

**International Journal of Applied International Business**

Volume 1 Issue 2

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**Enhancing Competitiveness In Australian Sugar Supply Chain:  
Can Application of Transaction Cost Analysis Provide an Answer?**

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ISSN 1743-2111

## Abstract

The concept of international competitiveness accords a notion of highly competitive marketplace with countries, industries, and firms fiercely vying for dominance, market share, and profit. However, the arena of competition and competitive advantage is moving from individual operations towards supply chains using coordination mechanisms. In such an environment, competitive capacity for agricultural products, and sugar in particular, needs to be based on supply chain coordination and cooperation. As the world sugar industry is under intense pressure to deregulate and become competitive, the importance of co-operating increases. This paper aims at reinforcing the relationship between cooperation and competitiveness by examining Australian sugar supply chain activities from the perspectives of transaction cost economics. It lays the groundwork in which various transactions costs in the supply chain can be segregated and assessed. The main conclusion is of the need to develop relationships among chain members based on trust with a common goal for improving competitiveness.

**Keywords:** Sugar, Supply Chain, Transaction Costs, Competitiveness, Australia.

## Introduction

Industries are facing widespread global competition caused by technological advances, diversity of product requirements, demanding customer expectations, and even by distortion in comparative costs and market shares through government supports and subsidies. Aggressive international competitiveness also increases insecurity and uncertainty. In such circumstances, it becomes increasingly essential for firms to not only concentrate and enhance on their own 'core competence' (Prahalad and Hamel, 1990), but also to seek for 'complementary competencies' (Porter and Fuller, 1986) in collaborative relations.

In recent years, the Australian sugar industry has been confronted with increasingly critical circumstances, particularly reduced sugar yields and low profitability. The Sugar Research and Development Corporation (SRDC), while taking note of such condition, observes that:

*This has been associated with a combination of adverse internal factors (e.g. supply problems caused by national hazards particularly high climatic variability and disease, and the rigidities of the current structure and culture of the industry) and external factors (e.g. the sharp downturn in world prices for sugar, changed relativities in world currency exchange rates, and disappointing returns on capital and low profitability throughout the industry value chain) (2003).*

In such a situation, it is increasingly important to understand how the management and coordination of the supply chain can lead to improved industry efficiency, profitability, and competitiveness. Principles of partnership and coordination along the supply chain to attain competitive position are of particular interest, even more so when the Australian sugar industry exports around 80% of its sugar production. However, coordinating activities in a supply chain is difficult due, in part, to complexity in a large number of inter-dependent activities in a supply chain.

Australian cane sugar supply chain activities can be analysed as expanded sets of contracts and are examined from the perspectives of transaction cost economics in this paper. This will help to identify possible transaction costs that induce inefficiencies and constrain competitiveness of the supply chain. Furthermore, enhancing global competitiveness in Australian sugar supply chain is explored through the behavioural assumptions of transaction cost economics and collaborative relations.

Firms are subject to intense competitive pressures as global competition increases. This creates additional challenges for individual firms as well as along the supply chain of which they form a part (Lee, 2002). In such an uncertain global environment, competitiveness is sought and pursued through inter-firm relationships as enunciated by Nassimbeni (1998) and Zineldin and Jonsson (2000). The concept of competitiveness traditionally refers to the ability of a firm or a group of firms (as part of an inter-related system) to gain market share, in the international or domestic market. This is typically advanced by creating cost efficiencies throughout the inter-related chain of firms resulting in increasing returns to capital and labour.

This notion of competitiveness related to efficiency and productivity is in accordance with Porter's (1990) approach based on industrial organisation and costs. This concept of competitiveness is broadened here through the application of the transaction cost framework that 'explicitly considers the efficiency implications of adopting alternate governance mechanisms' (Heide, 1994). Such an analysis accounts for efficiency implications beyond firm boundaries and how these might be used organising relationships. In light of this, competitiveness becomes a function of a system's performance, stability and value-added strategies. It is in this sense that the term competitiveness is used here.

## ***The Supply Chain and Economics***

The concept of supply chain management (SCM) is build on the theories of the firm, especially transaction cost economies. When combined with the seminal work of Porter's value chain optimization, it provides a useful business paradigm (Wilson, 1996).

## **Supply Chain and SCM**

Beamon (1998) defines supply chains as:

*'...an integrated process wherein a number of various business entities (i.e. suppliers, manufacturers, distributors, and retailers) work together in a effort to: (1) acquire raw materials, (2) convert these raw materials into specified final products, and (3) deliver these final products to retailers. This chain is traditionally characterized by a forward flow of materials and a backward flow of information' (p. 281).*

Novack and Simco (1991) succinctly define supply chain as consisting of *'participants, or intermediaries, who are linked physically, behaviorally, and informationally, for the purpose of facilitating transactions among channel members'* (p. 146).

Additionally, Christy and Grout (1994), referring to Houlihan (1985) states that:

*'A supply chain is a series of trading relationships between firms that sequentially add value to a product or service.'* (p. 233)

A number of definitions have been proposed concerning the concept of 'the supply chain' and its management. Lummus and Vorkurka (1999) reviewed definitions, the concept of the supply chain, and the evolution of supply chain management. They found that the interest in SCM has steadily increased when firms saw the benefits of collaborative relationships that transcend both functional boundaries (intrafirm) and organisational boundaries (interfirm). The authors further observed that the firms no longer compete effectively in isolation of their suppliers or other entities in the supply chain.

