characteristics thus have a major influence on the efficiency of alternative transaction modes. According to Loader (1997) citing Häkansson, the notion of rationalizing and economizing on transaction costs in the comparison of different modes of organisation becomes crucial and implies that the level of transaction costs will differ considerably depending on which contractual perspective is taken (i.e. looking from either the seller's or buyer's point of view). Loader (1997) gives a summary of the implied contracting process with respect to the characteristics of the transaction and suggests that:

i. "If full rational judgement is assumed but inputs are dedicated[6] and other parties are opportunistic, then the contractual world becomes one of planning, where all the relevant issues of contract are settled at the contract design stage, and the contract is accurate and effective because participants are fully rational and informed as to the potential behaviour of other parties.

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[5] For examples and discussion of the effects on product spoilage of different contractual relationships see Lang (1980).

[6] Dedicated inputs/ assets: relation of dependence between investment and return in face of the dedication to a particular agent of specific activity. See also Masuku (2003).

ii. If opportunism is absent, but economic agents are subject to limits to their judgement (through lack of information) and require assets which are dedicated to the particular exchange, then simple promises suffice to strike bargains (the trader's word is his bond).

iii. Where limited judgement and opportunistic self-interest are present, but inputs can be freely moved between uses, the world of competition prevails, where the market arbitrates any disputes and informational inadequacies, and the parties to the transaction have no long-term interest in the identity of, or the relationship with each other".

However, when conditions of limited judgement, opportunistic behaviour and dedicated inputs occur simultaneously, planning is incomplete, promise breaks down, and competition does not persist because of dedicated inputs, this becomes the world of internal governance.

In supply chain management, governance or the coordinating system is important. According to the AgriReview (2002), alternative governance systems may include open-access markets, various forms of contracts, strategic alliances[7], quasi-vertical integration (joint ventures, franchising arrangements, networks and cooperatives)[8], and vertical ownership. The choice of governance or coordination system will have a significant impact on the distribution of power and control. In figure 2.2 below, the vertical coordination continuum is presented

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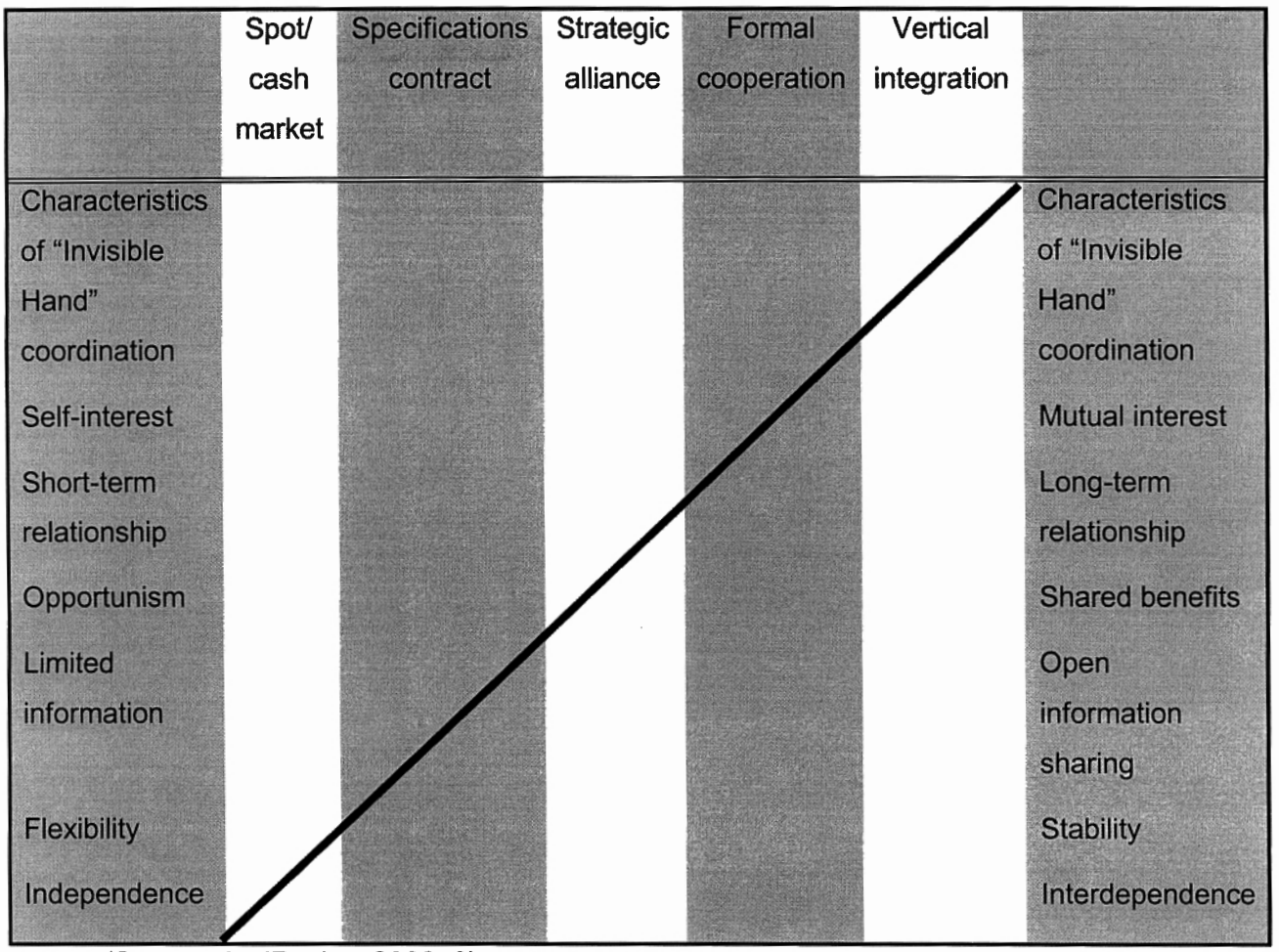
[7] A strategic alliance is an agreement mutually entered into by two independent firms to serve a common strategic objective. It is often more flexible than a contract or full vertical integration and central to its success is trust between firms and a strategy which is to the mutual benefit of all the participants; sometimes the alliance may place a legal obligation on the parties (Hobbs, 1996; 19). For example, a fruit exporter might reach an agreement with a group of farmers to obtain fruit of certain quality, providing the farmers with a list of acceptable varieties. A fruit exporter might also enter into a strategic alliance with the retailer under a strategic alliance.

[8] Quasi-vertical integration refers to a relationship between buyers and sellers that involves a long-term contractual obligation where both parties invest resources in the relationship. It differs from full vertical integration because the arrangement ceases at the end of an agreed period of time and the firms remain independent of one another. Joint ventures, franchises and licences are examples of quasi-vertical integration (Hobbs, 1996; 19).

Figure 2.2: Alternative governance structures for managing produce marketing



(Source: AgriReview 2002; 2)

In the figure 2.2 above the spot market and vertical integration are presented at extremes of the coordination continuum. In the spot market, the open market ideal of the invisible hand coordinates market transactions where individuals are assumed to act only in self-interest and pursue exchange agreements that are short-term, opportunistic, limited in information sharing, flexible and preserve independence. On the other end of the continuum coordination is managed on the basis of mutual interest for the exchange partners, who pursue exchange agreements that are long-term, benefit sharing, open as to information flow, stable, and supportive of interdependence. In between the two polar ends, coordination evolves from being dominated by invisible hand characteristics through a changing mix of invisible hand or managed characteristics to being dominated by managed characteristics.

2.3.3 Efficient governance

According to Loader (1997), for efficient governance in the agro-food sector, three main structures emerge, with reference to the volume or number of transactions and the characteristics of the investment required to consummate them. Table 2.4 and Table 2.5 below represent efficient governance structures and examples of investment characteristics and efficient governance respectively.

