Exploring the supply chain of small and medium-sized South Australian wine producers

This research is part of a wider study that seeks to understand the nature of significant stakeholder perceptions as situated in the South Australian (SA) wine industry supply chain (SC) context. The focus is the small and medium enterprise (SME including micro) wine producers. It explores the complex relationships that exist within the supply chain of a number of case organisations and their perceived key stakeholders. This paper presents the findings from four case organisations and explores what they perceive to be important in their supply chains, who their perceived significant SC stakeholders are, why they are important, and what the implications are for their SC.

Introduction

Even though the supply chain (SC) and supply chain management (SCM) are not new concepts, many organisations and industries are only just starting to recognise the importance of managing or exploiting their supply chains. The Australian wine industry is no exception. The industry is growing at a phenomenal rate with 2,299 wine producers currently listed compared with 344 wine producers in 1983 (Winebiz.com, 2008). More than 100 new producers have been established each year since 1998. The industry is dominated by five large producers in terms of tonnes crushed but the largest number of wine producers (87%) fall in the SME category. Australia is currently ranked tenth in the world for grape production and its percentage share of wine production places it in sixth position. Although its domestic sales are growing each year its export markets are increasing much faster, currently placing it fourth in the world in terms of wine exports (Winebiz.com, 2007). In 2001, 663 wine producers exported wine to 89 international markets (Winetitles, 2002). By 2007 this had grown to 1,165 wine producers exporting wine (Australia and New Zealand Wine Industry Directory, cited in Winebiz.com, 2009).

Although the Australian wine industry has invested heavily over the years in all aspects of wine cultivation and product quality, and its products continue to grow from strength to strength, there is evidence that other aspects of the business have not developed in line with growth and changing needs. The growth of the industry and of exports has created a new set of business relationships within Australia and worldwide that has resulted in a more complex and dynamic supply chain for the industry. In addition, the number of wine producers has more than doubled since 1998 and a very large number of these are micro and small wineries. The 2008 Australia and New Zealand Wine Industry Directory (cited in Winebiz.com, 2009) shows 22 companies...
accounting for 90% of sales with the remaining 2,277 smaller companies competing for the remaining 10% of sales.

The wine industry bodies have identified potential for supply chain initiatives, as typically indicated in the supply chain literature and detailed below, but there is little evidence to determine whether micro, small and medium-sized wine producers are exploiting these opportunities.

This article presents the findings from an investigation of four SME South Australian wine producers, what they perceive to be important in their supply chains, who they perceive as significant stakeholders in their SC, why they are important, and what the implications are for their SC.

Supply chain management (SCM) and the Australian wine producer

Baatz (1995) suggested that conceptually the supply chain extends from “dirt to dirt.” It begins “when the raw material is extracted from the earth and ends when the product is reused or disposed of in a landfill” (p.46). If we consider this in the context of a wine producer’s supply chain, the chain extends from its agricultural suppliers (chemicals, organics, vines, etc.), wine production suppliers (grapes growers, grape processing equipment, labels, bottles, closures, vineyard mowers, etc.), and production processes and services (crushing, storage, bottling etc.) to its distributors (wholesalers, retailers, hotels, etc.) through to its final consumer of the wine. It is also influenced by other parties such as wine industry and regulatory bodies (exporting, funding, policy direction, taxation, etc.). Even for a small-scale producer the number of parties involved and the relationships that exist are quite extensive and complex.

Supply chain management is described in several ways but typically by the stages involved in directly or indirectly filling a customer order, the parties involved (such as suppliers, manufacturers, transporters, warehouses, retailers, and customers), and the functions or processes required (for example, new product development, marketing, operations, distribution, finance, and customer service) to enable orders to be filled in the right quantities, at the right time, at the correct location, and to customer satisfaction whilst minimising costs (Simchi-Levi et al., 2008; Chopra & Meindl, 2001; Balsmeier & Voisin, 1996), reducing inventories and improving production performance (Challener, 1999), and providing added value to customers and stakeholders (Jayaram et al., 2000; Handfield & Nichols, 2002). Golicic et al. (2002, p. 851) describe supply chain management as “essentially management of the relationships and activities among the member organizations . . . from single transactions to complex interdependent relationships.”

