



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Co-operating to Compete in High Velocity Global Markets: The Strategic Role of Flexible Supply Chain Architectures

Hamish R. Gow, Lance D. Oliver, and Neil G. Gow*

*Annual Meeting of the Western Coordinating Committee
on Agribusiness, Las Vegas, Nevada, June 23-26, 2002.*

*** Respectively, the authors are an Assistant Professor of International Agribusiness
Management at the University of Illinois at Urbana-Champaign, USA, Graduate Research
Assistant at the University of Illinois at Urbana-Champaign, USA, Senior Lecturer and
Head of the Farm Management group at Lincoln University, New Zealand. Contact:
hgow@uiuc.edu**

Copyright 2002 by Hamish R. Gow, Lance D. Oliver, and Neil G. Gow. All rights reserved.
Readers may make verbatim copies of this document for non-commercial purposes by any
means, provided that this copyright notice appears on all such copies.

Co-operating to Compete in High Velocity Global Markets: The Strategic Role of Flexible Supply Chain Architectures

Abstract

Continued value creation is paramount for the survival of firms competing in today's high velocity global business environment. This paper presents a conceptual framework for understanding how firms can create and capture value within a highly volatile and uncertain business environment by exploiting both performance gaps and opportunity gaps through the development and use of flexible supply chain architectures. The choice of flexible organizational architecture allows for the continued reconfiguration of the independent modular components of the supply chain so as to achieve optimal leverage of both the firms core competencies as well as their collaborative partners complementary resources. The case of “Cellars of Canterbury”, a New Zealand based International wine marketing and distribution cooperative enterprise provides empirical support.

Keywords: value creation, flexible supply chain architectures, leverage, core competencies.

The authors gratefully acknowledge the Cellars of Canterbury owners, staff, and business partners for their participation in this study. The authors are solely responsible for the views expressed within this paper and for any remaining errors.

1. Introduction

Change is now a common everyday occurrence within the agricultural sector. Massive structural changes are presently being observed as the agricultural sector shifts from the traditional static commodity based business of pushing homogenous products through spot markets to a more consumer driven market requiring differentiated products, continuous process innovation, and highly specialized product delivery, and customer support systems (Boehlje, 1999; Sonka, 2000). For firms to survive within this high velocity global business environment it is paramount that they develop and adopt organizational structures that allow for continuous value creation by continually evolving to meet their clients changing market needs, as what was there yesterday is already gone today, what is here today will be gone tomorrow, and who knows what tomorrow will bring.

The problem however is that many agricultural firms are still struggling to understand and define the fundamentals of how the evolution and industrialization of the global agrifood chain will impact their enterprises. Consequently, few firms have attempted to implement the necessary organizational changes that will be required to confront these changes and capture value within these new highly uncertain market places. As Schumpeter (1942) notes:

“To undertake ... new [activities] is difficult and constitutes a distinct economic function, first, because [these activities] lie outside the routine tasks which everybody understands and secondly because the environment resists in many ways that vary according to social conditions, from simple refusal either to finance or to buy a new thing, to physical attack on the man who tries to produce it. To act with confidence beyond the range of familiar beacons and to overcome that resistance requires aptitudes that are present in only a small

fraction of the population and define the entrepreneurial type as well as the entrepreneurial function. This function does not essentially consist in either inventing anything or otherwise creating the conditions which the enterprise exploits. It consists of getting things done.” (Schumpeter, 1942, 132).

Thus the challenge for many agribusinesses is no longer about solely increasing the efficiency with which they produce and deliver homogenous product. Instead these forces of change are requiring firms to completely reevaluate how they create and capture value within this “new” highly uncertain market place, where their customers and clients are requiring an ever increasing plethora of customized products and services tailored to match their specific time and location constraints (Burton-Jones, 1999). However, for firms to be able to achieve this necessitates that they understand how value is created and captured within their existing business.

Value creation can be viewed as having two aspects: the performance gap – optimizing performance through operating efficiencies – and the opportunity gap – exploiting opportunities for new product, market, or business development (Prahalad, 1993). The agricultural sector has historically been extremely effective at exploiting the performance gap. Primary evidence of this is the rarity with which an agricultural sector can be found that has not seen continuous yield increases over the past half-century or more. However, agricultural firms have struggled to exploit the opportunity gap, as this often requires a redirection of the firm’s energies toward a new strategic intent. This in turn may require a different set of skills, resources, and capabilities to the firm’s existing core competence. The question then becomes: how best to capture these required capabilities to enable the firm to take on such a new role?