Table 2.4: Efficient governance structures

Nature of transaction	Type of contracting	Expected governance structure
Standardised (occasional or recurrent)	Classical contracting	Market[a]
Occasional non-standardised	Neoclassical contracting	Trilateral[b]
Recurring non-standardised	Relational contracting[c]	Bilateral/ unified

Notes:

[a] Alternatives are available (from the market) which can be used if dishonesty occurs

[b] Contracts are built with safeguards and identified arbitration (neoclassical contract laws)

[c] Continuing contract between the parties where a range of social and economic relationships help to define and support a range of transactions

Source: Loader (1997; 26) *adapted from* Williamson (1985)

Table 2.5: Examples of investment characteristics and efficient governance

Non-dedicated	Input characteristics Mixed	Dedicated
Market (Classical contracting) e.g. purchasing[a]	Trilateral (neoclassical) e.g. purchasing customized equipment[a]	Trilateral (neoclassical) or unified governance, e.g. constructing a plant[a]
Market (classical contracting) e.g. purchasing standard material[b]	Bilateral governance (relational contracting) e.g. purchasing customized material[b]	Unified governance (relational contracting), e.g. site-specific transfer of intermediate product across successive ranges[b]

Notes:

Volume or number of transactions= [a]few; [b]many

Source: Loader (1997; 27) *adapted from* Williamson (1985)

In both the tables presented above, market governance implies that alternatives are available which protect each party against opportunistic self-interest by the opposing party to the contract; trilateral governance implies arbitration in resolving disputes and evaluating performance; bilateral governance implies continuing contractual contact, but with the autonomy of the parties maintained; and unified governance implies internalisation of the contracting process.

2.4 RESEARCH ON TRANSACTION COST ANALYSIS AND SUPPLY CHAIN MANAGEMENT

The New Institutional Economics under which the transaction cost economics paradigm branch falls is relatively new and as such the great advancements in theory that have been achieved have not been matched by empirical evidence to establish the effectiveness of the TCE approach to supply chain management. This is perhaps not surprising, since, unlike production costs, transaction costs – the costs of economic organisation – are neither easy to separate from other managerial costs nor readily measurable. Despite this shortcoming a number of studies can be pointed out especially in the developed countries, that have aimed at using TCE to improve supply chain management. This section reviews some

empirical studies on transaction cost and supply management in the agricultural sector. It provides an overview of studies at the global level and then closes with some studies focusing on Southern Africa.

2.4.1 Global studies

Hobbs (1996a) notes that the complex nature of firms and market institutions means that the costs of their operation are not easy to quantify and the data which one might use to measure transaction are not usually collected by government or by the standard accountancy practices of firms. Therefore, although one can recognise that there are indeed costs involved in valuing a good or in monitoring the actions of a buyer or seller, it is difficult to measure these costs in financial terms. Economists have therefore, turned instead to other ways of measuring transaction costs.

Sylvain Rousset (2003) in his case studies of the restructuring in regional wine supply from Burgundy, California and New Zealand, used a transaction cost analysis to study the link between raw material transaction characteristics and governance structures (market, hybrid, hierarchy) in the fine wine industry. Fieldwork was conducted in four countries, and semi-structured interviews were conducted with key industry representatives, including wine merchants technical staff and new world wineries people in charge of raw material purchasing and or of the production on the vineyards. Other people interviewed included growers, vineyard development firms, labour contractors, middlemen (agents, distributors), professional or inter-professional organisations, administration, and extension service officers. The study, which is partially incomplete, has led Rousset to conclude by noting the relevance of the Transaction Cost Economics (TCE) framework to explain the structures on vinous raw materials in the wine firms and supply chains studied.

In the United Kingdom (UK), Jill E. Hobbs (1996) conducted a study using a transaction cost analysis of the quality, traceability and animal welfare issues in beef retailing. In her study, the hypothesis that "a retailer's choice of beef supplier is influenced by the transaction costs incurred in different supply relationships" was investigated. The study measured the relevance of the transaction costs incurred

by retailers as a result of concerns over quality consistency, traceability and farm animal welfare using conjoint analysis[9]. Data were collected through a postal survey of UK supermarket retailers and results suggest that the information and monitoring costs arising from the need to ensure that beef supplies are of a consistent quality are relatively important influences on the choice of a supplier. This was followed by the traceability of cattle, whether the beef originates from a farm assurance scheme and the price paid by the retailer. The study concludes that strategic alliance partnerships between retailers, processors and marketing groups composed of farmers may emerge as the method of vertical coordination which minimizes transaction costs.

Another interesting study that was conducted by Loader and Hobbs (1998) analysed the likely impact of a bovine spongiform encephalopathy (BSE) crisis on the organisation of the UK beef supply chain. Using concepts from the "New Institutional Economics", the authors argued that, in addition to the direct financial costs of the crisis, additional hidden transaction costs and long-term "transaction benefits" should be considered. The hidden costs include, the increased need for monitoring and traceability in the supply chain, while hidden benefits may result from a reorientation of the industry towards a more consumer-driven focus, a greater attention to food safety issues and opportunities for branding and market segmentation. They suggested that hidden costs and benefits are likely to lead to closer vertical coordination throughout the beef supply chain.

Carvalho *et al* (2000) conducted a survey among Brazilian exporters of apples and melons to determine the governance structures of the two fruit chains. Three research methods were used in this study; a survey of Brazilian exporters of fruit; semi-structured interviews with executives of key export firms; and secondary data analysis. The study revealed that vertical integration of the production and the export activities in firms is the predominant governance structure in the two export sub-sectors. The transactions between exporters and importers were of the market type, and it was also found that the counterparts in an export transaction have a long-term commitment to each other. This attitude gives room for ample use of

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[9] Conjoint analysis method uses survey data and is potentially less resource intensive. It involves ranking different scenarios in terms of preference. For more detail about the use of conjoint analysis, see Hair and others (1992); Steenkamp (1987).

supply chain management tools.

2.4.2 Empirical Studies in Southern Africa

In Southern Africa the concept of transaction cost analysis and chain management has gained popularity in the agricultural sector, as evidenced by the increase in the number of studies that have been and are being conducted. The importance of transaction cost economics in enhancing the competitiveness of the sector through its cost minimisation approach cannot be ignored. Several studies from Southern Africa that have applied transaction costs are reviewed in this section.

Karaan (1999) used a transaction cost approach to identify an appropriate farm model for the mussel mariculture industry. The study was carried out in Saldanha Bay were small-scale mussel farming is more efficient than production by large vertically integrated firms. The hypothesis in the study was that "high transaction costs essentially constrain the participation of emerging farmers in the open economy". In the study four models were compared and franchising was found to be the most suitable model, because the efficiency advantages of small-scale production are retained and high transaction costs are circumvented through more effective vertical coordination. Other models that were proposed included independent small operators, contract institutions between small operators and processors or marketers and vertically integrated more specialized large firms.

De Bruyn *et al* (2001) applied a non-linear dynamic model to determine the influence of transaction costs on the marketing decisions of cattle owners in the Northern communal areas of Namibia. The hypothesis that "a producer's choice between alternative marketing options is influenced by transaction costs was tested". A sample of 80 households in the Kavango, Caprivi, and North Central regions of Namibia were interviewed using a structured questionnaire with the transaction cost variables considered being divided into three main groups – information, negotiation and monitoring or enforcement costs. The results of the study indicated that a number of transaction cost variables (herd size, distance from auction points, information and risk) have a significant effect on the proportion sold to the government owned parastatal Meatco and thus indirectly on the choice of marketing channels.

In Swaziland, Masuku *et al* (2003) proposed and analysed a model of relationships between smallholder sugarcane growers and millers in the Swaziland sugar industry supply chain. The aim was to identify the behavioural factors that contribute to the utility that sugarcane growers perceive in their relationship with the millers. The study used data collected in 2001 from a sample of 124 smallholder cane growers who supply sugarcane to the three sugar cane mills in Swaziland. Personal interviews using a structured questionnaire were conducted and the results indicated that higher levels of trust lead to higher levels of cooperation that in turn lead to higher levels of commitment by the smallholder growers to the business relationship. It also noted that cooperation is an antecedent of the benefits and of the satisfaction that these growers gained from the relationship. According to the authors these findings imply that both cane growers and millers need to focus on initiating, signalling and disclosing their behaviours in an effort to improve their relationship with each.

Other studies that were recently conducted include the study by Meissenheimer *et al* (2001) on "Sources of transaction costs in the South African Wine Supply chain" with implications for enhancing chain competitiveness. Also Makhura (2001) used the transaction cost approach in his doctoral thesis on "Overcoming transaction cost barriers to market participation of smallholder farmers in the Northern Province of South Africa".

2.5 SUMMARY

This chapter has provided a literature review of the importance of transaction costs in determining the efficiency of the firm, and its role in supply chain management. Most importantly, it has attempted to explain the organization of firms and institutions under different sets of conditions. The fruit industry, like any other industry in the agro-food sector, requires a greater degree of coordination and, as such, transaction costs should not be ignored if competitiveness of the industry is to be achieved. These transaction costs emanate from different sources and can be observable or unobservable. They generally arise from lack of information, contract management, transport and administrative processes.