The South Australian small wine producers are just starting to recognise the potential of supply chain initiatives.

In the past, supply chain systems were regarded as channels of distribution with each firm operating on its own, seeking to make the highest profits (Lancioni et al., 2000; Prahalad & Ramaswamy, 2000). Prahalad and Ramaswamy (2000) suggest that businesses have adopted different roles with other businesses due to “deregulation, globalisation, technological convergence, and the rapid evolution of the Internet” (p.79). Anderson et al. (2007) argue that many companies focus on improving their supply chain management in order to balance the needs of the customer with those of the company. In other words, some organisations are moving away from the traditional autonomous operating unit towards alliances and integration across the supply chain, which Lambert and Cooper (2000, p. 81) have determined “involves identifying the supply chain members with whom it is critical to link, what processes need to be linked, and what type/level of integration applies to each process link.” Neumann et al. (2000) note that companies that are performing best are those that are investing in systems that integrate their internal and external supply chains. Cross-enterprise supply chain planning is seen as an opportunity to achieve sustained competitive advantage. It provides an opportunity for increased transparency in the supply chain, to eliminate distorted information, to reduce the bullwhip effect, and to encourage greater cooperation, planning, and monitoring to remove unwanted stocks, reduce lead times and uncertainty, and achieve better capacity utilisation (Skjott-Larsen, 2000). In a study of French wine companies Chandes and Estampe (2003) found the French wine sector had not yet realized the importance of supply chain management to the overall performance of a business.

In Australia, some of the larger wine companies implemented new systems to support supply chain activities. However, not all implementations were immediately successful, as could be seen with Southcorp (Gottliebsen, 2001) though this might be attributed to teething troubles typically associated with ERP implementation. Southcorp has since become part of the Foster’s Group. However, the company is referred to as Southcorp in this paper because this was the company name during the implementation of its ERP system.

Industries are also recognising the value of their customers and their knowledge of the marketplace (Prahalad & Ramaswamy, 2000; Chizzo, 1998; Simchi-Levi et al., 2008; Anderson et al., 2007;
Challener, 1999) and the Australian wine industry is no exception. Different products have different customer requirements and cannot be satisfied by a single supply chain strategy (Childerhouse & Towill, 2000; Christopher, 2000; Christopher & Towill, 2000, 2001; Power et al., 2001; Fisher, 1997). There is ample evidence of investigation into downstream activities in the supply chain within the wine industry, particularly in regard to the marketplace, customer preferences, and exporting. These are documented regularly through a range of wine-related journals and in the local and national press of Australia.

Challener (1999, p32) points out that “[t]he inherent complexity of a global supply chain requires the efficient and effective coordination of all of the resources of the enterprise.” She suggests that for an organisation to be ever-more responsive to its markets, partners, and customers, new strategies are required for supply chain integration, supply chain optimization, and inter-enterprise collaboration, and that cultural as well as technological barriers exist to implementing cross-enterprise supply chain management processes. It requires trading partners to change their traditionally adversarial business relationships. In Australia, at the upstream end of the supply chain of a wine producer, there are limited sources available from which to source some supplies. During production, outsourcers are used for a range of services that are required for a seasonal basis, particularly by the smaller businesses. Downstream a number of services and agents are used to transport and distribute the finished product to the end consumer. The wide range of goods and services used, the quantity and type required, their availability, and the size of business all influence the type of relationship that exists among the different parties.

There is already evidence that cross-enterprise supply chain planning is happening between businesses, though not always through their information systems and information technology at present. Premkumar (2000) describes three types of inter-organisational systems: communication systems for electronic messages; co-ordination systems that support production planning, delivery scheduling, and logistics co-ordination; and cooperation systems in which organisations might share, for example, product design information and customer information. Although large wine companies such as Southcorp saw the need to invest in these new systems to support their business needs, identifying a newly installed ERP “as the base for a world-class chain” (Gottliebsen, 2001, p. 32), Matterson (2001, p. 24) noted “substantial lost wine sales and excess costs” for Southcorp following the introduction of the new system.