Reinforcing the above concept, Mason-Jones and Towill (1997) state that to maximize competitive advantage, all members within the supply chain should 'seamlessly' work together. To add to this, Spekman, Kamauff, and Myhr (1998) observe that success is no longer a measure of a single transaction; instead competition, in many instances, is a function of a network of co-operating companies competing with other firms along the entire supply chain. Chandra and Kumar (2000) express that SCM has become a crucial element of improving competitiveness by reducing uncertainty and enhancing customer service.

For Wilson (1996), *'SCM theory is concerned with the linkages in the chain from primary producer to final consumer with the incentive of reducing the transaction costs incurred within. It seeks to breakdown barriers between each of the units so as to achieve higher levels of service and substantial savings in costs'* (p. 9).

The traditional view of SCM is to leverage the supply chain to achieve the lowest procurement price while assuring supply. Such traditional supply chain comprises independent channel partners who do not plan cooperatively nor share information. Typical characteristics include multiple partners, partner evaluation based on purchase price, arms-length negotiations, formal short-term contracts, and centralized purchasing (Spekman et.al., 1998). These conditions lead to fierce competition among suppliers with performance being the only measure for long-term cooperation. Such an environment is based on two fundamental notions of:

1. Competition, through market mechanism, promotes intense rivalry for an efficient and healthy supply base;
2. Trading partners can be altered when necessary.

Therefore, in the traditional SCM view, suppliers and partners are frequently selected based primarily on cost, ease of doing business, and in the process, the extent to which they can be relied upon.

Under the new paradigm, where the focus of competition shifts from firm versus firm to chain (or system) versus chain, firms within a system can be better off by ensuring the sustainability of a supply chain by fair distribution of costs and benefits among the participants by working together or co-operating. In such a situation, one of the key elements of SCM is the notion of 'co-operating to compete' (O'Keeffe, 1998). Harland (1996) too has stressed SCM as the strategic management of inter-business networks.

In developing supply chain strategies, Morash (2001) identifies two major classes: operational excellence and customer closeness. Companies pursuing 'operational excellence', seek ways to minimize costs, reduce transaction and other 'friction' costs (Treacy and Wiersema, 1993). 'Customer closeness' is characterised by value-added

customer service, quality product, and problem recovery to satisfy customers (Morash, 2001). Nowadays, developing a supply chain strategy to operate effectively, it is not only necessary to be aware of customer needs and potential benefits of chain formation, but also build relationships based on trust. This reduces the cost of doing business and increases flexibility. Today, therefore, SCM represents a paradigm of the concepts of 'co-operation and competition' (O'Keeffe, 1998) and successful chains have a culture of continuous improvement combined with a process to ensure quality and optimization.

## Transaction Cost Economics (TCE)

TCE pertains to the co-existence of different forms of organizations and mechanisms for co-ordinating economic transactions: firms, markets, and hybrid forms of governance of exchange relations. It has 'emerged as a reaction to the neoclassical theory of the firm which ignored the friction inherent in transactions' (Wilson, 1996). The seminal work of Coase (1937) identified this limitation of the neoclassical paradigm.

Williamson (1985, 1991) has since developed Coase's original insights to draw together the core concepts of "transaction cost" in TCE. Williamson reasoned that bounded rationality and opportunism are characteristic of human behavior and, when incorporated with informational asymmetry and asset specificity, result in transactions costs. Wilson (1996) referring to Cheung (1992), classifies these dimensions as 'a spectrum of institutional costs' including those of information, negotiation, and monitoring (enforcement) costs.

Loader (1997, p. 25) adds that Williamson (1979) further distinguishes between:

- 'Frequency' (volume/number of transactions per time period) as the 'cost-determining attributes of individual transactions', and
- 'Uncertainty' as the 'environmental, political, social or economic risk' related to transactions.

These additional characteristics lead to costs in carrying out transactions.

The human characteristics encompass all informational activities that influence transaction costs within a supply network and on the efficiency (minimization of transaction costs) of alternative transaction modes. Therefore, simply stated, transaction costs are the costs of gathering information prior to a transaction, negotiating the actions of carrying out the exchange, and monitoring enforcement to ensure that pre-arranged terms of the transaction are adhered to (Boger, Hobbs & Kerr, 2001). Coase (1937) opines that these costs are an incentive to integration, either through cooperation or by buyout of chain partners.

Further, Boger, Hobbs & Kerr (2001) state that prohibitively high transaction costs will stifle economic exchange, deter investment and impede the transition process. Transaction costs are, therefore, considered as one of the main motives for interaction, co-operation, co-ordination and collaboration to alleviate the uncertainty of the market, reduce risks, and to increase the efficiency of economic exchange. Heide (1994) also emphasized the need 'for establishing and managing channel relationships' especially where mutual dependence of firms involved in transactions is acknowledged. Mentzer (1993) states that 'from a channel relationship perspective, the long term relational orientation and limited supplier decisions tend to

make the channels more strategically oriented and relationships more cooperative than conflictual' (p. 32).

