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Supply Chain Management: Fad, Panacea or Opportunity?

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Introduction

Supply chain management has certainly been one of the hottest topics in agribusiness management circles over the past five years. But, what is supply chain management? What are its benefits? What, if anything, is its relevance to agribusiness and in particular to farmers?

The purpose of this paper is to bring together the disparate views on supply chain management so that agribusiness professionals and researchers will have a common framework within which the complex issues and problems confronting agribusiness firms can be analyzed, discussed and hopefully resolved.

As with any management concept, supply chain management (SCM) means different things to different people. To most, SCM is all about logistical efficiency – the efficient transport handling and storage of physical products through the various stages of production and distribution to the final consumer. This is not a bad place to start because it is essential to the whole marketing concept that the right product gets to the right place, at the right time, in the right condition, in the most efficient manner.

Establishing integrated supply chains that provide end customers and supply chain member organizations with the materials required, in the proper quantities, in the desired form, with the appropriate documentation, at the desired location, and at the lowest possible cost lies at the very heart of supply chain management.

[Handfield and Nichols 1998.](#)

But logistical efficiency is only one aspect of SCM when the term is used in a competitive strategy context. In this context, SCM combines the quest for logistical efficiency with the drive for creating customer value as a means of achieving sustainable competitive advantage for the firms involved.

We have entered a new era in understanding the dynamics of competitive advantage and the role played by procurement. We no longer talk about suppliers and customers as though they are managed in isolation, each treated as an independent identity. More and more, we are witnessing a transformation in which suppliers and customers are inextricably linked

throughout the entire sequence of events that bring raw materials from their source of supply, through different value-adding activities to the ultimate consumer. Success is no longer measured by a single transaction; competition is, in many instances, evaluated as a network of co-operating companies competing with other firms along the entire supply chain.

Spekman et al. 1998,p.53

In a strategic sense, the adoption of SCM requires managers of firms servicing a consumer market segment to re-evaluate their business relationships with input suppliers and buyers of their products. This re-evaluation usually involves a shift in their focus from an adversarial to a co-operative relationship. As a result, the competitive focus shifts from that between firms within one supply chain to that between different supply chains which service a common market segment.

What is driving the acceptance of SCM?

Australian agribusiness in the 1990's has experienced a prolonged period of adjustment and there is no reason to expect that this will change. Rather than resist change, which in the long term is fruitless, a more productive course of action is to investigate ways of adapting to these forces so as to take advantage of the opportunities that change opens up.

Dunne (1999a) identifies three basic forces that drive change in the agribusiness sector:

- the globalisation of markets,
- the rapid advances in technology, and
- the greater involvement of people in what is produced and how it is produced.

Boehlje et al.(1995) claim that these changes have such a dramatic impact on the management of an agribusiness firm because they effect the competitive environment of the firm and influence the way in which the management of the firm will reorganize its internal resources to meet these challenges (Figure 1).

In the case of agribusiness firms the changes in the competitive environment are usually reflected in changes in:

- market access,
- competitive intensity, and
- relative market power.

Since change in any business is difficult to achieve in the absence of a crisis that would leave a firm in a vulnerable strategic position, it is worthwhile examining the scope of these changes and the ramifications of their potential impact.

Globalization[1]

Over the past 50 years, there has been a drive to liberalize world trade through the reduction in tariff and non-tariff barriers that individual countries have imposed to protect their domestic industries. The principal instrument in the fight for trade liberalization has been the General Agreement on Tariffs and Trade (GATT).[2]

Although there has been considerable success in liberalising trade in manufacturing goods, progress in the agribusiness sector has been limited because of the importance of food and fibre industries to the social fabric and national security of individual countries.

Figure 1: The Forces of Change

During the Uruguay Round of GATT (1987-94), agricultural trade issues were firmly on the agenda and the major blocs involved in the negotiations – the United States, the European Union, Japan and the Cairns Group, agreed to significant concessions which were formalised in The Agricultural Agreement (www.wto.org). The Millennium Round that was scheduled to commence in 2000, will be conducted in a much more difficult environment as individual countries assess the impact of market liberalisation on their domestic economies. For example, a new term - 'multifunctionality' has entered the lexicon of international trade. This term is used to defend the protection of domestic agricultural industries on social and environmental grounds.

Trade liberalisation is a two-way street. In Australia's case the Agricultural Agreement is improving access to export markets for our products but it is also opening our domestic markets to import competition. A point painfully brought home to the Australian pork industry in 1997-98 (Dunne 1999b).

Technology

Rapid advances in technology, in particularly in the fields of biotechnology and communication, are revolutionising the way food and fibre products are produced, processed, distributed and consumed. These advances have resulted in what Boehlje (1996) refers to as the 'industrialization of agriculture'.

But technological advances are not without their problems. For example:

- The development of new technology is usually capital intensive, which in turn leads to a concentration in ownership of such

technology and the possibility of anti-competitive behaviour. The recent anti-trust action initiated by the US Government in the case of Microsoft and the consumer reaction against multinationals such as Monsanto are well-published examples of public concern with technological development.

- Genetic modification of plants and animals to enhance their productivity raises questions of ethics and food safety. This latter point is well demonstrated by the consumer backlash to genetically modified foods in the UK and Europe.
- The development and acceptance of the Internet as a source of information and a channel of communication presents tremendous opportunities for the provision of timely information but raises problems in the areas of accuracy, security and data management. In addition, the rapid acceptance of e-commerce threatens the traditional powers of retailers by providing consumers with direct access to manufacturers.

Confronted with the challenges posed by changes in technology, firms will be required to demonstrate flexibility in integrating these new technologies into their business operations.

People

The impact of people on the agribusiness sector stems from their dual roles as consumers and guardians.

Changes in the demographics, incomes and social awareness of people alter the nature of demand for food and fibre products while also influencing how these products will be produced and made available to the public. For example, in developed countries there is a well-established trend towards what is being termed 'mass individualization'. Consumers are demanding an ever-increasing variety of products to match their growing disposable incomes and a lifestyle which is increasingly time poor.