As conveyed in the literature, the pace at which theoretical development has

advanced has not been matched by empirical development of the transaction cost approach to chain management. Although the subject has attracted overwhelming attention amongst academics and business management practitioners in many developed nations, this has not been the case in Southern Africa, where the studies have been limited.

This study attempts to add to the empirical analysis of the transaction cost approach to supply chain management. In subsequent chapters the empirical findings will be used to analyse supply chain management using the transaction cost approach.

CHAPTER THREE

CASE STUDY: – TABLE GRAPE AND CITRUS FRUIT CHAINS

3.1 INTRODUCTION

The approach taken in this study, as explained in the methodology section of Chapter One, attempts to isolate the constituent features of transactions, identifying the inefficiencies that arise from these transactions. The objective is to identify the transaction costs that result from these inefficiencies. In the sections to follow, a brief overview of the value chain structures of the Table grape and Citrus industry is provided. This is followed by a breakdown of the activities that constitute the value chains. The mapping, identification of linkages, inefficiencies and ultimately the analysis of the transaction cost that arise, is subsequently explained. Of importance to note is that the transaction is taken as the unit of analysis (Williamson, 1996).

3.2 MAJOR ACTIVITIES OR PROCESSES IN THE SOUTH AFRICAN TABLE GRAPE INDUSTRY

The Table grape chain of South Africa has been transforming rapidly over the years after deregulation.

The importance of delineation when analysing an industry was emphasised by Meissenheimer *et al* (2001) in their study of the South African wine supply chain.

In this particular study, efforts have been made to determine the primary and secondary activities, highlighting the linkages related to the production, procurement, marketing and exporting (distribution) of the table grape chain.

3.2.1 Primary Activities in The Table Grape Chain

The Table grape chain is unique to other chains of the South African fruit industry in the manner in which operations are managed. The primary activities include viticultural practices, cooling and packaging. The emphasis here is to give a brief overview of what is involved in each.

a) Viticultural practices

This encompasses all the production preparations that can ensure optimum yields without compromising on quality. The climate, soil and slope type play a major role and determine the appropriate variety that is suitable to a particular area or region. Good viticultural practices and management is crucial for sustainable production and is also important when issues of traceability, environmental concerns and quality assurance are required. Such concerns in effect will channel the manner in which to manage production in the medium – long-term period.

b) Packaging

When pickers harvest fruit, it is placed in field lugs without trimming. It is then placed in the shade of the vines to await transport to the shed. At the packing shed the field lugs are distributed to packers who select, trim, and pack the fruit. To facilitate quality selection each packer often packs two different grades simultaneously and a scale is used to facilitate packing to a precise net weight.

Packaging of Table grapes is according to market specifications. Different markets require different packing specifications and this may be loose or value adding pre-packs. The function of packaging is manifold. It includes protection of the fruit from damage, and maintaining the quality and condition of the fruit. Also packaging promotes the cosmetic appearance of the fruit, which is crucial in marketing. The overall packaging has an important role in influencing the buyer's perception of quality.

c) Cooling

The main purpose of cooling table grapes is to lower their respiration rate and thereby increase their life span after harvesting. Because the respiration rate increases exponentially with the temperature of the grapes, it is advantageous to lower the temperature to –0.5°C as soon as possible. From the field temperatures must be below 20°C as soon as possible after picking and to –0.5°C as soon as possible thereafter. How one achieves this reduction in temperature is dependent on the overall system which is being followed from packing to market which makes this process a crucial stage in the supply chain and hence the need for producers in South Africa to have their own pack-houses.

3.2.2 Secondary and Supporting Activities in the Table Grape Chain

The exporter is the major role player at this stage. The major role is to link the producer and the buyer. In generic terms, the exporter is the producer's agent. However, this role entails much of coordination if both parties are to be satisfied. The coordination activities performed by the exporter include:

i) Crop estimates,

ii) Inform markets,

iii) Market requirements,

iv) Monitoring packing,

v) Liasing with manufacturers of packaging material,

vi) Liasing with cold stores,

vii) Making transport arrangements,

viii) Making shipping arrangements and,

ix) Communicating with the importer

Other activities include banking, insurance and ensuring that the requirements of the Perishable Products Export Control Board (PPECB) are adhered to.

3.3 MAJOR ACTIVITIES OR PROCESSES IN THE SOUTH AFRICAN CITRUS FRUIT INDUSTRY

The role of the exporter in the supply chain is crucial for enhancing the competitiveness of the industry. Exporters are not just shippers of produce but also the primary party in South Africa responsible for meeting the supply chain requirements set by importers. These firms need the capability to work closely with importers; organization to deal with growers to meet volume and quality requirements; capital to invest in transportation and post-harvest facilities; and ability to benefit from governmental incentives (Singh, 2002).

Exporters work closely with growers from planting to harvest to ensure production of high quality produce and compliance with European standards of food safety and labour practices. They are also involved in training of farmers on safety and quality management issues and oversee the use of chemicals on produce grown for export.

Citrus fruit are a perishable commodity, thus their freshness on the retail shelf depends to a great extent on how it is handled after harvest. Field heat of the harvested crop has to be removed as soon as possible and the surface washed and disinfected to prevent bacterial and fungal damage. To this end, products need to be placed in shade immediately after harvest, transported to packing facilities, cooled, washed with chlorinated water, graded, and packed under controlled humidity and temperature. Facilities for post-harvest handling, including pack-houses and cold storage chambers, require considerable investment. However, few growers have capital or expertise to undertake post-harvest processing and hence specialized processors or exporters themselves assume this function.

3.4 ANALYSIS OF THE TABLE GRAPE AND CITRUS FRUIT SUPPLY CHAINS BASED ON TRANSACTION COST ECONOMICS

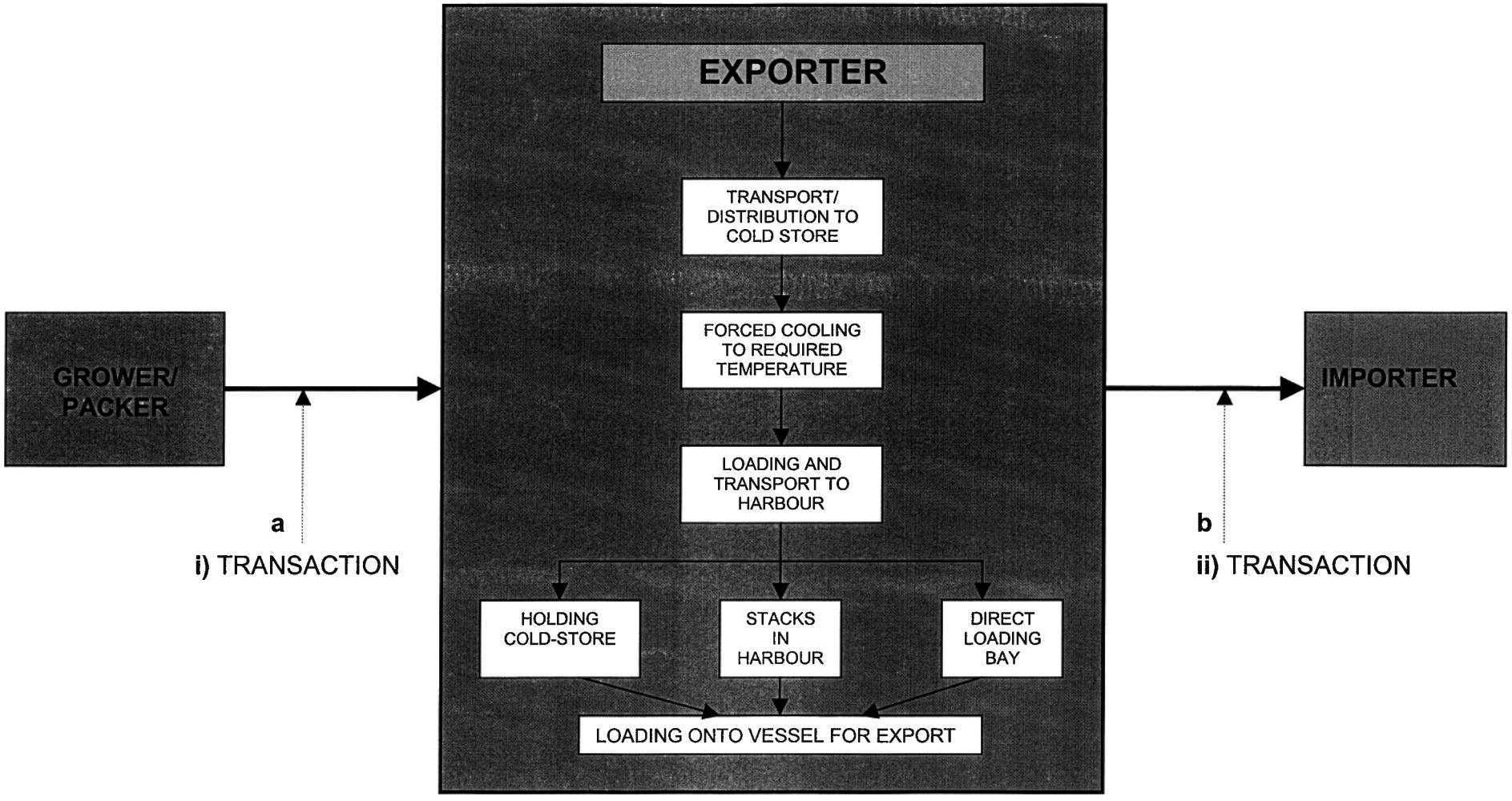
In analysing the Table grape and Citrus fruit supply chains from a TCE perspective, the framework of analysis was adapted from the work of Loader (1997) who illustrated the possibility of using transaction cost economics as a basis for a detailed diagnostic investigation of individual relationships within an agricultural marketing system, and to explore the implications of such relationships for channel