This paper presents a conceptual framework for understanding how firms can create and capture value within a highly volatile and uncertain business environment by exploiting both performance gaps and opportunity gaps through the development and use of flexible supply chain architectures. The choice of flexible organizational architecture allows for the continued reconfiguration of the independent modular components so as to achieve optimal leverage of both the firms core competencies as well as their collaborative partners complementary resources.

This paper is arranged in six sections. The next section differentiates between productivity and opportunity gap initiatives in the creation of value. The third section then discusses the core competencies of the firm. Section four introduces Roberts and Berry's (1985) Familiarity Matrix for understanding when and how firms should look outside of their boundaries for assistance. Section five develops the conceptual model of flexible supply chain architectures as an organizational strategy or mechanism that provides firms with the ability to continually adapt and evolve to best meet the changing market requirements and therefore maximize their ability to create and capture value. Section six uses an instrumental case study of "Cellars of Canterbury", a New Zealand based International wine marketing and distribution cooperative enterprise, to provide empirical support to this conceptual framework.

2. Value Creation

Historically agribusiness firms have created value by focusing their business strategy towards becoming more efficient, or what Prahalad (1993) terms the performance gap. This is justifiable since more efficient management of quality, costs, cycle time, logistics, and productivity should lead to greater profitability. However, it is obvious that performance gap improvements have a

finite limit. Thus, in order to create value and increase business profitability, managers' need to focus not only on the performance gap but simultaneously they also need to seek and identify new business and market opportunities. Prahalad (1993) refers to this as actively managing the opportunity gap. In this way, funds created by productivity increases can be redeployed toward new business and market opportunities, which will ultimately lead to successful value creation (Prahalad, 1993). These twin aspects of value creation are illustrated in Exhibit A.

Opportunity gap management however requires new skills, resources, and capabilities and begins with the establishment of an aspiration level for the organization, known as "strategic intent". "By design, strategic intent must cause a 'misfit' between aspirations and current resources and current approaches to using resources. The aspiration must focus the energies of the organization toward innovation in the way the firm competes" (Prahalad, 1993, 43). In this way strategic intent creates an obsession at all levels and functions of a firm to achieve a specific goal. This goal, perhaps better termed an ambition, often represents a 'stretch' where the firm's currently available resources and core competencies are often exceeded (Prahalad, 1993).¹

Where the traditional view of strategy has been to match existing resources with current opportunities, strategic intent, by creating a 'misfit', challenges the organization to develop new competitive advantages and competitive space. Thus, realizing the strategic intent of an organization implicitly leads to firm growth (Hamel and Prahalad, 1989). To achieve this, firms are not only required to identify, cultivate, and exploit their existing core competencies (Prahalad

¹ Hamel and Prahalad (1989) found that those companies that have risen to global leadership began with aspirations that reached beyond their current resources and capabilities. They succeeded in creating an obsession throughout the organization, which they sustained until this quest was fulfilled. Strategic intent must capture the essence of winning. An example of strategic intent is Coca Cola's desire to put a Coke "within arms reach" of every consumer in the world.

and Hamel, 1990) but are also required to leverage their existing intra-firm resources against those of others to develop new core competencies (Prahalad, 1993).

3. Core Competencies

Core competencies are defined by Teece, Pisano, and Shuen (1997) as a set of differentiated skills, complementary assets, and routines that provide the basis for a firm's competitive capacities and sustainable advantage in a particular business. When thinking about core competencies it is helpful to envisage the notions of: unique, distinctive, difficult to imitate, and superior to competition, combined with, resource deployment, and skills (Leonard-Barton, 1992). Perhaps core competence can best be understood when related to the analogy provided by Prahalad and Hamel (1990) of the corporation acting as a large tree. This being the case, the trunk and major limbs can be thought of as the core products; the smaller branches are business units; the leaves, flowers, and fruit are end products. The root system that provides nourishment, sustenance and stability is the core competence. By looking only at the end products of a firm you can miss seeing its true strength, in the same way that by looking only at the flowers and leaves on a tree you miss the strength of the root system upon which this tree is growing (Prahalad & Hamel, 1990).