Associated with their increasing affluence, people have developed an increased awareness of health, welfare and environmental issues. This increased awareness has impacted on the agribusiness sector through increased regulation of how food and fibre products are produced. There are many examples of this:

- Instances of food contamination have resulted in tighter controls in regard to chemical residues and production hygiene. Agribusiness firms are well aware of their responsibility to exercise 'due diligence' in providing safe products.
- Animal welfare lobbies have had a significant influence on the husbandry practices associated with animal production, especially in the intensive pig and poultry industries.
- Environmental groups have influenced attitudes towards sustainable production and pollution.
- Consumer groups have successfully lobbied governments to introduce compulsory labeling of food products that contain ingredients that have been genetically modified.

There is no doubt that agribusiness firms are being influenced by rapid changes in their competitive environment. It is also clear that the pressure for change is persistent and has intensified over time. As a result, the challenge for agribusiness managers is to formulate strategies to accommodate these changes. The question is, will the concept of supply chain management assist this process? Before this question is discussed there is value in examining the theoretical basis that underpins the concept of SCM.

What are the theoretical foundations of SCM?

In its broadest sense, supply chain management is concerned with the interactions between firms, ranging from raw material input suppliers to retailers that are serving a specific market segment. Irrespective of the focus of these interactions – improved efficiency or enhanced competitive position, SCM is a multi-disciplinary approach and therefore has its foundations in a range of academic disciplines. The most important of these are economics, strategic management and marketing.

Improved efficiency

Traditional microeconomic theory holds that the basic coordinating mechanism between firms in a supply chain is the market. But, as [Coase \(1937\)](#) points out, while market transactions are common outside the firm as a means of directing production, inside the firm the task of directing or coordinating production is in the hands of the owner/manager.

This observation raises the question - which activities should be left to the coordinating influence of the market and which should be assumed within the firm to be controlled by management? [Williamson \(1971\)](#) built on this theme and identified the importance of 'transactional failures' as the driving force behind vertical integration and/or the substitution of market transactions by contracts. Transaction cost economics as described by Coase and developed by Williamson provides a solid theoretical base for the existence of a firm and for establishing the boundaries of its activities.

[Hobbs \(1996\)](#) classified transaction costs under three major headings:

- Information costs - the discovery of potential suppliers/buyers and price levels.
- Negotiation costs - all aspects of the sale including time, the employment of specialists and the terms of sale.
- Monitoring costs - activities, which occur after the sale has been negotiated, such as monitoring the behaviour of the other party, checking deliveries against specifications and enforcement costs.

According to Coase a firm will internalize activities (vertically integrate) up to the point where the internal transaction costs associated with

these activities equals the costs of using the open market. This initial research concentrated on presenting two starkly different supply chain structures for the firm - dependence on market transactions or vertical integration.

The obvious question is - are there other alternatives?

Transaction costs research sparked renewed interest in the relationships that exist between firms. This theme was readily taken up by academics working in other economic areas, for example, agency theory and industrial organization theory, as well as in cognate disciplines such as marketing (business to business marketing and relationship marketing) and sociology (power and conflict resolution). O'Keefe (1994) has documented the evolution of this research.

Heilbron and Roberts (1995) expanded on O'Keefe's work and described the various forms of relationships that exist between agribusiness firms. Their study illustrated that alternative forms of organizational structure form a continuum that ranges from independence, through cooperation, coordination, collaboration, and joint ownership to integration. The intermediary stages are collectively referred to as coordination and can occur vertically or horizontally within a supply chain.

Competitive advantage

In his seminal work on competitive strategy, Porter (1980) introduced the concept of a 'value stream' as a continuum of individual 'value chains'. In this model, each value chain represents an individual firm that adds value to its customer - the next firm in the value stream, and ultimately the final consumers in the target market serviced by the value stream.

It follows that the total added value generated by a value stream is influenced by two factors:

- The ability of individual firms to create value - the competitive advantage of the individual value chain (Figure 2), and
- The ability of firms to co-ordinate their value creation activities - the efficiency of the value stream (Figure 3).

In this context, what activities a firm undertakes and its relationships with other members of the value stream are of fundamental interest.

According to Porter (1980), a firm's ability to create superior value for its customers - its competitive advantage, is determined by how successful it is in melding its support and operational activities.

Figure 2: Porter's Value Chain

The firm's support activities consist of:

- Its business structure - its ownership and management structure that directly affects the level of resources available to a firm along with its decision-making structures.
- Its human resource management policies that directly affect how it recruits, trains and retains staff.
- Its research and development policies that directly affect its ability to develop new processes and practices.
- Its procurement policies that directly affect how it deals with input suppliers.

The management structures and policies of a firm are part of its intangible assets. Not only are these assets difficult to value in monetary terms they are also difficult to duplicate. Because of these characteristics, the support activities of the firm are an important source of sustainable competitive advantage.

The operational activities of a firm (Porter refers to these as primary activities) consist of:

- Inbound logistics - how inputs are delivered, handled and stored affects the real cost of inputs through their effect on the quality maintenance of inputs, the cost of holding inventory and the risk of material shortages.
- Operations - what techniques and processes it employs to produce its goods or services will obviously affect how competitive the firm is in terms of product quality and price competitiveness.
- Outbound logistics - the level of finished product inventory along with how the products are handled stored and delivered will affect the final cost of the goods and the level of service the firm is able to offer its customers.
- Marketing and sales - how the firm positions and sells its products will directly affect the revenue that it is able to generate.
- After-sale service - how the firm manages its relationship with its customers will directly affect the level of customer loyalty.

In a strategic sense, both the tangible and intangible resources of a firm constitute its strengths and weaknesses, and can be used (Wernerfelt 1984) to address some key issues such as:

- on which of the firm's current resources should diversification be based,
- which resources should be developed through diversification,
- in what sequence and into what markets should diversification take place,
- what type of firms will it be desirable for this particular firm to acquire.

This model of strategic management developed by Wernerfelt is known as the 'resource-based view' of the firm. This view of the firm provides a logical linkage between Porter's value chain, his concept of the value stream and Coase's observations concerning the boundaries of the firm.

The Porter concept of the 'value stream' provides an excellent framework within which to examine the boundaries of a firm in a strategic sense. Two aspects of these boundaries are of importance:

- The size of the firm's activities at one stage of the value stream - horizontal integration (do Firms 1a and 1b operate separately or do they amalgamate?).
- How far up or down the value stream do the firm's activities extend - vertical integration (do Firms 1a and 2 operate separately or do they amalgamate?).