In the objective to achieve reduced transaction costs, Wilson (1996) also endorses the establishment of 'a lasting relationship based on trust' among players to 'synergize their strengths' to improve the supply and development of the market' (p. 29). This precludes the need for contracts and expensive negotiation. Batt (2003), while citing Hawes, Mart, and Swan (1989), states that 'for any particular potential exchange, trust will be critical if two situational factors are present: risk and incomplete buyer information' (p.66).

In addition to trust for the establishment of successful long-term relationships, commitment is also recognized as an essential ingredient (Gundlach, Achrol, Mentzer, 1995). They further write that:

*Committed partners are willing to invest in valuable assets specific to an exchange, demonstrating that they can be relied upon to perform essential functions in the future (Anderson & Weitz, 1992). These self-interest stakes help stabilize associations, alleviating the uncertainty and cost of continually seeking and consummating new exchanges (p.78).*

Morgan and Hunt (1994) drawing on The Commitment-Trust Theory mention that 'when both commitment and trust – not just one or the other – are present, they produce outcomes that promote efficiency, productivity and effectiveness' (p.22).

It is therefore seen that reducing transaction costs is the objective of an economic exchange. This can be achieved by building long-term 'channel relationships' based on trust and commitment. There will be transparency and openness among the chain members, resistance to attractive short-term alternatives in favor of the long-term benefits, and reduced uncertainty. Such conditions of cooperative behaviors will result in awareness, trust, efficiency, transparency and rewards.

## **SCM, TCE, and Competitiveness**

As a significant commitment to enhancing such competitiveness, it is also necessary to manage supply chain relationships. SCM requires effective management of various types of investments specifically related to a relationship. Williamson (1979) identified three types of specific investments that are engaged – site-specific, physical, and human capital. Dyer and Ouchi (1993) state that such investments (i) bind the participants into highly interdependent relationships and (ii) 'create value substantially beyond what could have been achieved without them' (p. 56). The formations of such value-added partnerships provide the supply chain particular competitive advantages.

Further, Griffith and Myers (2005) assert that effective management of supply chain relationships depend on aligning organizational elements with environmental opportunities and threats. The advantages of such a concept in competitiveness lie in strategy formulation (Zajac et. al., 2000) and flexibility (Ghemawat and del Sol, 1998). While Griffith and Myers (2005) stress that 'supply chains are managed through governance structures' (p. 255), Wathne and Heide (2004) draw exclusive attention to particular governance process of adaptation to uncertainty and the use of governance structures that allow for flexible adaptation or relationship modification to changing circumstances. In essence, relational elements of the sort specified, create



a relational governance structure that can enhance performance (Zhang et. al., 2003) by fostering stability and value-added strategies.

Now in regard to competitiveness, Porter's approach, based on industrial organisation, aims for market position through strategy and TCE focuses on governance structure to economise operations. However, Ghosh and John (1999) highlight the asset attribute of specified investments for market position and state that market position, resources, and governance structure are interdependent, implying that selection of each depends on the other (Nickerson et. al., 2001). Further, according to Nickerson et. al. (2001), Porter's primary analytical device for competitive advantage is the *value chain* 'which is a disaggregation of a firm into strategically relevant and technologically distinct activities' (p. 253). This analysis of Porter is based on the assumption that activities in the chain can be 'logically and operationally unbundled' (Nickerson et. al., 2001; p. 253). For Williamson, the fundamental unit of analysis is the *transaction* which is a 'technologically separable interface where one stage of activity terminates and another begins' (Nickerson et. al., 2001; p. 253). So to attain overall economic efficiency by economizing transactions, Williamson's analysis is based on 'unbundling' firms into separate transactions at a time while implying appropriate organisational form through which the various activities of the firm can be structured.

Thus, in summation, competitiveness can be achieved through an appropriate SCM and governance mode that can (i) provide value-added strategies corresponding to resource characteristics, (ii) economise on transactions, and (iii) adapt to changing environment.

## ***The Supply Chain and Transaction Costs***

Supply chain management (SCM) is built on a foundation of trust and commitment (Lee and Billington, 1992). It is seen in its basic form as a move towards co-operation in building a long-term relationship. 'These long-term relationships lead to reduced political social or economic risk, reduced transaction costs, and access to economies of scale by by-passing traditional market arrangements' (Loader, 1997; p.22).

### **Transaction Cost Basis**

McAdam and McCormack (2001) highlight that as supply chains develop, complexity increases with:

- Increases in the number of linkages to be managed;
- Difficulty in the communication of a common goals; and
- Increased dependency on each other among the chain members.

Echoing similar concerns, Loader (1997), referring to Hakansson (1982), notes that 'exchange relations are not always co-operative, and therefore the notion of rationalizing and economizing on transaction costs in the comparison of the different modes of organization becomes crucial' (p.25). Following Williamson (1985), an efficient alignment of the governance mode and the characteristics of the transactions are expected to exist. In the context of the above, it is imperative to understand the (1) Contracting Process and (2) Governance.