Leonard-Barton (1992) identifies four dimensions to core competence. The first is the knowledge and skills embodied in people; this encompasses both firm specific techniques and scientific understanding. The second is the knowledge embedded in technical systems; this is the result of years of accumulating and structuring the tacit knowledge in people's minds. This knowledge constitutes both information and procedures. Such systems represent compilations of knowledge, generally derived from multiple sources such that the whole technical system is

greater than the sum of its parts. The third is managerial systems that represent the ways of creating knowledge (e.g., apprenticeship programs) and controlling it (e.g., reporting structures). Lastly, the fourth is the values and norms of the company. These influence all of the previous three dimensions and potentially impose restraints and conditions on the content and structure of knowledge, the means of collecting knowledge, and the way in which knowledge is controlled.

When shifts in the business environment occur it becomes imperative that firms are not only able to use their existing core competencies but are also able to develop and leverage new competencies to move quickly and efficiently in response to these changes. Thus, environmental changes, such as the introduction of new technologies, often require that management redeploy internal and external competence to develop new procedures or product innovations. However, path dependencies and switching costs often make change very costly to incumbent firms (Arthur, 1988) thereby helping to explain the observation that many companies can accumulate a stock of expensive assets yet not have many useful or valuable capabilities. Those that recognize the difference between core competencies and asset accumulation and demonstrate timely responsiveness to changes in their business environment are generally more successful than firms that merely attempt to apply their existing procedures to the new situation. This is particularly the case with incremental and radical innovations in product development and helps to explain why radical innovations are often introduced to an industry by new entrants (Teece *et al.*, 1997).

Leonard-Barton (1992) argues that core competencies may in one instance provide firms with competitive advantage, yet on the other hand act as core rigidities restricting the progress of the firm into areas of new business development. This is where there is a shortfall between the environmental requirements and the core competencies possessed by a firm. Values, skills, managerial systems, and technical systems that have been successful in the past and may still be

suitable for some projects, become inappropriate knowledge sets in the new situation (Leonard-Barton, 1992). This is precisely what Prahalad and Bettis (1986) refer to as the dominant logic of the firm. In situations of change, the initial response of a firm is to implement what is now likely to be an inappropriate dominant logic. This has the effect of propelling the firm more deeply into an adverse situation, when in fact survival is dependent on the development of a new logic (Prahalad and Bettis, 1986) or new set of appropriate competencies.

The very essence of competencies is that they often include an intangible component, such as the tacit knowledge of personnel, this makes them difficult to imitate or trade in the market place unless purchased as a complete firm, unit, or sub-unit. These core competencies develop slowly over time, thus, any effort at replication will at best also take time, but may still ultimately be illusive, even for insiders (Teece *et al.*, 1997). Prahalad and Bettis (1986) believe that before a new set of competencies can be developed, a process of unlearning must take place whereby firms eliminate old logics and behaviors to make way for new mental maps. In effect the firm and its individuals must first reverse down the existing learning curve to enable them to proceed up another (Bettis and Prahalad, 1995). This confronts firms with a difficult issue: to exploit the opportunity gap and realize their strategic intent by expansion into unfamiliar markets, products, processes or technologies, firms need to identify the optimal strategy to acquire the necessary competencies to allow this progression, while simultaneously reducing the risk of failure, thereby maximizing potential gain.

4. Capturing Competence

Previously, researchers have often recommended that new business development activities should be bounded by the firm's core competencies, as the more unfamiliar the innovation, the

more difficult it is for firms to succeed, as they do not have the competencies required to exploit the innovation (Afuah, 1998). However, this can be extremely constraining. Alternatively, Roberts and Berry (1985) argue that when new business opportunities lie outside of a firm's core competencies, the firm may be better off cooperating with another firm that already possesses these competencies, than going it alone. Using their "Familiarity Matrix" they argue that the critical variable explaining much of the success or failure of new business initiatives is the familiarity of a company with the underlying technology or processes being implemented and the markets being targeted and that the most suitable form of cooperation varies depending upon where in the matrix the opportunity lies. Using their framework any new product/market development opportunity can be analyzed according to the firm's familiarity with the underlying market and technological processes or services required, and be located conceptually on a 3 X 3 technology/market familiarity matrix (Exhibit B).