Figure 3: Porter's Value Stream

Evidence of horizontal integration is readily provided by the consolidation of agricultural production units across all industries over time (ABARE 1999b). Advances in technology and management have led to productivity increases that have in turn led to a reduction in the number of farms and an associated loss in the number of farmers. There has been considerable consolidation at each stage of the value stream for food and fibre products - fewer and larger processors, distributors and retailers (Australian Farm Journal 2000).

As horizontal integration increases, the skills required by the owners/operators of these larger production units change. The focus shifts from operational skills to planning and coordinating skills.

The term horizontal integration implies individual ownership of the enlarged operation - an implication most commonly associated with the term 'get big or get out'. But there are alternatives to individual ownership of large businesses:

- Remain small - with a focus on flexibility and service to establish a point of differentiation.
- Form alliances - cooperatives and producer groups are two obvious examples.

Vertical integration, or common ownership of successive stages of the value stream, has always appealed to farmers as a means of increasing their access to the higher margins that they perceive to exist downstream of the farm.

As we have already seen, each firm in the value stream creates value for its customer - its immediate neighbour in the value stream. By adding value the firm is able to make a profit from its activities. If a firm takes over the operations previously performed by its neighbour, then for it to be accepted by other members of the value stream it must be perceived to create at least the same value, but not necessarily in the same form, as its neighbour did previously.

In other words, if a firm vertically integrates then it has to develop, or acquire, the skills needed for the success of the expanded operation. Not only is there a requirement for the development of managerial skills because of the increased complexity of the expanded business there is also a need to develop new operational skills. While the former requirement was present with horizontal integration the latter requirement usually isn't.

As with horizontal integration, there are alternatives to vertical integration through ownership. The most common form is a processing cooperative - for example, similar to those that exist in the sugar and dairy industries. A more recent development in vertical coordination has been through alliances forged between customers and their preferred suppliers - the basis of supply chain management.

The major contribution Porter has made through his analysis of the value chain of an individual firm is that he has clearly identified that there are multiple sources of competitive advantage within a firm. The bonus available to business managers is that if they 'get it right', in a coordinating sense, the firm's cumulative competitive advantage is enhanced.

However, it is in this aspect of coordination that Grant (1996) argues that the resource-based view of the firm as promoted by Porter and Wernerfelt inadequately captures the importance of knowledge as a strategic resource.

The issues with which the knowledge-base view concerns itself extends beyond the traditional concerns of strategic management – strategic choice and competitive advantage – and address some of the other fundamental concerns of the theory of the firm, notably the nature of coordination within the firm, organizational structure, the role of management and the allocation of decision making rights, determinants of the firm's boundaries, and the theory of innovation.

Grant 1996, p.110.

Relationship marketing

In the previous two sections we have examined the structure of a supply chain from two different perspectives:

- Efficiency - where the emphasis has been on minimizing the transactions costs associated with interactions between firms.
- Strategic – where the emphasis has been on increasing the competitive advantage of individual firms within a supply chain.

In this section we turn our attention to examining the relationships that exist between firms within a given supply chain as the final discipline on which supply chain management is based.

The primary focus of business-to-business transactions is the exchange process. Traditionally economists and marketers have tended to treat the exchange process as a series of discrete events and as a result, relational aspects have been neglected. However there is a growing body of literature that confirms a move away from adversarial buyer-seller interaction towards a more cooperative relationship as

buyers downsize their supply base and sellers tailor their marketing mix to individual buyers. This move towards greater cooperation between buyers and sellers (referred to as relationship marketing) stems from the changes in the global marketplace and the changing requirements for competitive success (Morgan and Hunt 1994).

Morris et al. (1998, p.361) define relationship marketing as

A strategic orientation adopted by both buyer and seller organizations which represents a commitment to long-term mutual beneficial collaboration.

From a seller's perspective, the assumption is that it is easier and cheaper to keep existing customers than to find new ones, especially in mature and concentrated markets. Buyers see benefits arising from more reliable sources of supply in terms of total cost, delivery and quality.

Dwyer et al. (1987) identifies five stages in the development of a relationship between firms:

- awareness – where a buyer or seller recognizes another firm as a feasible exchange partner,
- exploration – the search and trial phase where potential exchange partners consider obligations, benefits and costs, and the possibility of exchange. This stage involves selection, communication and the establishment of behavioural norms and expectations,
- expansion – trust and joint satisfaction in the exploration stage leads to increase commitment by the partners and a greater degree of interdependence,
- commitment – an implicit or explicit agreement by both parties to invest in the maintenance of the relationship, and
- dissolution – there is always the potential for either or both partners to terminate the relationship if its usefulness declines.

The commitment- trust theory of relationship marketing (Morgan and Hunt 1994) postulates that commitment and trust are central to successful relationships between firms because they encourage managers to:

- work at preserving relationship investments by cooperating with exchange partners,
- resist attractive short-term alternatives in favour of the expected long-term benefits of staying with existing partners, and
- view potentially high-risk actions as being prudent because of the belief that their partners will not act opportunistically.

Further, Morgan and Hunt identify five major precursors of relationship commitment and trust which are necessary to generate these outcomes (Figure 4):

- termination cost – due to an absence of a comparable potential substitute partner and dissolution/or switching costs,
- relationship benefits – the leverage gained in the firm's ability to create customer value through the relationship,
- shared values – minimize the potential for dysfunctional conflict between partners due to commonly held attitudes towards goals, processes and behaviours,
- communication – timely communication fosters trust by aligning perceptions and expectations, thereby reducing the potential for conflict, and
- opportunistic behaviour – if present such behaviour has a negative impact on trust and therefore on commitment.

While Morgan and Hunt do not include coercive power as a variable in their model they recognize its importance as a negative effect on relationship commitment and trust that over the long-term will decrease cooperation and diminish the overall success of the relationship.

Figure 4: The Morgan-Hunt Model of relationship marketing

Wilson (1995) combines an expanded list of relationship variables identified by Morgan and Hunt (1994) with the stages of partnership development first proposed by Dwyer et al. (1987). In developing his five-stage process model, Wilson (p.335) argues that he is able to capture the dynamics in the development of a business-to-business relationship that are missing from cross-sectional studies.