The Australian Government’s National Office for the Information Economy (2001) report “Advancing with E-commerce” outlines many of the potential benefits of e-commerce for small businesses, for example, reduced costs, increased revenue, and improved competitiveness. The Internet has made possible the idea of integrating processes, not just transactions, but this raises issues of costs, intrafirm and interfirm adaptability, platform neutrality and interoperability, scalability, security, reliability, ease of use, customer support, and perceived value (Sarkis & Sundarraj, 2000). In a study of Australian SMEs Lawson et al. (2003) found that major barriers to Internet use were concern about security and privacy of transactions, cost of consultants, lack of government incentives, lack of IT expertise of staff, lack of cost-effective telecommunications infrastructure, and lack of knowledge of numbers of users using the Internet. Sellitto and Martin (2003a, 2003b) provide evidence that some Australian wine industry SMEs are using the Internet to their advantage, primarily in downstream marketing activities, but not across the whole supply chain. In 2002 only 76% of wineries had an e-mail address and 49% had a web site; in 2007 this had grown to 91% and 77%, respectively.

Throughout the wine industry supply chains, suppliers, grape growers, wine producers, sellers, and consumers are involved in the range of typical supply chain business processes. There is little evidence, however, that micro, small, and medium-sized wine producers are exploiting or are able to exploit the opportunities cited in the vast array of supply chain literature. Quayle (2003) points out that there is limited literature on SMEs and supply chain management practices. Much of the research has concentrated on large businesses and explored simple, linear, and dyadic supply chain relationships. Quayle also notes that SMEs generally view the supply chain as a one-way relationship in terms of the pressure that powerful customers place on them. Macpherson and Wilson (2003) suggest that, given large organisations are focusing on strategic supply chain opportunities, it is not unreasonable to suggest this will have a significant effect on SMEs. Macpherson and Wilson (2003) note, however, that systems are not currently in place to support adoption of supply chain strategies by SMEs. In addition, many of these studies have been conducted overseas, have categorised SMEs according to number of employees, and are more comparable to medium to large businesses in Australia.

The literature tends to agree that organisations can, at the very least, achieve some efficiencies through their supply chains, and much of the past literature has explored efficiencies in terms of internal business processes, logistics, and optimal sourcing. This research explores four SME producers and their perceptions of what and who is important in their supply chains, why they are important, and what the implications are for their SC.
**Research design**

The approach adopted for this research was an interpretive case study. The case study is considered to be particularly appropriate for answering explanatory **how** and **why** questions (Yin, 2003). Where **what** questions are exploratory, Yin also considers the case study to be one of several appropriate approaches.

A number of models already exist to explore the supply chain and supply chain management in organizations, for example, SCOR (Supply Chain Operations Reference Model) and WLC (World Class Logistics model). Because this research was exploratory in nature, and with a focus on the worldviews of the micro, small, and medium-sized South Australian wine producers, it was considered more appropriate to use what Checkland (2000) describes as a purposeful activity model. He describes these as “intellectual devices-whose role is to help structure an exploration of the problem situation being addressed” (p.26). The problem situation in this instance is the supply chain of the South Australian wine producer. The generic activity model used is detailed in figure 1. Although Checkland tends to use hand-drawn models, the text in the following models are typed for ease of reading.

This approach appeared to work well as it provided a basis for exploration whilst allowing participants to determine activities and related issues that were important to them. It is also interesting to note that in each instance the case organisation introduced a context to their business without the need for prompting.

The research undertaken is exploratory research and involves a number of learning cycles. This is referred to by Gummesson (2000) as the hermeneutic circle or spiral in which at each stage of the research we have a different level of pre-understanding that allows us to develop further understanding. Thus continuous reflection and learning was important throughout the process. The cycles of this research are illustrated in figure 2 and described below.

**Cycle 1 - Finding out about SC/SCM - generic model based on best practice (literature view)**

The SC and SCM literature was initially explored to identify the range of activities, issues, measures, values, expectations, frameworks, and models that currently exist in the literature. It was then used to produce a generic activity model of a SC.