structure and integration.

Central to the study is the role of the exporting firm, Colors Fruit (SA) Pty Ltd, in managing its activities with other chain role-players (producers and importers). The mapping exercises of the Table grape and Citrus fruit chains was undertaken to facilitate the identification of linkages, hence the transactions being studied. A participatory approach was used and this exercise was made possible with the assistance of the Logistics, the Table grape and Citrus fruit business unit teams from Colors Fruit (SA) Pty Ltd. Figure 3.1 was used as the basis for many of the discussions and illustrates a generic fruit supply subsystem, emphasising the links and transactions being studied. The major difference between the Table grape and Citrus fruit supply chain is the need for an on-farm pack-house for Table grapes due to their high susceptibility to damage.

Due to the complexity of transaction cost economics, no attempt was made to measure the nature of attributes – such as asset specificity, frequency of transactions and uncertainty. In this case, informants were asked the nature of assets, level of uncertainty and frequency of transactions between transacting parties.

Figure 3.1: Generic Fruit Supply Chain And The Transaction To Be Analysed.



Four key concepts underpin this analysis as identified by Hobbs (1996a). These are bounded rationality, opportunism, informational asymmetry, and asset specificity (Williamson, 1985; 1979). The nature of the relation between transacting parties is affected by uncertainty or risk involved in the transaction, frequency of the transaction and asset specificity. These three dimensions rank transactions and are important parameters for the definition of efficient institutional arrangements aimed at minimising transaction costs.

3.4.1 Theoretical Context of Transactions Costs in the Table Grape and Citrus fruit Chains

When inquiring about transaction 'a' in figure 3.1, according to Williamson (1989) the organisation of transactions or governance structure affects transaction costs. The diversity of the institutional arrangements that conduct the transactions is justified by the variation of the existing attributes[10]. The real explanatory power of the theory, though, comes from the three dimensions or attributes that are used to characterise any transaction. These three variables will, according to the theory, determine whether transaction costs will be lowest in a market or in a hierarchy. It is easiest to consider these attributes with respect to decisions about whether to integrate vertically. According to the variation of attributes the ideal governance structure is determined, varying from the spot market to vertical integration, passing through a mixed hybrid forms.

Several types of specific investments can be distinguished that have an effect on transaction "a", namely specificity of location, time specificity, physical specificity and dedicated specificity.

a. Table grape chain

i. Specificity of location: Table grapes are highly susceptible to damage and sensitive to temperature fluctuations, making long distance transportation costly. It demands the pack-house and or cold store to be near the farm.

ii. Time specificity: To guarantee quality and a long life span, the grapes must

[10] Williamson (1985) classifies the attributes of the transactions as: asset specificity, frequency and uncertainty. For more detail refer to the Literature review in Chapter Two.

be harvested once they reach their point of maturity. This demands constant technical assistance throughout the season.

iii. Physical specificity: This does not only relate to the agricultural production, but also to the industry. The necessity of investing in the physical infrastructure emanates from the vintage the vine plant takes before it starts producing. This is a specific, expensive and irreversible physical investment. Regarding storage and handling, the equipment used is also slightly specific to table grapes; therefore, the reallocation to other uses becomes costly or irrational.

iv. Dedicated specificity: Because of the number of reputable exporting firms dominating the market, producers take most of their production to only one firm (size investments), leading to a relation of dependence

b. Citrus fruit chain

i. Time specificity: To guarantee quality and a long life span, the citrus fruits must be harvested once they reach a certain point of maturity. This demands constant monitoring.

ii. Physical specificity: The necessity of investing in the physical infrastructure emanates from the perennial culture of citrus plants before onset of production. This is a specific, expensive and irreversible physical investment.

iii. Dedicated specificity: Specialising in Citrus production leads to a relation of dependence between investment and return.

According to Klein et al (1978), the employment of specific assets to the transaction creates a quasi-rent that is characterised by the difference between the return in employment of these assets in the specific transaction compared to other alternative employment. The quasi-rent depends on the continuity of the relation in which each one of the partners will have incentives to acquire any incremental profit resulting from this joint venture, creating the possibility of opportunistic behaviour or hold up. As a result, a relation of dependence between the partners is established as the asset specificity is raised. Klein *et al* (1978) note that agents

must indeed secure against opportunistic behaviour. The more assets are subjected to appropriation, the more one goes towards an integrated structure, and the less the entrepreneur calls upon the market.

Marino and Machado (2000) note that increasing the frequency of transactions entails the use of more complex structures and makes the creation of reputation possible, decreasing, consequently, the transaction costs. In the definition of control structure, the attribute frequency is of supreme importance as it guards against opportunistic behaviour in face of the potentiality of future interruption of the business.

The third attribute to be considered refers to the uncertainties of the environment. These uncertainties provoke unexpected disturbances in the transactions, demanding complex structures of monitoring, which might encumber the cost of the transaction. With a raised degree of uncertainty, *ceteris paribus*, the transaction tends to internalise (Marino and Machado, 2000).

TCE theory suggests that when a transaction is associated with low asset specificity, low uncertainty the implied contractual process is of a classical/ promise (i.e. word of mouth will suffice as a basis for a transaction) due to lack of specific inputs (Loader, 1997). In figure 3.1, transaction 'b' is expected to be conducted on the market (spot contract). However the need to service a specific market of specific interest has lead to a movement towards other hybrid forms of organisation. According to Wilson (1996; 10) the "slow growth in the overall food market is causing manufacturers and retailers to seek product flow strategies that create greater efficiencies and economies as a means of increasing their margins". The relation has moved strongly towards vertical coordination, as the major importers are increasingly demanding dedicated supply. This has provided the exporter with a strong client base in the export market providing their producers a ready market and has greatly reduced the costs of finding a buyer and price negotiations. Table 3.1 below summarises the relationship between asset specificity, uncertainty and governance structure from the arguments put forth.

Table 3.1: Summary of the relationship between asset specificity, uncertainty and governance structure.

		Asset specificity		
		Low for both parties	*High for both parties*	*High for one party, low for one party*
Uncertainty	*High*	Contract/ vertical integration	Vertical integration	Vertical integration
	Low	Spot market	Long-term contract	Vertical integration

NB: Because frequency is so clear-cut, it is has been omitted, but this is not because it is unimportant. On the contrary, the effect of frequency on transaction costs is very strong. It is just that the case where the frequency of transactions is low is not very relevant.