I argue that variables are the focus of the partners' attention in some stages and latent in other stages. A variable is latent when it is in the background of the current interaction between the partners but is not receiving their attention.

The importance of Wilson's model is that it highlights that partners need to prioritize different relational variables depending on the current stage of their relationship.

This aspect of relationship management has an even greater significance in view of the contribution of Spekman et al. (1998) to the development of relationship marketing literature. They identify (p.55) the evolving stages of a relationship between buyers and sellers that are necessary for firms to go through if they are to maximize the benefits from a strategic partnership (Figure 5).

We are beyond the debate of whether such ties between buyers and suppliers carry inherent risks. Rather, the more relevant question is how does one effectively manage and leverage the skills and talents of one's supply chain partners.

Figure 5: The evolutionary stages of a business partnership

Lorenzoni and Lipparini (1999) expand on this notion of leveraging of skills within a partnership, and in so doing create a linkage between strategic intent, the resource based view of the firm, knowledge accumulation, economic efficiency and relationship marketing.

Their research, based on a longitudinal study of three networks in the Italian packaging industry generated two main propositions:

- Lead firms potentially can lower overall coordination and production costs of a network through multiple, repeated, trust-based relationships with key suppliers.
- Multiple, repeated, trust-based relationships with key suppliers favour the lead firm's access to complementary capabilities and specialized knowledge with positive effects on the networks as a whole.

They conclude that the capability to interact with other companies – a firm's relational capacity, accelerates the lead firm's knowledge access and transfer with relevant positive effects on company growth and innovativeness. These outcomes are similar to those reported by [Dyer \(1996\)](#) in the US car industry.

The journey from an open market, adversarial type relationship to one that involves closer collaboration with a partner requires increasing amounts of trust, commitment and relationship management. This is particularly the case in the shift from coordination to collaboration because of the necessity for greater transparency and interdependence.

Empirical studies in the US ([Spekman et al. 1998](#)), South Africa ([Morris et al. 1998](#)) and Australia ([Schroder and Mavondo 1998](#)) suggest that:

- close business-to-business relationships are not appropriate for all trading situations,
- business-to-business relationships in practice are more than simple customer retention programs but less than full-fledged collaborative partnerships, and
- business-to-business relationships are more valued by sellers than buyers.

[Morris et al. \(1998, p.369\)](#) conclude that:

A move towards more involved relationships may be underway, but the changes to date appear to be more attitudinal than behavioral.

They claim that this apparent gap between theory and practice may be due to:

- difficulty in determining with whom to form relationships,
- a simple lack of knowledge and experience regarding how to manage relationships,
- difficulty in determining the cost and benefits associated with relationships, and
- the absence of a clear understanding of the strategic role of partnerships in the competitive strategy of the firm.

In spite of this 'go-slow' approach to more involved cooperation between businesses, [Morris et al. \(1998\)](#) think that it is reasonable to conclude that relationships are now a fixture in industrial markets. Furthermore, the literature suggests that an extension of dyadic business-to-business relationships to the whole supply chain is a prerequisite for firms wishing to compete in global markets.

Global competition occurs increasingly between networks of firms. To be an effective competitor (in the global economy) requires one to be a trusted cooperator (in some network).

[\(Morgan and Hunt 1994, p.20\)](#)

Individual buyer-seller relationships are becoming part of competitive systems or networks as firms strive to create competitive advantage through developing a set of relationships that creates value and is difficult to duplicate.

These networks seem to be organized by one firm that seeks to build an interlocked set of relationships which in their totality give the network competitive advantage over other sets of non-networked firms.

[\(Wilson 1995, p.334\)](#)

In this section the theoretical foundations for the concept of supply chain management have been established. The individual elements of this foundation are not new, what is new is the integration of these elements into a management approach that has the potential to enhance a firm's competitive position in a complex global marketplace.

What are the issues involved in SCM?

[Gifford et al. \(1997, p.2\)](#) define supply chain management as:

an integrated approach that aims to satisfy the expectations of consumers, through continual improvement of processes and relationships that support the efficient development and flow of products and services from producer to consumer.

This definition explicitly identifies innovation, efficiency and coordination as central elements of SCM and implicitly recognizes the importance of competitive strategy in aiming to meet the expectations of consumers. It is this lack of an explicit recognition of value creation as the key strategic objective of SCM that has prompted authors such as [O'Keefe \(1998\)](#) and [Boehlje \(1999\)](#) to suggest that a more appropriate name for SCM is 'value chain management'. To avoid confusion, the traditional terminology of supply chain management is used in this paper, but the primacy of value creation as its strategic objective is acknowledged. Perhaps the definition of supply chain management as expressed by [Lambert and Cooper \(2000, p.66\)](#) is more appropriate:

Supply Chain Management is the integration of key business processes from end user through original suppliers that provides products, services and information that add value for customers and other stakeholders.

Porter (1980) and Wernerfelt (1984) have argued that the individual firm is the source of value creation and hence competitive advantage by virtue of its resources and processes employed to generate goods and services. Coase (1937) and Williamson (1971) claim that the activities undertaken by a firm will be determined through an comparison of the costs involved in undertaking specific production and service activities within the firms as opposed the costs (including transaction costs) of having those same activities undertaken outside the firm. Finally, the relationship marketing literature indicates that the value creation potential of an individual firm can be enhanced, in some cases, through a more collaborative relationship with its suppliers and customers (Spekman et al. 1998), provided that trust and commitment is developed (Morgan and Hunt 1994).

Based on this overview of the theoretical foundations of SCM, it is possible to identify the critical issues that have to be addressed by firms contemplating becoming more proactive in the management of their supply chain so as to improve their competitiveness:

Do we have the core competencies to create value?

- How do we select the right partners that share our values and vision while enhancing our value creation capacity?
- How do we manage the partnership to maximize trust, commitment and innovation?

Do we have the right competencies?

Lambert and Cooper (2000) claim that a prerequisite for successful SCM is to coordinate the activities within the firm. This involves the identification of key processes undertaken by the firm and the adoption of appropriate management styles and techniques to effectively coordinate these processes.

Their research, based on in-depth interviews with managers representing various levels, functions and processes in 15 different companies, identified the following key business processes:

- customer relationship management,
- customer service management,
- demand management,
- order fulfillment,
- manufacturing flow management,
- procurement,
- product development and commercialization, and
- returns.