**Figure 1**

Generic activity model of the supply chain of wine producer (modified from Checkland, 2000)
Cycle 2 - Finding out about SC/SCM - industry view - annotated model

The generic activity model was then annotated to reflect the potential activities of the SC of a wine producer using findings from the industry research. Initial data collection on the industry was undertaken using a range of secondary sources: industry bodies, web sites, journals, attendance at conferences and events, and local and national newspapers.

Cycle 3 - Finding out about SC/SCM - producer view - annotated models

The model (figure 1) was used in this cycle to provide a framework for semi-structured interviews with wine producers. Given this was exploratory research and the researcher did not want to influence the businesses beyond providing a basic supply chain structure, no values or measures were included in the model. In addition, rather than influence the participants by asking specific questions, participants were asked to explain and comment on their supply chains. The model was piloted with one of the producers and modified before the remaining interviews took place. Other sources of data included informal conversations and attendance at meetings and events.

Cycle 4 - Finding out about SC/SCM - key stakeholder views - identified by producers

Data from key stakeholders was also gathered mainly through semi-structured interviews. It was impossible to access all of the key stakeholders identified by the producers but in the instances in which this occurred the available literature was used as far as was possible to explore the relationships and potential issues. Other sources of data included informal conversations and attendance at meetings and events.

Final reflection

Although continual reflection and learning was important throughout the process, this cycle provided an important final reflection of the findings in the context of each of the previous cycles.

The case organizations

Wine Producer 1

Wine producer 1 crushed less than 20 tonnes and classed itself as a micro-sized winery producing a small range of table wines that it sells through its cellar door, mail order customers, local restaurants, and hotels. In addition it supplies its wines to local bed-and-breakfast accommodations as part of a “holiday package.” It also sponsors local events. Its focus is on producing quality wines in a green environment. The company has two full-time staff members who are the owner/managers. The business employs casual staff as needed for netting, grape picking, earth moving, and tax accounting. It identified as its key stakeholders its customers (consumers), wine making, grape pickers, storage facility (crushing, maturation, storage), and suppliers.

Wine Producer 2

Wine producer 2 crushed between 100 and 249 tonnes and classed itself as a small winery producing a range of premium quality wines that it sells through mail order, restaurants, and export. Its focus is on producing premium quality wines. The company has two owner/managers, one full-time vineyard manager, and two part-time administrators. The business employs casual staff as needed for netting, grape picking, and accounting. It identified as its key stakeholders its agents, customers (consumers), grape growers, and wine-making facilities (crushing, maturation, storage).

Wine Producer 3

Wine producer 3 crushed between 250 and 499 tonnes and classed itself as a small to medium-sized winery producing a range of premium quality table wines that it sells through its cellar door, mail order, restaurants, and export. The company has four owner/managers and three sales staff. The business employs casual staff as needed for grape picking. It identified as its key stakeholders its customers (consumers), sales force, and transportation.

Wine Producer 4

Wine Producer 4 crushed between 2500 and 4999 tonnes and classed itself as a small to medium-sized winery producing a range of premium quality table wines that it sells through its cellar door, mail order customers, local restaurants, and hotels. In addition it supplies its wines to local bed-and-breakfast accommodations as part of a “holiday package.” It also sponsors local events. Its focus is on producing quality wines in a green environment. The company has two full-time staff members who are the owner/managers. The business employs casual staff as needed for netting, grape picking, earth moving, and tax accounting. It identified as its key stakeholders its customers (consumers), wine making, grape pickers, storage facility (crushing, maturation, storage), and suppliers.
itself as a medium-sized winery producing a range of premium quality table wines that it sells through its cellar door, mail order, restaurants, retail, and export. The company was a family-owned business employing ten staff. (Note, the company has merged and grown since the time of the interview.) It identified as its key stakeholders its agents and accountants, consumers, crushing facility, grape growers, and storage/labelling facility.

A comparison of the key characteristics of the four wine producers is detailed in table 1.