From the brief overview of the theoretical context highlighted above, asset specificity, uncertainties and frequency rank transactions, and are important parameters for the definition of efficient institutional arrangements that aim at minimising the transaction costs

3.4.2 QUALITATIVE APPLICATION AND ANALYSIS

Through an empirical application, this section intends to relate the theoretical concepts previously discussed with the inefficiencies that exist which result in transaction costs for the table grape and citrus value chains. The implications of these costs are also highlighted. The conjecture of the argument at this stage stems from the fact that a transaction can only be made if the gains in the transaction outweigh the costs associated with that particular transaction, that is, when a profit can be realised. Table 3.2 and Table 3.3 identify the parties involved in transaction "a" and transaction "b" respectively as identified in Figure 3.1, the grounds for a transaction and some of the implications at stake. The compilation of the tables is the result of information gathered during discussions with key industry informants[11] during the multiple site visits to the exporter's operating location.

[11] For a list of the key industry informants see appendix 1

Table 3.2: Transacting Parties, Nature Of Transaction And The Stakes at Hand.

Transacting Parties (Producer/ Exporter)	Transactions		Stakes
	Offer	Reward	
Producer	i) Table grapes/ Citrus fruit ii)Packed & quality sorted fruit iii) Commission iv) Consistent supplies	i) Income ii) Service iii) Information iv)Competitive prices v) Market guarantee	- Reputation - Adverse selection - Hold up problems - Moral hazards - Loss of crop - Investment loss - Compromising producer/ exporter relationship - Frequent insurance claim; - increase in insurance premiums - Liquidation
Exporter	i) Payment of fruit at competitive price ii) Service iii) Market for fruit iv) Information v) Reputation (Brand name) vi) Network vii) Knowledge	i) Commission ii) Supply of quality fruit iii) Consistent supplies	- Bad product (adverse selection) - Inconsistent quality (moral hazard) - Inconsistent supply (hold-ups) - Reputation (Brand name compromised) - Compromising producer/ exporter

			relationship - Increase in insurance premiums from frequent claims - Liquidation

Table 3.3: Transacting Parties, Transactions And The Stakes On Hand.

Transacting Parties (Exporter/ Importer)	Transactions		Stakes
	Offer	Reward	
Exporter	i) Quality guaranteed Table grapes ii) Brand name iii) Consistent supplies iv) Just in time deliveries	i) Competitive price ii) Market for Table grapes iii) Information (market trends etc.) iv) Income	- Brand name loss - Compromising relationship - Loss of market - Loss of investment
Importer	i) Market for Table grapes ii) Payment iii) Competitive prices iv) Long-term relationship	i) Quality Table grapes ii) Brand name iii) Guaranteed supplies iv) Just in time deliveries	- Supply of bad product - Inconsistent supplies - Reputation

NB: The list of stakes on hand is not exhaustive, but aims at giving an overview of the implications that parties can encounter when brokering a transaction.

Table 3.2 and Table 3.3 above highlight the importance of ensuring a smooth transaction between the producer/ exporter and exporter/ importer respectively, if sustainability is to be ensured. All parties have stakes that affect their operations, thus mutual agreements exist to ensure that each party carries out its end of the bargain.

The tables presented in the next section comprise three parts:

- The first part summarises the contractual perspective putting emphasis on the transaction objectives of the parties involved and highlighting the relationship under consideration,
- The second summarises the transaction attributes and,
- Finally the governance structure, given the level of particular attributes is discussed. A comparison is made between the implied and actual governance structure. The implications of such arrangements are also noted.

The tables are presented for each contractual situation between the parties involved to enable the exploration of the governance mechanism in the chain.

a) Exporter and Producers

Table 3.4 assesses the position of the exporter and producer illustrating the nature of the contracting process between the two. It highlights the fact that transaction attributes affect the governance structures. The high specificities, frequency of transactions and the relative degree of uncertainty channels the contracting world to one not of competition but of relational and or bilateral contracting. In this world, close relationships are formed that ensure the establishment of long-term interactions. The fact that the exporter is not only involved in trade activities, but also in producing export fruit, implies that with such integration, the firm can make use of several managerial tools to guide the flow of resources. This involves harmonisation of production, post harvest processing and the logistics in international trade. This way they gain control of all operations on the export side of the supply chain. It also makes harvesting to value added processing an integrated operation and oversight on labor laws, pesticide regulations, and safety compliance

easier. Growing crops on their own farms guarantees continuity of supply and reduces risk of losing suppliers to competition.

Table 3.4: Exporter to Producers

1) Contractual perspective	**From Exporter To Producers**
Transaction Objective	To ensure that the quality of fruit the company produces and handles is not compromised
2) Transaction Attribute	
Asset specificity	High – especially investments in human skills) to specifically dedicate all their attention, time and expertise on identifying and fulfilling the needs of producers and customers (e.g. quality control cannot easily be re-deployed. Also investments in pack-houses and pre-sorting facilities.
Frequency	High – transactions conducted on a daily or weekly basis in-season
Uncertainty	Relative – Agricultural products; Climatic conditions affect yield, can affect harvesting schedules and also cause delays in loading and offloading. This can have ripple effects on other factors. Hold up problems are prevalent, adverse selection and moral hazard problems are common.
3) Governance	
Implied contracting process	Formal contract (neoclassical)
Expected governance structure	Relational/ Bilateral contracting

Actual governance structure	Relational contracting
Implications	Need for the establishment of close relationships with producers and ensure that they understand the global demands. Building of trust and long-term relationships is important. Therefore there is a tendency to move towards adoption of hybrid forms governance (e.g. strategic alliances and joint ventures).

b) Exporter to Importers

The role of the exporter with the importers varies depending on the target market. Each market has different requirements and specifications thus there is a tendency to have varying levels of governance structures being used. Despite this, the objectives of the importer play a considerable role in channelling or determining the governance structures to be used. In Table 3.5 a general approach has been taken to determine the common governance structure because of the multiple export markets that the exporter is servicing. In the table it can be seen that there is a great divergence of the expected and actual governance structures. This can be attributed to the fact that the exporter's transaction objective is to target a particular market that has a certain preference or that is very sensitive to agronomic practices and environmental issues. Hence, the achievement of this is captured by the development of a good reputation and investments in brand name marketing. Another important factor to note is that the bulk of the exports are destined for relatively few importers, making it possible to minimise the negotiation and other costs. In the long-term aspect, this behaviour creates the opportunity to establish better transaction specific arrangements. This means joint ventures aimed at value adding, development of new technologies, sharing information, and reducing risk associated with investment in specialised assets.

Table 3.5: Exporter to Importers

1) Contractual perspective	From Exporter To Importer
Transaction Objective	To deal with only the world's most discerning (perceptive) customers
2) Transaction Attribute	
Asset specificity	Low – specialised refrigerated containers, loading and unloading facilities owned by third parties.
Frequency	High – in season, usually large quantities during certain periods. Usually transactions are on a weekly basis. Consignments reach the importer weekly.
Uncertainty	Relative – Depends on a particular market. Each market has specific demands – consumer trends; quality checks; occasional delays in shipping dates; quantity information and exchange rate fluctuations all affect the transaction.
3) Governance	
Implied contracting process	Spot contract
Expected governance structure	Market
Actual governance structure	Relational
Implications	Reputation/ brand name establishment is important to ensure transactions with leading retailers/ importers. A high tendency to coordinate with the adoption of strategic alliances and dedicated supplies.

3.5 DISCUSSION

In the following sections attempts have been made to highlight the problems or inefficiencies that occur and or exist in the table grape and citrus fruit chains. This has been related to what Coase (1937) noted on the non-existence of zero costs during a transaction, Williamson (1985) also shared the same sentiments of the existence of positive transaction costs, which manifest themselves in bounded rationality, asset specificity, uncertainty and opportunism, emanating from the problems and inefficiencies that exist in the chain. Table 3.6[12] identifies these problems and or inefficiencies that generate transaction costs in the chain and their implication.