There is an obvious correlation between this list of processes and those identified by Porter (1980).

Lambert and Cooper (2000) assert that cross-functional teams best manage these intra-firm processes and they identified the fundamental components of management required for success:

Managerial and behavioral components

- management structure
- power and leadership structure
- risk and reward structure
- culture and attitude

Physical and technical management components

- planning and control
- work flow/ activity structure
- organizational structure
- communication and information flow facility structure
- product flow structure

By integrating these observations with those of other researchers such as Spekman et al. (1998), Lendrum (1998), Fearn and Hughes (1999), Morgan and Hunt (1994) and O'Keeffe (1998) it is possible to construct a checklist that can be used by the management of a firm to assess its readiness to partner (Table 1).

No attempt has been made to prioritize the components of the checklist or to set any minimum score that is indicative of a firm's readiness to partner. The use of Likert Scales is a way of identifying the firm's strengths and weaknesses in relation to the key relationship success variables that were gleaned from the literature.

Table 1 Readiness to Partner Profile

1. Culture					
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As a management team	LOW HIGH				
We value our firm's independence	1	2	3	4	5
We have integrity	1	2	3	4	5
We are proactive	1	2	3	4	5
We are flexible	1	2	3	4	5
We cooperate and communicate	1	2	3	4	5
We encourage initiative	1	2	3	4	5
We tolerate mistakes	1	2	3	4	5
We recognize and reward performance	1	2	3	4	5
2. Process					
<u>In our firm</u>					
We have clearly articulated our vision and goals	1	2	3	4	5
We know our competitors	1	2	3	4	5
We know our key suppliers and customers	1	2	3	4	5
We have an effective communication system with our key suppliers and customers	1	2	3	4	5
We have an effective internal communication system	1	2	3	4	5
We have an effective quality management system	1	2	3	4	5
We understand our cost drivers	1	2	3	4	5
We understand our revenue generators	1	2	3	4	5
We have the ability to create value for our customers	1	2	3	4	5

How do we select the right partners?

[Spekman et al.\(1998\)](#) clearly indicate that closer business-to business relationships such as cooperation and integration are neither appropriate nor desirable in all situations. This raises two questions in the context of SCM:

- When is partnering appropriate?
- Who should we partner with?

Fortunately the research of [Lambert and Cooper \(2000\)](#) provides some answers.

They contend that all firms belong to a supply chain, but the structure of this supply chain resembles an uprooted tree rather than a simple linear sequence of independent businesses. (Figure 6)

Figure 6: A Supply Chain Network Structure 

Even in this simple representation of a firm's supply chain network it is obvious that a firm has multiple relationships with other firms and that the firm belongs to many supply chains. From a supply chain management perspective Lambert and Cooper claim that it is important to identify which members of these supply chains are critical to the success of the focal firm and therefore should be allocated appropriate managerial attention and resources. These strategic firms become the 'primary' members of the supply chain (shown as shaded boxes in Figure 6) and the remaining firms comprise the 'support' firms within a particular chain. (The business-to-business relationships that need to be managed or monitored by the focal firm are indicated by the heavy lines.)

Another important consideration arising from this network analysis is that suppliers or buyers may not view the relationships shown to be important from the focal firm's point of view in the same light. As Lambert and Cooper (2000, p.72) point out:

The integration and management of business processes across company boundaries will only be successful if it makes sense from each company's perspective.

This observation reinforces the importance of the 'awareness' and 'exploration' phases of the relationship development model proposed by Dwyer et al.(1987) in partner selection.

Again drawing on the literature it is possible to construct a checklist to aid the management teams of potential partner firms to evaluate each other. In Wilson's (1995) Partner Selection phase six relationship variables are identified as important. These correspond closely with the five antecedent variables identified by Morgan and Hunt (1994) and O'Keefe's (1998) foundation variables. (Table 2)

Table 2 A Comparison of Relationship Variables in the Partner Selection Phase

Morgan & Hunt (1994)	Wilson (1995)	O'Keefe (1998)
Opportunistic behavior	Reputation Power/dependence	History
Relationship benefits	Performance satisfaction	Value creation
Communication	Social bonds	Alignment of goals
Shared values	Mutual goals	
Termination costs	Strengths of Alternatives	Alternatives

The starting point for this partner evaluation process is the checklist developed to assess the individual firm's readiness to partner (Table 1).

There are two ways in which the Readiness to Partner checklist can be used:

1. Each firm can assess their own Readiness to Partner and then compare their profile with that of their potential partner. This simple comparison of their strengths and weaknesses is a guide to their potential fit on the grounds of business culture and process.
2. The simple comparisons of profiles can be augmented by each of the firms evaluating their potential partner's Readiness to Partner profile and comparing these to the self-developed profiles. The advantage of this additional step is that each firm's perceptions of its potential partner's Readiness to Partner profile are exposed and any discrepancies are open for discussion.

Whipple and Frankel (1998) highlight the importance of partner match as one of the five variables that determine the strategic effectiveness of an alliance and the use of the Readiness to Partner profiles seem to be an effective means of measuring this. In addition, Whipple and Frankel (1998) claim that the operational effectiveness of an alliance is in part determined by the partners' propensity to commit that is based on mutual commitment to problem resolution and the presence of competence based trust.

In summary, the selection of a partner/s has three basic components:

- cultural fit,
- strategic fit, and
- process fit.

These components provide the framework for the Partner Selection checklist shown in Table 3.

As with the Readiness to Partner checklist, there has been no attempt to weight individual components or items in the Partner Selection checklist. It is acknowledged, as Whipple and Frankel (1998) point out, that it is difficult to achieve integration between firms' corporate philosophies and culture in the absence of character-based trust – as measured by the components of cultural compatibility. Again, the use of Likert Scales allows the generation of a Partner Compatibility profile which can assist the management of the firms involved in deciding to proceed with the alliance or not.

Setting the boundaries to a partnership

The ability of the partnership to create superior customer value is of strategic importance. As part of the process of determining the potential for value creation the partners have to consider what processes within each of the individual firms need to be coordinated across the supply chain partners.