Business developments can be classified as either base, new but familiar, or new and unfamiliar² regarding the market and technology or services embodied in the product and placed in one of nine corresponding sectors of the matrix. To establish the positioning of any new venture within the matrix, four main factors must be analyzed. Firstly, is the technology, process, or service to be used embodied in existing products? If yes, then this is a "base" technology, process or service. If no, then this is a "new" technology, process, or service. Secondly, are existing products sold within the market where the new product will be introduced? If yes, then this is a "base" market. If no, then this is a "new" market. If either the technology or the market involved with the new venture is "new", then the familiarity of the organization with these "new" areas must be assessed. Roberts and Berry (1985), have defined familiarity in the following

² For a more detailed explanation of the definition between these categories see Roberts, E.B., & Berry, C.A. (1985). Entering new businesses: selecting strategies for success. *Sloan management review*, 26:3, 3-17.

manner: familiarity with a technology, process, or service is the degree to which knowledge of it exists within the firm but is not necessarily embodied within products. Familiarity with a market is the degree to which the characteristics and business patterns of a market are understood within the company but not necessarily as a result of participation in the market. Once the new business venture has been assessed with regard to these parameters it can be placed in the corresponding sector of the familiarity matrix.

The nine sectors of the matrix can be grouped into three categories that possess broadly similar levels of familiarity, indicated by the shading of the sectors in Exhibit B. Based upon these categories, Roberts and Berry (1985) have identified seven different knowledge acquisition mechanisms that a firm can choose from when adopting an innovation³:

- ***Internal development*** - development of a business within the existing corporation.
- ***Acquisitions*** - purchasing an existing firm.
- ***Licensing*** - the product or technology is licensed from another firm.
- ***Internal Ventures*** - establishing a separate entity within the existing corporate body.
- ***Joint Ventures*** - multiple independent firms establish a jointly owned separate legal entity.
- ***Alliances*** - multiple firms agree to operate in a synergistic relationship without the formality of a joint venture company.

³ For more explicit details of each mechanism see Roberts, E.B., & Berry, C.A. (1985). Entering new businesses: selecting strategies for success. *Sloan management review*, 26:3, 3-17.

- ***Venture Capital*** - a firm makes a minority investment in a young firm endowed with the required capabilities.
- ***Nurturing*** - a firm provides managerial assistance to a fledging firm along with a financial input.
- ***Educational Acquisition*** - one firm buys another, not for the purpose of keeping it as a subsidiary but for the sole purpose of learning from it.

Basically, if the venture is positioned in the first shaded area, nearest the origin of the Familiarity Matrix, the firm may be better off developing the innovation internally, since it already possesses the required competence. As the innovation moves closer to the boundaries of the zone, acquisitions and licensing should be considered as options. In the middle zone, joint ventures are the most appropriate mechanism since the firm possesses the competencies in one facet, and would therefore benefit from pooling these capabilities in a separate legal entity with another firm, familiar with the other half of the 'equation'. In this way firms can learn from each other to build the capabilities they previously lacked. When both sides of the 'equation' are new but familiar a firm should use mechanisms such as, internal venturing, acquisitions, or licensing. In the outer zone, the innovation is radical; a substantial proportion of the required capabilities do not exist in the firm. Under these circumstances the matrix suggests venture capital, venture nurturing, or educational acquisition (Roberts & Berry, 1985; Afuah, 1998). Put more simply, the further an innovation lies from the base (core) capabilities of the firm, the more the firm should look outside its boundaries for assistance (Afuah, 1998).

5. Flexible Supply Chain Architectures

Moving beyond the boundaries of the firm to collaborate with those value chain partners most competent in a particular field may appear to be the obvious strategy to secure required competencies. However, in reality many firms are unable to dismantle themselves and their relationships with their present value chain partners so as to allow for the easy reconfiguration of their structural architectures to incorporate another firm, part thereof, strategic business unit (SBU), or particular individual into an existing firm. To do this requires that firms and their value chain partners maintain flexible structural architectures that allow for any value chain component to be freely replaced or reorganized within the existing bounds while causing minimal disruption to current economic activity. However, path dependences driven by productivity gap initiatives of firms operating in stable markets often result in the development of very static inflexible and efficiency driven architectures. Consequently the establishment of flexible and adaptive supply chains is not a trivial task. It requires an understanding of the critical processes or constraints driving innovation within a value chain.