## 1. Contracting Process

In the words of Williamson (1985, p. 30),

*The world of contract is variously described as one of (1) planning, (2) promise, (3) competition, and (4) governance (or private ordering). Which of these descriptions is most applicable depends on the behavioral assumptions that pertain to an exchange and on the economic attributes of the good or service in question.*

The key concepts of TCE that underpin the contracting process are uncertainty, bounded rationality, opportunism, and asset specificity.

1. 'Uncertainty' in various degrees is present in any economic exchange. This contributes to costs in carrying out transactions.
2. 'Bounded rationality' acknowledge limited judgements of individuals. This means that though the individuals may try to act rationally, they may only be partially successful in realizing their intentions.
3. 'Opportunism', defined by Williamson (1985, p. 47) as 'self-interest seeking with guile'. This recognizes individuals behave opportunistically to exploit a situation to their own advantage.
4. 'Asset specificity' signifies investment characteristics and denotes dedicated inputs.

Williamson (1985) writes that the 'most critical dimension for describing transactions is the condition of asset specificity'. Lyons (1994), while stating that 'modern transaction cost theory is predicted on two key behavioral assumptions, opportunism and bounded rationality', maintains that the transaction cost theory 'is made operational by the central role given to asset specificity' (p.314).

These characteristics also have a major influence on the efficiency of alternative transaction modes. In the context of the above dimensions, the variances in contract processes are presented in Table 1. The table suggests the following implications:

1. When a situation arises where bounded rationality is absent, that is, full rational judgment is assumed with dedicated inputs and opportunistic parties, then the contractual process becomes one of rational and cognitive planning. In such situation, the contract between parties is accurate and effective and based on full and informed account of all possibilities.
2. When opportunism is absent, and parties need to base their judgements on limited information with assets dedicated to the specific transaction, then the contracting process is based on a promise that is a result of trust between them and makes the contract self enforcing.
3. When asset specificity is absent, that is, the input can be freely selected with opportunistic self-interest and limited judgement being present, then the contracting process is in the realm of competition where the market decides. In this situation neither party is interested about each other or on establishing any relationship.
4. This is a situation where conditions of limited judgement, opportunistic self-interest, and dedicated inputs are present at the same time. In a case like this rational and cognitive planning is not effective, promise does not hold, and competition does not persist due to dedicated inputs. This results in internalization of the contract process where internal governance holds.



**Table 1** Attributes of the Contracting Process

Behavioral Assumption			Implied Contracting Process
Bounded Rationality	Opportunism	Asset Specificity	
0	+	+	Rational & cognitive planning – taking an educated account of all relevant issues & potential problems.
+	0	+	Promise – based on complete trust & honesty of parties leading to self-enforcement for mutual benefit.
+	+	0	Competition – in the market will overcome problems
+	+	+	Governance – internalization of contracting

**Notes:** + denotes presence in significant degree; 0 denotes absence

**Source:** Adapted from Williamson (1985) and Loader (1997).

## 2. Governance

TCE acknowledges that variation in the contractual process is mainly explained by underlying differences in the attributes of transactions and ‘that each generic form of governance...needs to be supported by a different form of contract law’ (Williamson, 1991; p. 271). There are three main types: classical contract, neoclassical contract, and relational contract.

- **Classical Contract:** Classical contract law endeavors to implement discreteness and applies to the ideal transaction in law and economics...in which the identity of the parties is irrelevant. Classical contract law is congruent with and supports the autonomous market form of organization. The emphasis is on legal rules, formal documents, and self-liquidating transactions (Williamson 1979, pp. 236-237; Williamson 1985, p. 69; Williamson 1991, p. 271).
- **Neoclassical Contract:** Neoclassical contract law, which relieves parties from strict enforcement, applies to long-term contracts in which the parties to the transaction maintain autonomy but are bilaterally dependent to a nontrivial degree. In long-term contracts, the existence of gaps in planning processes is acknowledged. A recognition that the world is complex, the agreements are incomplete, and that some contracts will never be reached unless both parties have confidence in the settlement machinery thus characterizes neoclassical contract law (Williamson 1979, p. 237; Williamson 1985, p. 70; Williamson 1991; pp. 271-272). For Williamson (1979, p. 238) ‘the reference point for effecting adaptations remains the original agreement’.

- **Relational Contract:** ‘Continuing contract between the parties where a range of social and economic relationships help to define and support a range of transactions’ (Loader, 1997, p. 26). For Williamson (1979, p. 238) ‘the reference point under a truly relational approach is the “entire relation as it has developed...[through] time...”’.

To successfully accomplish transactions, the structure for efficient governance regarding the volume and recurrence of transactions and investment characteristics is depicted in Table 2. It is seen that standardized nature of transaction stems from classical contracting and implies market governance. In this, alternatives to opportunistic self-interest behavior are available from the market.

Trilateral governance (in Table 2) implies that contracts stipulates arbitration as a settlement mechanism in case of disputes and also employs performance evaluation.

Continuing contractual contract is the characteristic of bilateral governance where autonomy of both parties is maintained. Unified governance implies internalization of the contracting process.