Findings

The findings from the cases are presented and discussed below. This includes exploration of what the case organizations perceive to be important in their supply chains, who they perceive to be their significant stakeholders, why they are important, and what the implications are for their supply chain.

### Upstream

**Suppliers/growers - agricultural and wine production**

On the supply side of their supply chains, when sourcing materials for growing and manufacture, all case organisations recognised the benefits of economies of scale but not all agreed that economies could be realised by individual businesses given the relatively small quantities of materials they sourced. This reflected the view presented in the literature of a more powerful player controlling the relationship, though the case organisations did not necessarily view this as a coercive relationship. Rather they represented it as a fact of business that one accepted and worked with. In some instances the very small producers were able to buy from a larger producer. Two of the businesses suggested the possibility of bulk purchasing through a regional group. However, they also commented that extensive organisation would be required to manage the process. Given that small (including micro) producers have limited resources, it would rely on the good will and skill of one or more members who have little or no spare time for this type of activity. One producer also commented that it is extremely difficult to get a large number of producers to agree on an approach. They had established an informal arrangement with a few other small producers to achieve some small savings. These producers also supported each other when one of them found they needed urgent supplies. There is also a very limited number of local (domestic) suppliers to the wine industry and thus choice is limited. One of the larger of the four producers described buying supplies, when only two suppliers exist, as “playing one supplier off against the other” but the producer said this was only possible when larger quantities are required.

All the producers were also grape growers. Although two producers used only their own grapes, two producers also sourced grapes from other growers. The cycle of

<table>
<thead>
<tr>
<th>Winery</th>
<th>Tonnes crushed</th>
<th>Size</th>
<th>Permanent staff (full-time equivalent) including owner/managers</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winery 1</td>
<td>Under 20 tonnes</td>
<td>Micro</td>
<td>2</td>
<td>Cellar door, Mail order, Events, Restaurants/hotels, B&amp;Bs</td>
</tr>
<tr>
<td>Winery 2</td>
<td>100-249 tonnes</td>
<td>Small</td>
<td>5</td>
<td>Mail order, Events, Restaurants, Export</td>
</tr>
<tr>
<td>Winery 3</td>
<td>250-499 tonnes</td>
<td>Small/medium</td>
<td>7</td>
<td>Cellar door, Mail order, Restaurants, Export</td>
</tr>
<tr>
<td>Winery 4</td>
<td>2499-5000 tonnes</td>
<td>Medium</td>
<td>10</td>
<td>Cellar door, Mail order, Restaurants, Retail, Export</td>
</tr>
</tbody>
</table>

Table 1

Key characteristics of wine producers
over- and undersupply of grapes in past years has resulted in a volatile market for some growers. This perhaps explains the increase in the number of new producer licences as grape growers look for alternative markets. However, the businesses that sourced additional grapes commented that they preferred to establish a relationship with a grower or growers to ensure the type and quality of the grape they purchased.

The two smaller case organisations do not view information and communication technologies (ICTs) as important in terms of ordering or managing supplies coming into their organisations. They use the Internet only to keep up to date with available products. The third case organisation initially uses e-mail to invite suppliers to tender and then orders are placed via e-mail. They also use the Internet to keep up to date with available products and to look for new products. The larger of the case organisations uses ICTs more extensively to support many of its business processes.

Production

Grape pickers
Grape picking can be viewed as an upstream activity in that the grapes are sourced as an input to the production process and, in some instances, sourced from other growers. However, in every instance the producers discussed grape picking as an integral part of their production process and this has influenced the location of this discussion. Grape picking is seasonal and grape pickers are required for only a few days each year by the case organisations. They also need to know they have reliable pickers who may need to be available with limited notice, given the vagaries of the climate. There are agencies that supply grape pickers but the cost was considered to be prohibitive for the smallest wine producer. This case organisation has cultivated a reliable group of casual pickers over a period of time. The case organisation not only has to train its grape pickers in picking, but they must also comply with occupational health and safety requirements and thus train their pickers in safe working practices. To encourage their pickers to return each year they provide a good working environment and all food and refreshments.