Henderson and Clark (1990) have developed a useful matrix for the classification of technological product innovations within a firm. We have adapted this to analyze innovation within value chains⁴ and the role that flexible supply chains play in high velocity markets (see Exhibit C). Within this framework there is an important distinction made between the value chain as a whole – the system – and the value chain in its parts – the components⁵ – that underscores the idea that successful chain development requires two types of knowledge. “First, it requires component knowledge, or knowledge about each of the core [competencies] and the way in which they are implemented in a particular component. Second, it requires architectural

⁴ Note that the value chain may be made of one or more components that may be located in one or more firms; the actual observable value chain structure will depend greatly upon the location of the requisite core competencies.

⁵ We define the components as a distinct portion of a business unit, firm, or value chain that embodies a core competency or design role and performs a well-defined function.

knowledge or knowledge about the ways in which the components are integrated and linked together into a coherent whole” (Henderson and Clark, 1990, 11). It is the recognition of this distinction between architectural and component knowledge, or between the components themselves and the links between them that provides important insights into the ways in which innovations in value chains may be facilitated or retarded (Henderson and Clark, 1990).

We recognize that there are many other ways that value chain innovations can be characterized, however this framework focuses one’s attention on understanding the impact that different value chain innovations have on the value of existing architectural and component knowledge within the chain. The horizontal dimension captures the impact of value chain innovations on the chain components, while the vertical dimension captures the innovations impact on the linkages between chain components. Within this matrix structural innovations of the value chain can be classified into four categories: incremental, modular, architectural, and radical; defined by their impact on the components of the firm and their impact on the linkages between components within the value chain. When value chain innovation is characterized in this manner, incremental and radical innovations become the polar extremes along an innovation continuum. Incremental innovation is efficiency driven and refines the established value chain structure and processes. Improvements occur within each component, but the component’s core competencies and linkages between the components remain unchanged. Whereas, radical innovation establishes a totally new value chain structure, design, or architecture with a new set of core competencies being embodied in each component and linked together through a new value chain architecture (Henderson and Clark, 1990). Of most concern to us however are those innovations that are modular and architectural in nature. By definition, architectural innovations are innovations involving reconfiguration of an established value chain to link existing components

together in a new way, while leaving the core competencies (and thus the basic underlying component knowledge) untouched (Henderson & Clark, 1990). These types of innovations destroy the usefulness of a firm's or value chain's architectural knowledge, but preserve the usefulness of the value chain component knowledge. A modular innovation, however, is when a component of the value chain structure is replaced whilst leaving the architecture of the value chain unchanged.

As Henderson and Clark (1990, 13) note, "the distinction between radical, incremental, and architectural are matters of degree". Through the use of this framework we are not attempting to compartmentalize value chain innovation into one of four boxes. Instead we are attempting to draw attention to value chain innovations that create value by using many existing components (and their associated core competencies) in a new architecture and thus these innovations are likely to have more significant impact on the relationships between these components than on the core competencies within the components. This is an important but subtle distinction noted here. With incremental innovation, component and architectural knowledge is enhanced incrementally, whereas with radical innovation, component and architectural knowledge is destroyed completely. However, architectural and modular innovations recognize that not all of what a firm or value chain knows may be useful or valuable, and in actual fact some of what it knows may not be useful at all and may actually be a handicap. Thus, to create value a firm or value chain needs to not only recognize what is useful and what is not, but it must also acquire and apply this requisite new knowledge when and where necessary.

Established organizations or value chains may actually find anything but incremental innovations a difficult task to achieve, as their knowledge and capabilities are usually organized and managed around the repeated tasks they perform (Cyert and March, 1963; Nelson and Winter,

1982; Prahalad and Bettis, 1986) and often result in the establishment of a dominant design or logic as organizations attempt to gain productivity advantages through economies of scale or externalities (David, 1985; Prahalad and Bettis, 1986; Arthur, 1988). Dominant designs are characterized by both a set of core design concepts that correspond to the major functions carried out by the value chain and are embodied in the value chain's components and linked by a chain architecture that defines the ways in which these components are integrated (Clark, 1985). The problem is, once a dominant design or logic establishes itself; progress is defined by incremental innovations refining and elaborating the initial set of components within a stable architecture. Thus, the emergence of a new technology or design may cause considerable confusion. Hence, understanding the evolutionary processes of value chain development can have important implications as to the types of knowledge that an organization requires when developing a new product or chain design, since an organization's knowledge and information processing capacities are shaped by the nature of the tasks and the competitive environment that it faces (Lawrence and Lorsch, 1967; Galbraith, 1973; Henderson and Clark, 1990).