**Table 2:** Efficient governance structures based on the principal dimensions of transactions

Nature of Transaction	Frequency	Asset Specificity	Type of Contracting	Expected Governance Structure
Standardized	Occasional & Recurring	Non-Specific	Classical Contracting	Market <sup>a</sup>
Non-Standardized	Occasional	Mixed & Highly Specific	Neo-Classical Contracting	Trilateral <sup>b</sup>
Non-Standardized	Recurring	Mixed & Highly Specific	Relational Contracting	Bilateral <sup>c</sup> / Unified <sup>d</sup>

**Source:** Adapted from Williamson (1985) and Loader (1997).

**Notes:**

<sup>a</sup> Alternatives are available (from the market) which can be used if dishonesty persists and protect each party against opportunism by his opposite.

<sup>b</sup> Contracts are built with safeguards and third-party *assistance* (arbitration) in resolving disputes and evaluating performance is employed.

<sup>c</sup> Bilateral governance, referred to as *obligational contracting* by Williamson (1979), implies continuing contractual contract, but with the autonomy of the parties maintained.

<sup>d</sup> Unified governance implies internalization of the contracting process.

## Interdependency, Contracting and Relational Governance

Lusch and Brown (1996), referring to Macneil (1980), state that the dependence structure in a relationship has relevance to contract form that has its fundamental origin in the society in which each person desires the need to be conscious of future while not being fully self-reliant. In such a context, Dwyer et. al. (1987) state that:

*'Relational exchange transpires over time...viewed in terms of its history and its anticipated future...supported by implicit and explicit assumptions, trust, and planning. Relational exchange participants can be expected to derive complex, personal, noneconomic satisfactions and engage in social exchange.'* (p. 12)

Additionally, Heide (1994, p.76) declares that 'bilateral governance modes seek to eliminate goal divergence and align incentives *ex-ante*' through a process of socialisation. In a similar vein, Stump and Heide (1996) show that controlling partner opportunism can be managed through socialisation. Furthermore, Wathne and Heide (2000) state that relational contracts are sometimes described as 'social contracts' and are often supported by a variety of norms and informal agreements (e.g. Heide and John, 1992). According to Williamson (1991) and Wathne and Heide (2000), relational contracts also address new circumstances by a norm of flexibility based on shared expectations. Within TCE, the act of inflexibility or unwillingness to adapt to new conditions can be regarded as opportunistic behaviour (Anderson and Weitz, 1986).

Griffith and Mayers (2005) declares that relational exchange is characterised by relational norms, key social elements which can restrict opportunism and promote cooperation and joint benefits of relationships (Heide and John, 1992; Zhang et. al. 2003). These norms include solidarity, flexibility, bilateral information exchange, role integrity and harmonious conflict resolution (Zhang et. al. 2003; Dwyer et. al. 1987) and can serve as a governance mechanism (Zhang et. al. 2003; Heide and John, 1992).

## Transaction Costs, Sugar and Supply Chain

The factors that make for an integrated approach applicable in food supply chains generally include complex issues such as perishability, transportation of low value products, and increasing consumer demands for safety (Hobbs, 1996; Folkerts and Koehorst, 1997). This is also applicable in the sugar industry. The chain can achieve integration through joint strategic planning by all participants working together through open and transparent sharing of information based on mutual trust and respect.

In search of efficiencies in the Australian sugar industry, Dr Muchow (2000) has referred to 'exploiting linkages and interdependencies across the farming, milling, and marketing sectors' with the 'shared ownership of local issues' and 'a commitment to proceed on a partnership basis'. He has further stressed on the fact that integration of the growing, harvesting and transport, and milling sectors is complex, but essential, to assess the benefits and costs of different cane supply scenarios.

Milford (2002) observes that there has been recognition in the sugar industry of Australia, almost since the inception, for the need for some form of supply chain

management. This is primarily 'due to the highly integrated nature of the chain and the potential for adverse power relationships within it'. He further notes that, in Australia,

*the sugar industry supply chain has been managed in the past through legislation. ...This mediated the power relationships, obviated the need to develop other forms of relationship and led to the establishment of strong sectoral representative bodies and linkages (pp. i &2).*

In this context, the effects of some of the elements of transaction costs, for developing closer partnerships in the Australian sugar industry, are considered below.

## Reducing Transaction Costs

In an attempt to reduce transaction costs Milford (2002), referring to Chapman, Milford, and Burrows (1997), provides some examples of transaction costs in the sugar industry. They include:

- The costs of miller—grower negotiations – that is preparation, meetings, grower feedback meetings, expert assistance, mediation and arbitration, technical and negotiation support;
- The costs of compliance with industry regulations – e.g. applying for cane production area;
- The costs that arise because of asymmetric information – that is seeking information known to the other side, mistakes made due to lack of knowledge;
- The cost of entering into a harvesting arrangement and uncertainty arising due to any change in the arrangements.

The transaction costs can be reduced with the development of an integrated supply chain where trust is generated and strategic aims are aligned to replace contracts and negotiations (as seen in Table 1). This creates a situation where there is a better flow of information between parties concerned that reinforces the trust and commitment to the exchange. The supply chain becomes more efficient as time spent on negotiation is replaced with time spent in rational and cognitive planning. This allows the development of strategies to create more income by reducing costs (Hobbs, 1996). It is to be acknowledged that building relationships takes effort and also entails transaction costs.