The other case organisations used agents on the basis that it was the agency's responsibility to ensure they provided trained staff, though one organisation did comment it was still sound business practice to monitor the activities of the casual workforce. One organisation commented that they had established a relationship with an agency and their "pick" was large enough to ensure a supply of staff was available even when an unexpected change in climate necessitated an earlier or later pick.

Crushing, maturation, and storage
Most micro and small and to some extent medium-sized wine producers do not have the space or the facilities to crush and then store their wine during production. Many tend to outsource this activity. All but one of the case organisations regularly relied on outsourcing companies to some extent for this aspect of the business.

Crushing can be a difficult process to manage given it is not always easy to forecast the exact time a grape will be ready to pick. An unexpected change in weather conditions can quite easily lead to an early or a later pick and crush. Crushing may only take a few hours each year but timing is important and the business has to rely on the goodwill of the outsourcing company in terms of a flexible schedule.

Each of the case organisations managed this aspect of their business differently. One organisation crushed at an outsourcing organisation. It also used this site to store its own containers and to make its own wine. It has also on occasion used the expertise of the resident winemaker at the outsourcing company. The case organisation, however, has a range of skills useful to the outsourcing company and provides its services in part payment for the services the outsourcing company provides. The case organisation views its relationship with this company as critical to the success of its business. The second case organisation again uses another company's facilities to crush, make, and store its wines, which it saw as a necessity but did not identify this as one of its key stakeholders. However, it did comment it had spent considerable time and effort in cultivating a good working relationship with the facility, which it stated was essential to ensure it had access to the facilities as and when they needed. The third case organisation had invested in equipment and was now self-sufficient in terms of crushing, storage, and maturation though it had found one year that a particularly good yield had necessitated the use of external storage. The final and largest case organisation crushed a proportion of its own grapes but government restrictions limited the amount of water it could use in the area it is located and more than half of its yield had to be transported and crushed elsewhere. It has its own facilities to make its wines and bottle and store at an outsourcing company.

The focus of all case organisations is on producing a high-quality product for their marketplace. The owners consider investments in production technology their core business, far more important than investments in ICTs, particularly given the high cost of capital investment in terms of wine production.

Downstream

Agents/Sales Force
On the downstream side of the supply chain only two of the case organisations used an agent and a third employed sales staff. Both organisations that used agents identified them as critical to the success of their business. They described the agent as the business that was responsible for
representing their products to the end consumer. One stressed the importance of having an agent with the same value system as its own so that the ethos of the business and the qualities of the wine would be faithfully represented. The other stressed the importance of the overseas agent visiting the winery in Australia so that the agent knew where the winery is located and could accurately describe the region the wine is coming from as well as the features of the wine. Another organisation discussed the difficulties of finding and keeping a reliable sales force and commented it was developing its electronic sales as much as possible to eventually shorten its supply chain with the intention of reducing costs to the mutual benefit of itself and its customers.

**Customers**

All four wine producers identified customers (consumers) as key stakeholders in their business though each producer prioritised the customer differently. One wine producer commented that “if people don’t drink wine then there’s no reason to exist.” The smallest winery believes that it is important to give the customer “a whole wine experience as well as good value, good quality wines at a good price; good value for money.” If people are interested they will take them into the barrel room, explain the different processes, and explain about the wine and how it is made. It believes it is important to establish a relationship with the customer, providing a quality experience as well as a quality product. The other wine producers noted the need for sales staff and agents who valued the product they were responsible for selling.

**Transportation**

One organisation identified transportation as particularly important to it given its global marketplace, though it did not identify any particular difficulties in terms of transportation.

It is at the downstream end of the supply chain where ICTs are more fully exploited by the case organisations. However, the smallest case organisation stated it has a web site on which it “had plenty of hits but no sales.” Their EFTPOS and electronic credit card facilities have proved to be very effective for the business, providing better cash flow, daily tallies of takings, and less risk of fraud.