Lambert and Cooper (2000) identified eight key supply chain processes and the results of their research demonstrated that not all these processes need to be managed across the entire supply chain. For example, customer relationship management may require coordination across the chain as might manufacturing flow management, while integration of customer service management might be restricted to a particular buyer –seller relationship.

The identification of which business processes need to be managed and the extent of the integration of these processes between firms can be achieved by mapping the individual processes through the supply chain network. The result of this process mapping would produce an outcome similar to that of the network mapping shown in Figure 6.

The purpose of this process mapping exercise is to identify the key processes that require managerial attention so that firms' resources can be allocated efficiently and effectively.

Table 3 Partner Selection Checklist

1. Cultural Compatibility					
With respect to:	LOW ----- HIGH				
Integrity	1	2	3	4	5
Business Ethics	1	2	3	4	5
Transparency	1	2	3	4	5
Flexibility	1	2	3	4	5
Innovation	1	2	3	4	5
Cooperation	1	2	3	4	5
Fairness	1	2	3	4	5
Recognition of contribution	1	2	3	4	5
2. Strategic Compatibility					
With respect to:					
Our vision and goals	1	2	3	4	5
Our ability to create value	1	2	3	4	5
Our ability to create competitive advantage	1	2	3	4	5
Our ability to define mutual expectations	1	2	3	4	5
Our ability to establish clear lines of responsibility	1	2	3	4	5
3. Process Compatibility					
With respect to:					
Our ability to share accurate information in a timely and efficient manner	1	2	3	4	5
Our ability to establish effective monitoring and control systems	1	2	3	4	5
Our ability to establish an equitable rewards system	1	2	3	4	5
Our ability to establish an effective dispute resolution system	1	2	3	4	5

Performance evaluation

As Morgan and Hunt (1994) pointed out, the strength of a relationship is based on trust and commitment but without trust there will be no on-going commitment to the relationship. The research of Whipple and Frankel (1998) demonstrated that the two component of trusts, character-based trust (integrity, openness, reliability) and performance-based trust (technical and business competence) are built over time and are based on a measure of outcomes versus expectations. Increasing levels of trust encourage the partners to invest more in the relationship. O'Keefe (1998) reminds us that these investments can be in terms of people, time, reputation, information, processes or capital and that over time they lead to a position of interdependency. O'Keefe (1998) refers to this process as the Investment Trust Cycle (Figure 7).

Figure 7: The Investment Trust Cycle 

The question remains – how do we evaluate the performance of a relationship?

Firms enter strategic partnerships because they believe that they will be 'better off' by working more closely with selected members of their supply chains. The expectations of these mutual benefits are determined in the exploration stage of the relationship development model identified by [Dwyer et al. \(1987\)](#). It is during this stage that [Wilson \(1995\)](#) claims that the success or failure of a relationship is determined as partners align their mutual goals and define the boundaries of their relationship. These two key processes initiate trust and determine the resources available to create value in the relationship.

[Lendrum \(1998\)](#), [O'Keefe \(1998\)](#), [van Hoek \(1998\)](#), [Whipple and Frankel \(1998\)](#) and [Fearne and Hughes \(1999\)](#) have developed key performance indicators by which partnerships can be evaluated. (Table 4)

Table 4 Key Relationship Performance Indicators

Lendrum	O'Keefe	Van Hoek	Whipple & Frankel	Fearne & Hughes
Return on investment	Operational performance	Cost effectiveness	Actual net benefit	Ability to measure & control costs
Changes in staff attitude	Cooperative culture	Integration	Alliance management	Structure and business culture
Customer satisfaction	Superior customer value	Customer service		Customer service
Progress towards best in class			Formalization of activities	Ability to exploit market information
Innovation		Market creation	Investment	Ability to innovate
Development of Competitive advantage	Balance between tactical & strategic capability	Market development	Partner match	Strategic orientation

The Partner Selection checklist (Table 3) provides a benchmark for the subsequent evaluation of the partnership since it presents a profile of the firms' perceptions of each other in terms of their cultural, strategic and process compatibility at the commencement of their partnership. The elements of this checklist cover the key performance indicators shown in Table 4, therefore it is appropriate to use them in the construction of a Partnership Evaluation checklist (Table 5).

The cultural compatibility components of the Partnership Evaluation checklist have been retained from the Partner Selection checklist. These key aspects of a firm's culture do not change but we would expect to observe an increase in alignment of the partners' cultural compatibility as the length of the partnership increases.

The second section of the Partnership Evaluation checklist concentrates on producing a profile that reflects the partners' perceptions of the performance of the partnership in meeting their expectations. Of course it is assumed that the partners would have developed quantitative measure of performance, wherever possible, to underpin these perceptions.

Table 5 Partnership Evaluation Checklist

1. Cultural Compatibility					
With respect to:	LOW HIGH				
Integrity	1	2	3	4	5
Business Ethics	1	2	3	4	5
Transparency	1	2	3	4	5
Flexibility	1	2	3	4	5
Innovation	1	2	3	4	5
Cooperation	1	2	3	4	5
Fairness	1	2	3	4	5
Recognition of contribution	1	2	3	4	5
Outcomes versus Expectations					
Strategic Compatibility					
With respect to:	BELOW EXPECTATIONS ABOVE				
Our ability to align of our vision and goals	1	2	3	4	5
Our ability to create value	1	2	3	4	5
Our ability to create competitive advantage	1	2	3	4	5
Our ability to define mutual expectations	1	2	3	4	5
Our ability to establish clear lines of responsibility	1	2	3	4	5
Process Compatibility					

With respect to:					
Our ability to share accurate information in a timely and efficient manner	1	2	3	4	5
Our ability to establish effective monitoring and control systems	1	2	3	4	5
Our ability to establish an equitable rewards system	1	2	3	4	5
Our ability to establish an effective dispute resolution system	1	2	3	4	5

Reward sharing

The final issue to be addressed as an issue in supply chain management is that of market power and its impact on the sharing of rewards among partners in the supply chain. The reasons behind the necessity to confront this issue lie in its historical importance in agricultural price policy.

The basic premise behind government intervention policy in the pricing of agricultural commodities has been the perceived imbalance in the market power of farmers and other members of the agribusiness supply chain – especially input suppliers and commodity traders/processors. (Figure 8)

Figure 8: The Agribusiness Supply Chain

Griffith et al. (1999), in their review of power in the food marketing chain, conclude that contrary to popular belief there is no conclusive evidence of abuse of market power by supermarket chains either in Australia or overseas.