## A Typical Application to Sugar

In taking into consideration Williamson's elements of transactions along with the expected governance structure, an attempt is made to disaggregate the nature of transactions into a series of components to explore the relationships between cane growers (farmers growing the crop for the mills and the export market) and mill-owners.

The basic profit center of the industry is the mill area where the marketable raw sugar product results from the joint efforts of both the farmers and the millers and can be depicted as:

*Profit Centre = mill area = farms + (harvest + transport) + factory (Hildebrand, 2002).*

Similarly, the basic supply chain of sugar can be depicted as:

**FARM → HARVESTING → TRANSPORT → MILL → TRANSPORT & STORAGE  
→ REFINING → INTERMEDIATES & END USERS**

### **The Farm-Mill Relationship**

Sugarcane once cut must be treated within 16 hours otherwise its sweetness and its commercial value deteriorates. For this reason, farms and mill must be geographically located and the farmer and the mill are wholly co-dependent. In the light of the above, the transaction objectives of the farmers and the mills, as borrowed from Hildebrand Report (2002), can be summarized as:

- *'Farmers seek to ensure that a mill will accept the cane they will grow and harvest over the season for optimum farm proceeds, to a schedule that averages crop and climate event risks between farmers; and*
- *On the other hand, a mill seeks to ensure that cane farming is the most profitable use of land in its feeder area, and that its milling capacity is adequate to ensure cane continues to be grown in sufficient quantity by its supplying farmers, in order for the mill to remain economically viable'.*

These respective objectives of the farmers and the mill owners seek to maximize their own performance. It also implies that the desirability of pursuing closer integration across these inter-dependent partners through joint planning, trust, and respect is of mutual benefit. However, it appears that in reality the farmers and mill owners lack the desired characteristics in their relationship and operate in an environment of high uncertainty.

Tables 3 and 4 illustrate clearly the relationships between the farmers (the cane growers) and the mill-owners (the cane users) in respect to the dimensions of transactions cost developed in Tables 1 and 2. Inputs to Tables 3 and 4 regarding information on relationships have been based on studies conducted by KPMG (2000) and Milford (2002).

The implications that can be drawn from the analysis of the tables are:

- The transactions require extensive dedicated inputs, including the location-specific nature of the investments and the temporal specificities associated with the perishability of the agricultural product (sugarcane). The nature of the transactions results in advantages to firms in specialization and/or integration. As specialized or relationship specific investments increase, coordinated adaptation becomes more important.
- There is high degree of uncertainty in transactions and it is imperative to steady the relationships through commitment and trust as millers and farmers are jointly reliant in each mill area for profitable outcomes.
- Bounded rationality exists which also enhances the political, social or economic risks leading to the breaking down of planning processes which results in a need for greater co-operation. Public education of farmers can reduce some of the sources of uncertainty and help create an environment of commitment and trust for economic sustainability of mill areas.
- The transactions are high during crushing season and at other times relatively infrequent, then they are more likely than such transactions are more likely to be handled by some form of specialized governance structure. Williamson

(1985) notes that 'where frequency is low but the needs for nuanced governance are great, the possibility of aggregating the demands of similar but independent transactions is suggested'.

- Further, to reduce opportunistic self-interest, rules and standards are to be drawn.

In analysing the current operational environment, the sugar industry is characterised by:

- A distinct lack of trust – with opportunism being potentially present in some cases;
- A fiercely competitive global market for sugar with perhaps increasing uncertainty;

**Table 3:** Cane growers to Mill-owners

<b>(1) Contractual Perspective</b>	<b>From Cane growers</b>	<b>To Mill-owners</b>
<b>Transaction objectives</b>	To supply quality sugarcane to mills.	
<b>(2) Nature of Transaction</b>		
<b>Volume/number of transaction (frequency)</b>	Relatively infrequent – bulk supplies.	
<b>Environmental, Political, social or economic risk (uncertainty)</b>	Considerable being an agricultural product; problems of yield, seasonality, unpredictability and demands of mills.	
<b>Dedicated inputs (asset specificity)</b>	High – human assets considerable.	
<b>Limited judgement (bounded rationality)</b>	High – with little knowledge of prices and qualities - lack of education of farmers, etc.	
<b>Opportunistic behaviour (self interest &amp; guile)</b>	Considerable – mill-owners wield ultimate power.	
<b>(3) Governance</b>		
➤ <b>Actual</b>	Trilateral – contracts are built with safeguards and identified arbitration to schedule harvesting & to ensure acceptance of cane.	
➤ <b>Expected</b>	Relational/bilateral seeks continuity of contract and reduce transactions costs as useful time can be utilized for joint planning & strategies	
<b>(4) Contracting Process</b>	Neo-classical with a maximizing orientation.	

**Source:** Adapted from Loader (1997)

- A deeply-rooted tradition of independence among the cane-growers;
- Unequal power relationships (as exhibited in Table 3 and 4) that is 'critical in the perception of trust' (Young and Wilkinson, 1989).

For example, growers who can access two mills will have different opportunities for opportunism than those who can access only one. Also company owned mills and cooperatively owned ones will have different opportunities due to their different ownership and organisational structures. Either side may seek opportunities in time sensitive practices such as cane harnessing and transport. Such factors are major hurdles in the pursuit of greater co-operation, co-ordination and collaboration.