The second case organisation views good stock management as critical to the organisation and keeps track of its stock and shipments in a database. Some of the storage and distribution companies provide access to an intranet to allow the case organisation to track its stock levels and shipments but this is not available from all companies. However, it views its business relationship with its wholesaler as more critical than the systems it might put in place to manage sales.

The third case organisation would prefer all orders other than cellar door to come in via e-mail. None of its software currently is linked to other businesses; however, it stated it would welcome a more-structured link for processing orders with customers (retail and end consumer) and see benefits in terms of reducing costs - fewer cars for sales staff, lower phone costs and associated costs - which would enable them to lower prices and grab a bigger market share. They have good in-house expertise in IT that has been learnt on the job. The company does not view IT as the problem-“it’s getting the initial wine into the market [the retailer] . . . the hardest part is selling . . . not really a financial investment . . . it’s more a time investment in terms of learning your systems and procedures and how we go about it and seeing what works and what doesn’t work . . . when you get to the sales side of it that’s something you have no idea . . . until you negotiate a sale. . . . I think we’re a bit behind in this country in actually selling wines over the computer.”

The largest of the case organisations had more developed and more integrated systems to support its downstream activities.

**Discussion**

The supply chain of an SME wine producer has a large number of parties with complex relationships and much of the cultivation, picking, production, and distribution processes are outsourced to external parties. The case organisations explored had, to some extent, differing views of who their key stakeholders were; however, there were a number of interesting issues identified by the case organisations.

**Measures of performance**

Measures of performance were identified as most important. Checkland and Scholes (1999) define five measures of performance (effectiveness - are the goals the right ones; efficiency - are the minimum resources used to reach the goals; efficacy - do the means employed enable us to realize the goals; elegance - is this a beautiful transformation; and ethicality - is this a morally correct transformation).

The smaller producers did not believe they were working with the critical mass necessary to achieve economies from their supply side. They had explored potential strategies for achieving economies of scale through their regional associations but noted this would require extensive organisation, goodwill, and skill for it to be successful, and considered the costs in terms of time and money would outweigh any benefits they might gain. There was, however, potential for achieving efficiencies towards the end of the manufacturing process and at the downstream end of their supply chains. This is discussed below under postponement strategies.

A greater importance was placed on establishing the right goals (effectiveness) and operating in a morally acceptable (ethical) and tasteful (elegant) way. All four cases questioned their goals during the interview process. They commented that, as was typical of many small businesses, they spent more time working in the business
rather than on the business. However, each business had a clear idea of what its product should be, who its potential customers were, and which markets it would target. Likewise, they were all aware that there were potential opportunities to improve the efficacy of their wine production as well as their business processes.

The right goals were defined by the quality of their product, the satisfaction of customers, building a good reputation, contributing to long-term viability, and establishing good working relationship with growers, other producers, the production facility owners, and distributors.

For the customer there was emphasis placed on providing a high-quality product and a good wine experience. For the distributor, shared values were emphasized and a knowledge of the wine and its region. When growing and wine making were outsourced the emphasis was placed on developing a close relationship with each so that they became a valued part of the production process and final product.

**Postponement strategies**

A great deal of movement takes place for these producers in moving raw materials to crushing facilities, then on to production facilities, storage facilities, distribution facilities, and cellar doors. For some this was more extensive than for others. There were limited opportunities to achieve efficiencies in some of these processes as government regulation limited the type of activities that could be undertaken by the businesses at its own site and, if regulation did allow, required a large capital outlay. However, opportunities were identified for achieving efficiencies and efficacy through careful management of its stock in terms of how much it held in bulk, how much it bottled, when it blended, and when it labelled and packaged. This is typically described in the literature as logistics postponement (Pagh & Cooper, 1998) or assembly postponement (van Hoek, 1997), though if blending is postponed this could be seen as part of postponed manufacturing as described by Pagh and Cooper (1998) and van Hoek (1997).

**Collaboration and organizational forms**

Quality of product, satisfaction of customers, reputation, and long-term viability are well documented in the literature. Formal alliances, relationships, and networks are also documented in the literature and tend to focus on upstream and downstream relationships.