Table 3.6: Transaction costs and their implications in the Table grape and Citrus fruit chains

PROBLEM/ INEFFICIENCY	SOURCES OF TRANSACTION COSTS	IMPLICATION
Over-production	Opportunism	• Poor quality fruit • Over supply
Climatic conditions	Bounded rationality	• Yields are affected • Quality is compromised • Affect harvesting, packing and delivery schedules • Over-ripening of fruit
Inappropriate varieties	Opportunism and Information asymmetry	• Compromises quality • Compromises producer/ exporter

[12] The table is the result of information gathered during discussions with key industry informants during the multiple site visits to the exporter's operating location.

		relationship • Damages industry's image/ reputation • Perennial nature of vines makes re-investment expensive or even impractical
Shirking w.r.t. complying to technical specifications	Opportunism	• Industry's image is compromised • Quality is compromised • Compromises producer/ exporter relationship
Weak enforcement measures	Opportunism and Information asymmetry	• Quality is compromised • Adverse selection and moral hazard problems
Limited packaging material suppliers	Asset specificity and Opportunism	• Monopolies/ Oligopolies thrive – high prices • Missing client deadlines – ripple effect on the chain • Quality may be compromised
Private pack-houses (important to Table grapes)	Asset specificity *(Location specific)*	• High establishment and maintenance costs • Pose as barrier to

		entry • Few alternative uses
Specialised packing material	Asset specificity *(physical specificity)*	• High prices
Delays in transport deliveries to port	Asset specificity *(time specificity)*	• Affects price of fruit • Failure to load on booked freighter • Storage costs at harbour are incurred • Quality is compromised • Compromises exporter/ importer relationship • Compromises exporter, producer and transporter relationship
Malfunctioning temperature recorders	Information asymmetry and opportunism	• Quality is compromised
Delays in distribution of packing material to suppliers	Opportunism and Asset specificity *(time specificity)*	• Quality is affected • Relationships are affected • Deadlines and schedules are compromised
Slow flow of market information	Information asymmetry and Opportunism	• Compromises industry's competitiveness

		• Decision making is prolonged • Gaps in communication
Top down information dissemination	Opportunism and Information asymmetry	• Development of industry is compromised • Failure to adapt to the changing global environment due to lack of bilateral consultations • Producers may be channelled in wrong direction
Fruit supply inconsistency	Bounded rationality	• Failure to meet demand • Relationships are compromised • Inaccurate projections • Efficient planning is compromised
Few specialised producers	Bounded rationality	• Variation in quality
Reliance on informal contracting	Bounded rationality	• Shirking can become a problem

3.5.1 Information asymmetry and supply chain management

Competitiveness within the industry is important for the sustainability of the industry in the global markets and the flow of information plays an important role to ensure that competitiveness is achieved. This is possible when equity in information sharing within the industry prevails. Market signals should be distributed to all role players in the industry in order to prevent costs to the industry in the form of lost opportunities. Where information is incomplete and there is no collaboration among role players, the industry's development becomes vulnerable. In both the table grape and citrus fruit chain, opportunism by some role players who have more information than others can result in a benefit at the expense of others. Examples include; -

- Virus contamination or a new breed of pests can affect the quality and yields of producers who are not informed of the outbreak or proper control measures.
- Poor scheduling of harvesting, delivery and proper communication with role players in the chain are results of incomplete information that are costly to the players and industry in general.
- New technology is important to keep in touch with global trends and if its transfer is slow, because of information asymmetry between the users of the technology and the researchers, huge costs are incurred making the industry incompetent because of use of inappropriate technology.

3.5.2 Opportunism and supply chain management

The lure to exploit a situation to own advantage is a common human phenomenon and when conducting business or transactions, an opportunity that allows firms or parties to act in a self-interest seeking manner to further one's objectives can be irresistible. Opportunism is common when transactions are made and the table grape chain is not an exception. This high value fruit is highly susceptible to damage from weather and even climatic conditions. Its perennial nature makes it a high-risk investment such that producers prefer to spread risk.

Over-production per hectare is common among producers; however the

consequence of such actions can affect not only the producer but also the industry. Because this is a high value fruit, volume is not an important driver for production. Quality fruit ensures a good return and this is possible when managing an optimum crop per hectare. This enables a producer to take note of his operations without overlooking crucial aspects in the production process. Opportunistic behaviour occurs when some producers decide to produce large volumes of grapes at the expense of quality and then attempt to sell them as quality fruit. Such decisions easily compromise a producer's reputation and if this goes unnoticed the industry's image is at stake. Another implication is that of over-supply, which leads to excess fruit on the market resulting in the sale of fruit at below market prices and or incurring costs in search of a new market.

Compliance with international standards with respect to quality, traceability and phytosanitary measures among others is important, hence it is crucial for the industry on the whole to monitor the operations of its producers and exporters to ensure that any technical specifications are adhered to. Because of the imbalance of the producer/ exporter ratio, it is usually impossible to monitor each and every producer on an individual basis thus creating a window for opportunistic behaviour on the part of the producer. Shirking becomes possible because of the weak enforcement measures that prevail.

Packaging of fruit also plays an important role in maintaining quality, and also affects the perception of consumers in their judgement of quality. The need for packaging material calls for opportunism from manufacturers who find it difficult to cope with demand during peak seasons. Their limited numbers and the all year production of fruit keeps manufacturers in business, allowing them space to charge high prices and fail to meet client deadlines. Such opportunistic behaviour compromises the competitiveness of the industry because it does not instil confidence in the importers on the ability of the exporter to meet schedules. High costs are also incurred when finding alternative manufacturers at the last minute. Delays affect the price of fruit due to the common fluctuations of fruit prices in a particular season, thus affecting projections made, and this in turn affects the margins.

Communication amongst role players is an important and crucial aspect of supply chain management. The flow of information enables role players to quickly respond

to market changes and is a necessary driver for competitiveness. However, if information flow is impeded, gaps in communication arise. Decision-making is prolonged and usually there is a failure to adapt to the changing global environment. When some role players who have access to information fail to inform their partners, there are dire consequences to the industry. For instance, actions of exporters who fail to correctly predict future market trends and channel producers in a direction with the aim of furthering their own ambitions must be prevented through free flow of information and consultations with all stakeholders.

3.5.3 Asset specificity and supply chain management

As highlighted previously, asset specificity for both the table grape and citrus fruit chains is in multiple forms. Asset specific investments are vulnerable to opportunistic behaviour by partners in a chain. The replacement costs of the citrus trees; table grape vines; pack-houses and other production related investments are immensely high. For instance when a variety of table grapes or citrus fruit becomes unpopular on the export market because of consumer trends, the producer has few alternatives to ensure that this investment does not become redundant.

3.5.4 Bounded rationality and supply chain management

Bounded rationality occurs when decisions intended to be rational but the capacity to identify and evaluate all alternatives is physically limited. A situation in the Table grape chain can arise because of the perennial nature of table grapes. With the evolution rate of consumer preferences, this can land a producer with the production of inappropriate varieties. Continual changes of Table grape varieties become unviable due to the high investment costs involved. The same to a great extent applies to the citrus fruit chain. Proper research and forecast of future market trends should always be undertaken to prevent the costs that are incurred when a fruit variety falls out of demand.

Climatic conditions influence the yield, quality and other activities in the production process such as harvesting, packing and loading onto vessels. For instance on a windy day, it becomes very difficult to load containers on the vessel, causing delays and congestion at the port. Continuous rains during the harvest season can

easily lead to the over-ripening of fruit making it impossible to distribute such fruit to the intended markets. Fruit supply inconsistency is a result of unpredicted climatic conditions, leading to inaccurate projections of output, failure to meet demand and also compromising efficient planning.

Spreading risk is a safeguard measure that is usually adopted by producers so that their investment is protected. This stems from the uncertainty of future trends in the market and one way of spreading risk is to avoid specialisation. However, this impacts on the overall quality of their fruit units emanating from the different technologies that must be used for the different investments made by the producer as safeguard measures. Such decisions, although rational in nature, compromise the producer and industry's reputation because of the variability in quality that arises.

Contracting is a measure that is undertaken when uncertainty between the transacting parties is high. Although this is a time-consuming and costly measure, the use of informal contracts also has its own costs. The decision to use informal contracts in cost terms can be rational but paves the way for opportunism and shirking. Bounded rationality in such instances can pose a threat to the industry's development requiring other options to be established that satisfy the transacting parties.

3.6 SUMMARY

This Chapter has attempted to highlight the problems and or inefficiencies that exist in the table grape and citrus fruit chains. These inefficiencies result in transaction costs that compromise the competitiveness of the industry. These transaction costs occur whenever there is an exchange between transacting parties. The link between a producer/ exporter and exporter/ importer and the inefficiencies that exist when these parties engage in a transaction have been identified and also the transaction costs that emanate from them. An empirical application of transaction cost economics has revealed the implications of such inefficiencies and or problems and the extent to which the relationships between role players can be compromised. Other implications include the industry's image, quality variation and delays that impact on the price, effectively reducing or

lowering the margins. The incentives and safeguards to prevent these inefficiencies and reduce transaction costs will be discussed in the next Chapter.