Although there is a persistent downward trend in the prices received by agricultural producers for commodities (ABARE 1999a), these trends have more to do with increased productivity and alternative sources of supply than market power of buyers.

As firms within specific food and fibre chains become more aligned and therefore more interdependent, those firms who have the potential to exercise coercive market power do not do so because of the deleterious effect such action would have on business-to-business relationships within the chain. Fearne (1998) refers to this as the 'paradox of power' and it represents a shift in competitive focus from the traditional firm versus firm within a chain to chain versus chain competition (Cox 1999). Under this new competitive regime firms within a specific supply chain shift their competitive focus from determining how the 'revenue pie' will be divided among them to concentrating on how to make this 'revenue pie' bigger at the expense of other competitor chains.

Initially, gains from being involved in a managed supply chain result from gains in efficiency, but ultimately the real gains are derived from volume growth and innovation (Fearne and Hughes 1999; Cox 1999). There is no magic formula for the distribution of these gains but some characteristics of managed supply chains indicate that this will be done in an equitable manner:

- 1 - Two of the important criteria in the selection process for supply chain partners is the ability of individual firms to contribute to value creation and sustained competitive advantage.
- 2 - Two of the crucial elements required for the maintenance of a strong partnership are transparency and open communication.

Opportunistic behavior and/or the exercise of coercive power undermine the strength of a partnership so the establishment of processes for equitable reward sharing is an essential part of the exploration stage of partnership development. Fearne and Hughes (1999, p.128) in their observations of fresh produce supply chains in the United Kingdom come to the following conclusion in regard to reward sharing:

There is currently a great reluctance to share cost data, but Asda suppliers are already working on a cost-plus basis. In the future, when the market is structured along closed/exclusive supply chains, the expectation is that suppliers will be rewarded with an indicative return on investment, with price becoming increasingly less important and suppliers making more out of the raw material (i.e. cost-plus with the whole crop marketing).

Dyer (1996) uses the example of the Chrysler Corporation's Supply Cost Reduction Effort (SCORE) system to demonstrate how the benefits of increase efficiency resulting from supply chain cooperation can be measured and equitably distributed. Under this system, supply based initiatives that result in efficiency gains in the chain are returned to suppliers either via rights to supply increased volumes or by direct monetary compensation in terms of increased unit prices.

What is important to remember is that successful supply chain management requires managers to adopt a different philosophy and mode of behaviour towards their supply chain partners. Attitudes and behaviours with respect to opportunism, value creation and reward sharing are important aspects of these changes.

The application of SCM principles in the Agribusiness sector

Boehlje (1999, p.1028) reinforces the proposition raised in the introduction to this paper that the global food production and distribution system is undergoing significant structural change.

Production is changing from an industry dominated by family-based, small-scale, relatively independent firms to one of larger firms that are more tightly aligned across the production and distribution chain. Food retailing is increasingly more consumer responsive, more service focused, and more global in ownership. And the input supply and processing sectors are becoming more consolidated, more concentrated and more integrated.

Research conducted by the Australian Bureau of Agricultural and Resource Economics ([Martin et al. 2000](#)) confirms the changes in the structure of farm production sector and the emergence of what [Dunne \(1999\)](#) refers to as 'bi-polar' farm sector.

Top performing farms can be found in all regions of Australia and, despite the impact of seasonal events and price changes, the majority of farms that exhibit high levels of financial performance (relative to their peers) continue to do so over the medium term.

The achievement of sustained high level of performance is likely to be a combination of many factors. Typically, better performing farms in the 1990's were larger in terms of their enterprise size, often more diversified, frequently operated by younger farmers; they also received higher prices for products, often produced for a lower unit cost and often had higher levels of involvement in farm planning.

Agricultural production is concentrated among larger farms. Twenty-five per cent of farms produce 60-90 per cent of the value of production (depending on the product). This minority of large farms also achieves most of the sector's productivity gains as well as most of the sector's profits.

[Martin et al. 2000 p.55](#)

The emergence of a bi-polar farm production sector raises the question - what part, if any has the concept of supply chain management played in the evolution of these top-performing farms?

Evidence is difficult to find in the literature but at least two countries have specifically initiated government programs to investigate and develop supply chain management in their agribusiness sectors:

- The Agri Chain Competence Foundation in the Netherlands
- The Food and Fibre Chains program in Australia www.supermarkettoasia.com.au/chainsprogramme

Both these programs sponsor joint government-industry-university projects.

[Gifford et al.\(1997\)](#) and [Gifford et al. \(1998\)](#) provide a series of case studies of Australian and Dutch agribusiness firms that are involved in supply chain projects. These case studies outline the principles involved and the problems that must be overcome in the successful management of horizontal and vertical business-to-business partnerships.

There are five major international research journals that provide agribusiness chain researchers a forum in which to publish contributions to the principles and practices of supply chain management:

- Supply Chain Management: An International Journal
- The American Journal of Agricultural Economics
- The Australasian Agribusiness Review
- The Journal of International Food and Agribusiness
- The International Food and Agribusiness Management Review.

In addition, the Agribusiness Association of Australia (www.agribusiness.asn.au) and the International Food and Agribusiness Management Association (www.ifama.org) hold annual conferences, while Wageningen Agricultural University in the Netherlands host a bi-annual International Conference on Chain Management in Agribusiness and the Food Industry.

A review of the articles published in the major agribusiness journals since 1996 indicates that excluding Supply Chain Management: An International Journal, there were only twenty papers which dealt with supply chain issues. Fourteen of these articles dealt with structural change and efficiency aspects of SCM while only two addressed competitive strategy or value creation.

In Supply Chain Management: An International Journal there were 22 articles that dealt with agribusiness supply chain management and 60 per cent of these focused on strategic or relationship management issues. These articles dealt mainly with fresh produce, pigment or beef supply chains.

What does this all mean?

To farmers

The acceptance of the marketing concept ([Dunne \(1999\)](#)) by leading farmers in the 1980's brought home to them the necessity of adopting a customer focus as opposed to the production orientation that has historically dominated the farm sector. The consequence of this shift in focus was that farm managers soon realized that current selling systems, while efficient in the economic sense of price discovery, were inadequate in quantifying customer value.