For the wine producers, downstream and production relationships, and to some extent upstream relationships, were considered to be important. Some of the relationships were temporary and developed to achieve a particular need. For example, if a wine producer wishes to export wines it must belong to a region that has been designated as a wine region and, to achieve this, the region must apply to be registered as a “geographical indicator.” The application process requires a large amount of data to be collected, summarised, and presented for consideration, and in the instance discussed during the interview, it was successfully achieved by the establishment of a regional group of producers, managed by representatives of the group. Although none of the wine producers identified communities of this kind as a key stakeholder, three of the case organisations identified communities in the form of cooperatives and regional bodies as important to their businesses. Some relationships were informal and involved the exchange of skills and expertise particularly with other smaller producers, who were also their competitors. Others were of a more formal nature, such as the relationships with distributors and grape growers. In all instances ethical action and shared values were placed high on the agenda of the relationships.

The role of ICTs

ICTs were considered to be more useful by all organisations at the downstream end of their supply chain. The two smaller businesses identified cash control and stock management supported by ICTs. The two larger organisations viewed ICTs as an opportunity to provide a greater level of control over a number of business processes.

**Implications and further developments**

This research has explored the worldviews of four SME wine producers in terms of their supply chains. It has been noted that the measures of success for these producers relate to demonstrating quality in their product and ethicality and shared values in their relationships with their supply chain members. This does not suggest the SME wine producers ignore efficiency and efficacy. The businesses interviewed were fully aware of a range of potential opportunities but they were also aware of the costs involved and had determined the benefits did not outweigh the costs. All the case organisations were established businesses that had been in operation for several years and had determined an approach that helped them to survive in a volatile industry and marketplace. The fact that they are established businesses and are proffering similar views may suggest that their approach is replicable by other producers in the industry. Given more than 100 new wine producers have been established in Australia each year since 1998 and most of these are micro, small, and medium sized it would be necessary to evaluate some of these newer businesses to determine whether they have a similar view of their supply chains. In addition, given this is a small sample, further research is also needed to determine whether this is true of other established micro, small, and medium-sized wine producers.
Although much of the previous research has concentrated on large businesses there is limited literature on SMEs and supply chain management practices. There is even less discussion of the supply chain of micro, small, and medium-sized wine producers within the wine industry. For the wine SME the literature tends to be located in the marketing literature and is focused on the downstream end of the supply chain. SMEs explored in the supply chain literature tend to present the power relationship between the large producer and the smaller supplier. In this study the producers are the small players who are often trading with the larger, more powerful businesses. This research has noted the relationship between the large suppliers and the small producers but it has also identified a set of many and complex relationships that exist for the producer with other parties to its supply chain. The case organizations have recognized opportunities to develop a number of these relationships particularly relating to their production and downstream supply chains and some aspects of the upstream chain, though not necessarily a fully integrated supply chain. The research also needs to examine the views of the key stakeholders as determined by the producers and to explore whether their views conflict or coincide.

In noting the varied and sometimes temporary relationships within the supply chain of a wine producer, the research has also raised interesting questions relating to the type and shape of the organization and where the boundaries lie. The findings from the cases explored so far also suggest a number of different organisational forms. Future work will examine what forms these might take and how they can be defined, developed, and implemented into the complex situation of a wine producer.

Given the large number of micro, small, and medium-sized winery business both in Australia and in other countries, it may also be appropriate to replicate this study in other countries.

References


About the authors

Ann Monday lectures in supply chain performance at the Newcastle Business School. She has managed a number of undergraduate and postgraduate programs and has taught in the UK, Australia, Hong Kong, and Singapore. She has a bachelor of business from the Nottingham Trent University, UK; a master’s in information management from Hull University, UK; and a certificate in education from Leeds University, UK. Her master’s thesis explored quality-monitoring systems in production processes at a large packaging/manufacturing organisation. Her current research, as part of her doctoral research, is in the area of supply chain management within the Australian wine industry. She has presented a number of papers at conferences in Australia, Finland, New Zealand, Canada, the United States, Ireland, and the UK relating to both her supply chain interests and pedagogy. She is also on the editorial board and reviews for a number of journals.

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