CHAPTER FOUR

CONCLUSION, AND RECOMMENDATIONS

4.1 INTRODUCTION

This study has allowed for the identification of linkages within the supply chain where transaction costs arise. It has set out some issues involved in isolating transaction costs in a supply chain, the implications of such costs and how they can be assessed. The success of the methodology proposed considering the difficult procedure involved in the collection of data, produced a simple scheme of classification that can identify some of the key features of the contractual arrangements at different stages of the chain. The framework used accomplishes both a basic description of the system and a thorough investigation of the relationships within it.

Because the overall objective of the study is to raise ideas or issues that can enhance the competitiveness of the South African fruit industry through efficient supply chain management practices by reducing transaction costs, the empirical application of the TCE theory helped demonstrate the extent to which the exporter has adapted to changes in the global environment. The development of partnerships or relational transaction arrangements between the producer/ exporter and exporter/ importer demonstrate the evolution of governance structures from the simple to more complex structures in the wake of changes in global trends. This growing recognition of the competitive advantage that can be gained through improving coordination in the supply chain is the starting point for SCM initiatives and these are important signals that in the long run will determine the sustainability and competitiveness of the industry.

The analysis put forth suggests that the nature of the transaction attributes determines the governance structure to be adopted. These insights resonate with Williamson (1975; 1985) who addressed the trade-off between incentives and governance costs, and noted that "internal organisation often has attractive properties in that it permits parties to deal with uncertainty or complexity in an

adaptive, sequential fashion" (Williamson, 1975; 25), and, "because a high degree of bilateral dependency exists in those circumstances and high powered incentives impair the ease with which adaptive, sequential adjustments to disturbances are accomplished" (Williamson, 1985; 91).

4.2 IMPLICATIONS FOR EXPORTERS

The emphasis on prioritising non-financial measures such as quality; customer satisfaction; on-time delivery; innovation measures, and on the attainment of strategic objectives indicates the uncertain environment in which the exporter is operating. Because the exporter acts as the middleman, the exporter wields a certain amount of power, with the exporter generally in possession of reasonable levels of timely market information while producers are normally disadvantaged in this regard.

The process of constructing tables is of importance in assessing the nature of the chain and its relationships. The interviews conducted provided a spectrum of valuable raw information. The implications of the closeness of the actual governance structure to the efficient governance structure for the situations considered suggest who benefits party from the relationship. In this study the focus centred on the role of the exporter and if the exporter is "operating in the environment similar to that proposed by the theoretically efficient form of governance (shown by the levels of the transaction variables)" (Loader, 1997; 34), then the exporter can be seen to be benefiting. If the opposing side to the transaction (i.e. producer or importer) is also operating in the environment proposed, then the situation should be stable otherwise any other situation would raise questions of power and pressure for improvement to arise until a stable arrangement is established.

Other implications to be drawn from the analysis of the tables are as follows:

- Transactions that involve specific assets extensively are best internalised by firms through specialisation or integration since market competition is unlikely to prevail.
- Uncertain transactions require the establishment of relationships to militate

against the uncertain activities of other role players, therefore, mergers may be desirable though this may introduce new forms of transaction costs.

- Frequent assets are most likely to be handled by some form of governance (i.e. either internalised or some other hybrid form of governance).
- If opportunism is present then some form of rules and standards needs to be drawn up.

4.3 CONCLUSION

This study has attempted to use the transaction cost economics (TCE) approach to show how transaction costs can be reduced in order to enhance the competitiveness of the South African fruit supply chain. The case study approach used has its own limitations but is useful in that it sheds light on how supply chain management within a firm is important. Because the chain does not involve a large number of processing businesses, where for instance physical rather than time or place transformations occur, the lack of focus on intra-firm relationships is not a particular problem. In light of the findings that have been outlined, the exporter's ability to adapt to global trends and demand is quite exceptional, and, this is visible in the exporter's ability to internalise or externalise activities in response to the costs and benefits that are associated with that particular activity. However, there is room for further improvements through the provision of incentives, penalties and safeguards.

Critical issues in the supply chain management for exporters revolve around three key factors, namely; time, cost and product quality.

Timing is critical to the client's needs because the certainty of the events within a market decreases the length of time to acquire the fruit, thus preventing the incurrence of extra costs from a lost window of opportunity.

Costs increase for both the importer and exporter when timing issues are inefficient and when product quality is inconsistent. The key areas that contribute to the above issues are:

- Cold Chain Management

- Packing practices
- Packing materials
- Sorting facilities.

Quality of product is important to the exporter-importer relationship thus quality controls need to be exercised from the producer to the end customer to determine how and where the inconsistencies are occurring.

The remaining section of this study discusses the three aspects that are important in ensuring that transaction costs are minimised, namely incentives, penalties and safeguards. However as a point of departure, due to time constraints, the process of testing solutions by an expert panel was not conducted as outlined in the methodology section. There is need for further research on the subject of transaction costs and supply chain management. An analysis focussing on all the key role players in the chain providing insights on how individual chains are constructed and managed would give a clear indication to other role players on how coordination and cooperation creates possibilities for reducing costs.

4.4 INCENTIVES, PENALTIES AND SAFEGUARDS

4.4.1 Incentives

The purpose of providing incentives is to minimise on opportunistic behaviour and thereby prevent or avoid moral hazards and adverse selection amongst role players. Strong incentives usually suit procurement from the market while weak incentives are better internalised because opportunism can be prevalent in such instances. Incentives in the chain should be targeted to:

- Build trust and commitment among chain players,
- Promote good information exchange,
- Promote diffusion of tacit knowledge,
- Create a collective learning process among chain players.

4.4.2 Penalties

Penalties should be in place to ensure that time, cost, and product quality is not compromised. These penalties may be:

- Undertakings by all parties to meet agreed key performance indicators,
- Black-listing non performing parties and high risk parties,
- Deferring costs to the faulty party.

4.4.3 Safeguards

The aim of safeguards is to ensure that risk is minimized during a transaction. In this case the uncertainty factor is minimized, with parties maintaining flexibility to renegotiate thus avoiding over binding commitments to chain players.

4.5 RECOMMENDATIONS

From the analysis made in this study, the conclusions made reveal how the exporter has gained the ability to internalise or externalise activities in response to the costs and benefits that are associated with that particular activity in a dynamic and changing global environment. This is an important aspect of supply chain management. However, there are potential cost savings that can be gained from the use of other governance structures.

Awareness of the potential motivations for contracting is essential for understanding the changes that take place in an ever-changing environment. Contracting is one option exporters can apply because of its advantages. For instance a production contract specifies production practices such as inputs to be used, and cultural practices, among others. Thus, instead of the exporter venturing into full vertical integration, production contracts provide a type of quasi-integration whereby the exporter (contractor) gains some control over the production process of an upstream activity without having to take ownership of the activity in the supply chain. By contracting, the exporter is offered a high degree of certainty about quality and availability of supply. Thus, depending on the preferences of both the contracting parties, contracts can be advantageous to both. Also contracting will

likely improve access to capital that is essential in any business activity.

Based on this analysis, bilateral contracting and strategic alliances should be given priority to enhance effective communication, commitment and collective decision-making. It should also be emphasised that the key to success dwells on how the supply chain is managed, and a better way of achieving this is through analysing mistakes, past trends and learning from other competitive countries management processes.

BIBLIOGRAPHY

AgriReview 2002

Supply chain management and the citrus industry. A quarterly agricultural review, November 2002, Information Services Unit of the Agricultural Department, The Standard Bank of South Africa Limited

Aoki M 2000

Institutional evolution as punctuated equilibria In Menard C (eds) **Institutions, Contracts and Organisations: Perspectives from New Institutional Economics**, Edward Elgar, Cheltenham UK

Bardhan P 1989

The New Institutional Economics and Development Theory: A Brief Critical Assessment, World Development 17(9): 1389-1395

Barzel Y 1982

Measurement Costs and the Organisation of Markets, The Journal of Law and Economics 25(10;

Bayley B 2000

A Revolution in the Market: The Deregulation of South African Agriculture. Oxford Policy Management, Oxford, England.