**Table 4:** Mill-owners to Cane growers

<b>(1) Contractual Perspective</b>	<b>From Mill-owners</b>	<b>To Cane growers</b>
<b>Transaction objectives</b>	To obtain reliable, timely and high quality sugarcane	
<b>(2) Nature of Transaction</b>		
<b>Volume/number of transaction</b> (frequency)	High – in season	
<b>Environmental, Political, social or economic Risk</b> (uncertainty)	Considerable being an agricultural product; problems of yield and unpredictability.	
<b>Dedicated inputs</b> (asset specificity)	High – substantial investment in physical assets and human skills.	
<b>Limited judgement</b> (bounded rationality)	Low	
<b>Opportunistic behaviour</b> (self interest & guile)	Moderate – mill-owners wield too much power for this to be a major problem to them.	
<b>(4) Governance</b>		
➤ <b>Actual</b>	Trilateral – contracts are built with safeguards and identified arbitration to continue supply in a timely and efficient manner.	
➤ <b>Expected</b>	Relational/bilateral	
<b>(4) Contracting Process</b>	Neo-classical with maximizing orientation.	

**Source:** Adapted from Loader (1997)

### **Opportunism, Trust and Relational Contracts**

Opportunism is thus one of the key behavioural variables driving transaction costs analysis. Morgan and Hunt (1994, p. 25; quoting John, 1984) state that ‘the essence of opportunistic behavior is deceit-oriented violation of implicit or explicit promises about one’s appropriate or required role behavior’. However, Nooteboom, Berger and Noordehaven (1997) have demonstrated that trust can alter perceptions regarding opportunism. In establishing the relationship between trust and opportunism (Granovetter, 1985; Maitland, Bryson, and Van de Ven, 1985; Bradach and Eccles, 1989; Larson, 1992; Hosmer, 1995), trust is viewed as a more realistic characterisation for a wide range of economic exchange relationships than is opportunism (Chiles and McMackin, 1996; Masters, Miles, D’Souza, and Orr, 2004).

Hosmer (1995) has reviewed definitions, the concept of trust, and its usefulness in understanding interpersonal and group behaviour, economic exchange, managerial effectiveness and social or political stability. The author examines trust within the contexts of (i) individual expectations, (ii) interpersonal relationships, (iii) economic exchanges, (iv) social structures, and (v) ethical principles. In considering the various approaches of trust, Chiles and McMackin (1996) make an effort at integrating trust within the behavioural conditions of TCE. The argument that trust is better suited to explain behavioural assumptions rest specifically on the following perspectives:

- First, trust is perceived as the confidence expressed between exchange partners and the propensity to remain engaged in business even when conditions inducing self-interest seeking behaviour prevails (Hosmer, 1995;

- Bradach and Eccles, 1989; Chiles and McMackin, 1996; Masters et. al., 2004).
- Secondly, the generation of trust is discerned through the prism of 'social embeddedness' (Granovetter, 1985) that stresses on personal relations as the foundations for economic exchange. Granovetter (1985) contends that transactions of all types are 'rife with...social connections'. Thus, it is the creation of close ties and honouring of personal promises, pledges and responsibilities intrinsic to socially embedded economic transactions that generates trust and restrain opportunistic behaviour (Bradach and Eccles, 1989; Chiles and McMackin, 1996).
  - Thirdly, it is the societal norms that mould and direct human behaviour such as norms of fairness, obligation and cooperation, and reciprocity (Chiles and McMackin, 1996). Such norms condition conduct of business practices, adhering to moral imperatives, and generate trust. The trust, which develops in this manner, controls the inclination for opportunistic behaviour. Augmenting this aspect, Gundlach et. al. (1995, p. 82) hypothesise that 'in exchange relationships, the presence of relational social norms tend to mitigate...opportunistic tendencies'.
  - Fourthly, Chiles and McMackin (1996) highlight the imperatives of rational economics that produce trust. Conventional economics assumes economic actors to be utility maximising and self-interest-seeking 'infused with calculating, guileful intent' (Boyce, 2001, p. 5). This 'calculative rationality' and 'multi-period prisoners' dilemma game' (Chiles and McMackin, 1996) provide the rationale of abjuring from opportunistic behaviour for short-lived objectives and benefits.

It is therefore observed that behaviours and/or acts by exchange partners, based either on socially constructed relationship or through the confines of moral obligations, help in generating trust which can curb opportunistic behaviour in establishing and continuing a relational contract. Further, incorporating Dwyer, Schurr, and Oh's (1987) suggestion of integrating trust in models of distribution channel relationships, results in providing 'a unique vantage point for treating opportunism as an explanatory variable'.

In TCE, economizing on transaction costs is aimed at achieving greater efficiency through the choice of governance structure. However, the presence of opportunism entails safeguarding arrangements that are expensive and relate to costs of negotiating, drafting, and enforcing contracts. The contracts with safeguard mechanism, however costly (to arrest opportunism), exhibit characteristics of trilateral governance structures (third-party mediated arrangement). This type of governance structure manifest attributes of both the market and hierarchy, and trust is not evinced among exchange partners.

The market governance structure, on the other hand, though it provides alternatives to opportunistic behaviour and also acts as safeguard mechanism, forecloses opportunities for developing alternative relationships.