This inadequacy of the present selling systems raises two questions for farmers:

- Who are my customers?
- What constitutes value for them?

In the context of supply chain management the immediate customer for the majority of food and fibre producers are first-stage processors or packers. [Dunne \(1999\)](#) claims that producers create value for these immediate customers by:

- providing a continuous supply of product,
- providing a product that is consistent to specification,
- providing the product in lot sizes appropriate for efficient processing,
- providing the product at competitive prices, and
- having the ability to assist the buyer in adding value to the buyer's customer.

These sources of value creation require:

- adequate production capacity,
- effective quality management systems,
- effective financial management systems, and
- innovative and flexible management.

While some farmers will have the resources and systems to maintain their production autonomy and engage in supply chain management partnerships, the majority will not. In some cases farmers with insufficient production capacity or managerial skills and systems will be willing to sacrifice their production autonomy through horizontal alliances. As [Collins and Dunne \(1996\)](#) and [Murray-Prior et al. \(1998\)](#) point out, the formation of a producer alliance is not a solution in its self without the group having:

- a clearly defined purpose,
- clearly identified sources of competitive advantage,
- achievable objectives,
- strong leadership coupled with collective ownership,
- clear communication, and
- a cooperative culture.

Supply chain coordination, either horizontally or vertically, is not a panacea. The majority of family-owned farms because of their resource base or managerial disposition are not capable of conducting their business affairs cooperatively. These firms will continue to rely on open market transactions for the sale of their products and as a result their viability will depend on their managerial ability to exploit market opportunities as they arise. History tells us that farmers trapped in commodity markets are caught in a 'cost-price squeeze' that in a business sense is the equivalent of 'death by a thousand cuts'.

However, there are sufficient examples of successful supply chain alliances involving primary producers, either individually or in groups, to demonstrate that the principles that underpin supply chain management have a role to play in maintaining Australia's position as strong competitor in global food and fibre markets.

To agribusiness researchers

It seems fairly obvious that in the case of agribusiness, supply chain management practice is leading academic research. While agribusiness firms, including the top 20-30 per cent of farmers, are adjusting to the new competitive environment brought about by the three forces of change – globalization, rapid technological advances and people power, agribusiness academics have demonstrated a reluctance to change. As [Boehlje \(1999\)](#) points out the structural realignment process that agribusiness is experiencing is fraught with great controversy and confrontation as illustrated by the demonstrations that have plagued international forums such as the WTO conference in Seattle (November 1999) and the World Economic Forum (Melbourne, September 2000).

Further [Boehlje \(1999, p.1040\)](#) claims that unless agribusiness academics can begin to address the issues of concern to their constituents then they face the possibility of being branded irrelevant.

We can and we must focus additional emphasis on these issues unless we are content to explain ex post why the changes occurred rather than analyze ex ante what structural changes might occur and what the consequences or impacts are likely to be. Most of our constituents will be increasingly dissatisfied with our explanations of history (no matter how accurate) when they are trying to adapt to a future that they do not understand and in which their role is profoundly changed or they maybe even become redundant.

In the context of supply chain management this means:

The recognition that industry structure and performance is not the correct focus for research.

- The recognition that the firm and its place in a specific supply chain has the major impact on its competitive position.
- The acceptance that qualitative research methodologies have a legitimate role to play.

Traditionally, agricultural economists have approached their research into structural change in the agricultural sector from an interventionist government policy perspective.

To this end sector-wide studies using the Structure-Conduct-Performance (S-P-C) model ([Mason 1939](#)) from Industrial Organization Economics has served researchers working in this area well in terms of policy analysis. But is this approach appropriate to a global trading environment where in the context of WTO negotiations, market intervention by individual countries is being discouraged?

What the supply chain management literature tells us is that the competitive performance of individual firms is changing the way leading firms are conducting their business affairs and this in turn is changing the structure of the agribusiness sector. Furthermore, the work of [Roquebert et al. \(1996\)](#) indicated that 55 per cent of the variation between firms' Return on Assets (ROA's) could be attributed to corporate and business unit effects while industry effects could only account for 10 per cent of the variance. This evidence strikes at the very heart of the S-C-P model and has led researchers such as [Boehlje \(2000\)](#), [Sterns et al. \(1998\)](#) and [Westgren and Zering \(1998\)](#) to suggest that case study research, similar to that used widely in the business literature, may be more appropriate to investigating the current problems facing agribusiness firms.

Conclusion

Is supply change management a fad?

Based on the literature (particularly in the general business management area) and the documented agribusiness case studies that illustrate its applications in practice, the concept of supply chain management has solid theoretical and commercial foundations. There is no doubt that the competitive environment in which agribusiness firms operate has changed. As [Johnson \(1998\)](#) would say – 'someone moved the cheese'.

Supply chain management has emerged as one way that can be used to 'find new cheese'.

Is supply chain management a panacea?

As theory and commercial practice show, the levels of trust, commitment and management required to successfully develop and maintain the business-to-business relationships involved in supply chain partnerships are very high. Cooperation is not appropriate for all business-to-business interactions nor do all firms have the prerequisite cultural, management and operational systems necessary.

Is supply chain management an opportunity?

For some agribusiness firms, including farm businesses, supply chain management has emerged as an opportunity to improve their competitive position provided that the members of the chain have the potential (in terms of attitude, management and capability) to collectively create customer value and the skills to manage the internal and external relationships involved.

For some agribusiness researchers, the deregulation of the farm sector provides a tremendous opportunity to re-establish their credibility in the commercial world. For many this will require a paradigm shift similar to that required of agribusiness managers. Supply chain management research will require a shift in the focus of research from an industry base to that of a firm and its supply chain partners, the adoption of more qualitative research methodologies and the realization that the basis of competition in global markets is value creation and strategic fit.

Have we the capacity to accept [Hamel's \(2000\)](#) challenge to become 'corporate rebels or gray-haired revolutionaries'?

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Footnotes

[1] Friedman (2000) provides a comprehensive review of what he refers to as 'the convergence of the three forces of democratization' – technology, finance and information, that drive global integration.

[2] In 1995, the World Trade Organization (WTO) was formed and assumed responsibility for the administration of the GATT and other world trade agreements and protocols.

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