Broens DF, van Dyk FE and Tavasszy LA 2000

The cold fruit supply chain between South Africa and the Netherlands, TNO-report Inro-L&T/2000-26

Carvalho J M, Loader R, Hallam D 2000

Governance Structures of Two Innovative Fruit Chains in Brazil, In Trienekens J H and Zuurbier P J P (eds), **Chain Management in Agribusiness and the Food Industry**, Proceedings of the fourth International Conference, Wageningen 25 – 26 May 2000, Wageningen Pers

Clark T H, Croson D C, Schiano W T 2001

A Hierachical model of supply chain integration: Information sharing and Operational interdependence in the US Grocery Channel, Information Technology and Management, 2; 261-288

Coase R H 1937

The nature of the firm, Economica 4; 386-405

Coase R H 2000

The New Institutional Economics In Menard C (eds) **Institutions, Contracts and Organisations: Perspectives from New Institutional Economics**, Edward Elgar, Cheltenham UK

Commons J R 1934

Institutional Economics, Madison: University of Wisconsin Press

Cordes M 2003

South African Sub-Tropicals Rate Highly (editorial), Subtropical Agri-Guide 2003; 3

de Bruyn P, de Bruyn J N, Vink N and Kirsten J F 2001

How transaction costs influence cattle marketing decisions in the Northern communal areas of Namibia, Agrekon 40(3); 405-425

DFPT (Deciduous Fruit Producers Trust) 2002

Key Deciduous Fruit Statistics, Centre for International Agricultural Marketing and Development (CIAMD)

Drennan L G 2000

The efficient mix of performance controls: A transaction cost economics perspective, Paper presented at the ISNIE conference, Tubingen, September 2000

Faure C 2002

A word from the Chairman, In DFPT (Deciduous Fruit Producers' Trust) annual review 2002; 5

Forrester J W 1958

Industrial dynamics: A major breakthrough for decision makers, Harvard Business Review 38 (July/ August); 37-66

Fruit South Africa handbook 2003

Fresh Fruit Exports from South Africa, Fruit South Africa

Hair J F, Anderson R E, Tatham R L and Black W C 1992

Multivariate Data Analysis with Readings, 3rd ed., Macmillan, New York

Hobbs J E 1996a

A transaction cost approach to supply chain management, Supply Chain Management 1(2); 15-27

Hobbs J E 1996b

A transaction cost analysis of quality, traceability and animal welfare issues in the UK beef retailing, British Food journal 98(6); 16-26

Hobbs J E, Kerr W A, Klein K K 1998

Creating international competitiveness through supply chain management: Danish pork Supply Chain Management 3(2); 68-78

Karaan A S M 1999

Bridging the Small-Big Divide: A Transaction Cost Approach to Enterprise Modelling for Mussel Mariculture in Saldanha bay, Agrekon 38(4) December: 680-692

Klein B, Crawford R G and Alchian A A 1978

Vertical Integration, Appropriate rents and the Competitive Contracting Process, Journal of Law and Economics, XXI(2) October; 297-326

Kherallah M and Kirsten J F 2002

The New institution economics: Applications for agricultural policy research in developing countries, Agrekon 41(2) June (2002); 111-134

Lang M G 1980

Marketing alternatives and resource allocation: case studies of collective bargaining, American Journal of Agricultural Economics 6(4); 760-765

Langlois R N 1986

The New Institutional Economics: an introductory essay In Langlois R N (eds) **Economics as a process – Essays in the New Institutional Economics**, Cambridge University Press, Cambridge, New York

Langlois R N 1992

Transaction Costs in Real Time, Industrial and Corporate Change 1(1); 99-127

Loader R 1997

Assessing transaction costs to describe supply chain relationships in agri-

food systems, Supply Chain Management 2(1); 23-35

Loader R and Hobbs J E 1996

The hidden costs and benefits of BSE, British Food Journal 98(11); 26-35

Makhura M T 2001

"Overcoming transaction cost barriers to market participation of smallholder farmers in the Northern Province of South Africa", Unpublished PhD thesis, University of Pretoria, June 2001

Marino M K and Machado C A P 2000

"The Development of Contractual Relations between Producer and Citrus Food-industry in Brazil after the Extinction of the Standard Contract". Paper presented on June 25, 2000 at the IAMA Agribusiness Forum in Chicago, Illinois, *available on line* http://agecon.tamu.edu/iama/2000Congress/Forum - Final PAPERS/Area IV/Marino_Matheus.PDF (last accessed 21/10/2003)

Masuku M B, Kirsten J F, Van Rooyen CJ, Perret S 2003

Contractual relationships between small-holder sugarcane growers and millers in the sugar industry supply chain in Swaziland, Agrekon, 42(3): 183-199 September 2003

Mather C 2003

"Regulating South Africa's Citrus Export Commodity Chain(s) after Liberalisation", School of Geography, Archaeology and Environmental Studies University of the Witwatersrand, available on line: http://www.tips.org.za/research/papers/getpaper.asp?id=629 (Last accessed, 14/08/2003)

Ménard C 2001

Methodological issues in New Institutional Economics, Journal of Economic methodology 1(8): 85-92 March 2001

Mentzer J T, Dewitt W, Keebler J S, Min S, Nix N W, Smit C D and Zacharia Z G 2001

What is supply chain management, In Mentzer J T (eds) **Supply Chain Management**, Sage publication USA

Meissenheimer D J 2000

"'n waardeketting ontleding van die Suid – Afrikaanse Wynbedrfy", Tesis ingelender ter voldoening aan die vereistes vir die graad Magister in Landboubestuur (Landbou-ekonomie) aan die Universiteit van Stellenbosch

Nabli M K and Nugent J B 1989

The New Institutional economics and its applicability to development, World Development 17(9): 1333-1347

National Department of Agriculture 2002

"Economic review for the 12 months that ended on 30 June 2002", *available on line* http://www.nda.agric.za/docs/trends2002.pdf (last accessed 30/10/2003)

North D C 1989

Institutions and Economic Growth: An Historical Introduction, World Development 17(9): 1319-1332

North D C 1990

Institutions, Institutional Change and Economic Performance, Cambridge University Press, Cambridge

North D C 2000

Understanding institutions In Menard C (eds) **Institutions, Contracts and Organisations: Perspectives from New Institutional Economics**, Edward Elgar, Cheltenham UK

Ortmann G F 2000

Promoting competitiveness in South African agriculture and Agribusiness: the role of institutions, Agrekon 39(4) December (2000); 367-400

Paarlberg D 1993

The Case for Institutional Economics, American Journal of Agricultural Economics, 75 August: 823-827

Potgieter G undated

"Notes on a short talk about the different grape cooling systems", available online http://www.consultgpb.co.za/Grape%20Cooling.htm (last accessed, 30/09/2003)

Roberts J S 2003

The Buzz About Supply Chain, Inside Supply Management, 14(7); 24

Singh B P 2002

Non-traditional Crop Production in Africa for Export In Janick J. and Whipkey A. (eds.), **Trends in new crops and new uses**, ASHS Press, Alexandria, VA *available online* http://www.hort.purdue.edu/newcrop/ncnu02/pdf/singh.pdf (Last accessed on 05/ 11/ 2003)

Spekman R E, Spear J, Kamauff J 2002

Supply chain competency: learning as a key component, Supply Chain Management 7(1); 41-55

Staal S, Delgado C and Nicholson C 1997

Smallholder dairying under transaction costs in East Africa, World Development 25(2); 779-794

Steenkamp J B E M 1987

Conjoint measurement in ham quality evaluation, Journal of Agricultural Economics 38(3); 473-480

Tregurtha N and Vink N 2002

"B2B E-Commerce and the South African Horticultural Export Industry: current status and future directions", University of Stellenbosch, August 2002

Van Dyk E 2003

"Grape Information and Communication Protocol 2003", CSIR transportek

Williamson O E 1975

Market and Hierarchies – Analysis and Antitrust Implications, The Free Press, New York

Williamson O E 1979

Transaction cost economics: the governance of contractual relations, Journal of Law and Economics 22; 233-262

Williamson O E 1985

The Economic Institutions of Capitalism, The Free Press, New York

http://www.findarticles.com/cf_0/m4339/1_21/63510122/p1/article.jhtml?term= (last accessed 23/09/2003)

UNCTAD website: direct link-

http://r0.unctad.org/infocomm/anglais/orange/sitemap.htm#links

APPENDIX 1

List of Key informants

Craig Schaefer *(Colors Pty Ltd)*

Mike Grobbelaar *(Colors Pty Ltd)*

John Morgan *(Colors Pty Ltd)*

Mariaan Rademan *(Colors Pty Ltd)*

Avril de Villiers *(Colors Pty Ltd)*

Mia Mudge *(Colors Pty Ltd)*

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