In contrast, relational governance structure reflects attributes among firms 'that are enveloped in webs of interdependence' (Boyce, 2001, p. 7). The formal contract can initiate the co-operative intermediate arrangement that can serve as a framework for development of a long-term relationship (Heide, 1994; Williamson, 1985, 1991). In due course, the contracting process become more socially embedded and governed by societal norms that incrementally replace formal contractual safeguards (Masters et. al. 2004). Ring and Van de Ven (1992) have elucidated on the essence for aiming to build governance structure based on relational contracting with trust as 'the

principal mode of social control' (p. 491). Highlighting the difference in the basic tenet of TCE, Gundlach et. al. (1995, p.81) state that 'self-interest seeking is the foundation of the market mechanism' whereas 'mutual interest seeking is the foundation of...the mechanisms underlying long-term relational exchanges.'

Chiles and McMackin (1996) argue that with trust being integral to TCE framework, it can help to alter and identify the most economical governance structure. In doing so, the authors deduce that trust allows parties to:

- Endorse less elaborate safeguards,
- Cooperate and promptly come to resolution thereby reducing negotiating costs,
- Decrease on drafting costs – ex-ante inconsistency and differences in the contract will be dealt ex-post in a fair and equitable manner,
- Reduces monitoring costs with confidence on each other's performance.

Added to these, trust diminishes uncertainty (Hill, 1990). Moreover, it is observed in transactions laden with safeguard measures of control and enforcement can lead to skepticism and mistrust (Nooteboom, Berger and Noordehaven, 1997). In contrast, transactions anchored in a structure of personal relations (Granovetter, 1985) can be beneficial within a relational 'governance structure by trust' (Helper, 1990 as cited by Chiles and McMackin, 1996). Further, Boyce (2001, p. 9) argues that by applying Granovetter's approach of 'social connections', 'we can avoid relying on the austere rationality of economics and generalized conceptions of culture that gloss over the dynamics of interpersonal ties.'

In summing up the manifold propositions in the synthesis of trust in the TCE model, the relevance lies in restraining opportunism. Now, traditionally, only the role of opportunism is recognized in TCE. In this respect, Morgan and Hunt (1994) posit that opportunistic behaviour by one party will lead to decreased trust and relationship commitment. While the significance of trust, in its different manifestations, is taken cognizance of and emphasized, it is in the notion of opportunistic behaviour inhibiting trust and commitment that is expressed here. Such things can reduce competitiveness.

In an environment of uncertainty and intense competitive and economic pressure in the world sugar market, the choices are extremely limited for all members of the sugar supply chain. This calls for creating a 'negotiated environment' (Heide, 1994, quoting Cyert and March, 1963) to enhance competitiveness. Even as Nooteboom et. al.(1997, p. 310) state that 'Williamson (1975) recognized the relevance of "atmosphere" '. The nature and distribution of benefits associated with such an arrangement are:

- A better system's performance – through improved market access and higher profit margins;
- Higher stability – through greater discipline;
- More value-added strategies – through improved communications.

Again, in the current Australian sugar context, it may be argued that unequal power among the supply chain members and independence among the canegrowers inhibits trust building for a 'negotiated environment' and encourages opportunistic behaviour. This, to some extent may be true, but the long-term objectives and benefits should be the driving force for establishing and reinforcing the relationships

among supply chain members. This is a situation to which all members should aspire and for which suitable note should be taken of the nature of transactions.

## **Conclusion**

This paper attempts to lay the groundwork by discussing ways in which the implications of transactions costs in sugar can be assessed. This is done by setting out some of the issues involved in isolating transactions cost in independent activities (such as in a farm-mill relation). The transaction tables venture to analyze the processes at work in the system. The framework advanced here constitutes both a basic portrayal of the system and an examination of the relationship of the main actors within it.

In the case of this system the farmers and the mill-owners operate in an uncertain environment arising from an unanticipated changes in circumstances surrounding an exchange and depending to some extent on the direction and nature of the relationships involved. The uncertainty combined with the extent of asset specificity drives the system towards vertical integration. It can be anticipated that such transition processes will persist, unless uncertainty and bounded rationality are mitigated through advancement in information sharing between contracting parties towards cultivating trust and commitment.

The application of TCE to the relationship of the main actors in the Australian sugar supply chain has highlighted the glaring issues that need to be concentrated upon if the objective of enhanced global competitiveness in the industry is to be achieved. Incorporating the element of trust in the relationships of the sugar supply chain, within the TCE framework, can lead to benefits of (i) mutual planning, (ii) mutual strategy development, (iv) faster adaptation and development of technology, (v) information sharing, and (vi) business risk sharing. Such activities can provide the 'atmosphere' for a stable governance structure built on committed relationship.

A successful chain will have the most efficient and effective structure to achieve customers' need, improved efficiency, and international competitiveness. Again, this could be one common goal of developing relationships. This is primarily dependent on joint planning and cognitive knowledge of each partner's activities. In achieving such a relationship between partners, each has to commit to the exchange process based on trust. Ultimately such activities will lead to reduced transactions cost within the chain with rewards of efficiency and profitability for everyone in the supply chain.

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