Thus, established organizations or value chains attempting to establish new architectural knowledge must switch orientation from one of refinement within a stable architecture to one of active search for new solutions within a constantly changing context. While the dominant design remains viable, organization will continue to refine their specialist knowledge and rely on standard operating procedures to design and develop new products. However, once the market place becomes more volatile, a premium gets placed on exploration of new modular and architectural innovations and the assimilation of new knowledge. Historically, this has often proven to be a difficult transition for established firms. Consequently, new entrants, with smaller commitments to older ways of learning about the environment and organizing knowledge, often

find it easier to build the organizational flexibility that abandoning old architectural knowledge and building new requires (Henderson and Clark, 1990).

The following case study examines how five independently successful New Zealand wineries were able to develop a supply chain with enough adaptive flexibility to be able to continuously adapt and acquire new knowledge as the underlying business environment continually changed with increasing frequency.

6. Case Study: ‘Cellars of Canterbury’

Overview of the New Zealand Wine Industry

Wine production began in New Zealand (NZ) during the early nineteenth century; however, it was not until the early 1980’s that commercial wine production began to gain a foothold. From 1960 to 1990 the vineyard area of NZ increased by over 15 times its size and by over 31 times by 2000. During this same period wine production increased from 4.1 million liters to 59.2 million liters in 2000 (Winegrowers of New Zealand, 2000). The initial boom in the 1960’s was achieved at the expense of quality, as an indiscriminating and unsuspecting public snapped up large quantities of cheap adulterated Sherries and Table Wines (Cooper, 1984). The 1970’s brought an overall improvement in wine quality and a heavy emphasis on the production of table wines. The focus of modern day production in NZ has continued to be on quality and has tended toward export markets with 32% of NZ’s total wine production being exported in 2000.

As a result of this rapid expansion over the last half-century, competition in the domestic NZ market has increased markedly, particularly during the past decade. The number of wineries has grown substantially and now totals 358, more than double the number that existed in 1993. The greatest expansion over the past decade has come from wineries with annual sales less than

200,000 liters which represents small family owned and boutique wineries (Exhibit D).

However, the domestic market in NZ is controlled by three large corporate wine companies:

Montana Wines Ltd, Nobilo Vintners Ltd, and Villa Maria Estate Ltd.

During this same period domestic consumption of NZ wine has fluctuated widely, principally as a result of competition from imported wine. NZ wine producers have traditionally found it difficult to compete in the markets for cask, red, and discount sparkling wine which are imported at price levels below which they can be economically produced in NZ. By examining Exhibit E it can be seen that the decade's lowest level of domestic consumption of NZ wine, which occurred in 1994, inversely corresponds with the peak in imported wine. As a result the NZ wine industry has recently shifted its focus towards pursuing a more export oriented strategy (Exhibit F). Since 1997 domestic market wine sales have remained practically stagnant, indicating saturation, while export volumes have steadily increased since 1995 and now total 50% of the domestic sales by volume. However, these forces also pose a large threat to the ever-increasing number of small-scale wineries. For the most part these wineries are effectively excluded from the lucrative and largely monopolized domestic supermarket and liquor outlet markets, the two largest sellers of wine in NZ, due to the high entry and transaction costs involved. They also struggle to compete in export markets due to insufficient size and volume to complete export orders. Consequently, they are restricted to niche marketing whether that be selling wine through their own restaurants/winery stores, merging or forming an alliance with other producers, or up scaling the size of their operation, which is often financially unfeasible.

Formation of Cellars of Canterbury

Thus it was in 1996 that Dayne Sherwood, owner of Sherwood Wine Estate, found himself contemplating how to establish and develop a cooperative network of Canterbury wineries that would simultaneously promote and market the Canterbury wine producing region as well as their own individual wineries collectively under a jointly owned banner on the domestic market. He already had the ideal partners in mind but was unsure how to initiate the proceedings. It was at a Trade NZ seminar on their Hard Business Network (HBN) program⁶ that Dayne Sherwood encountered Peter Elvy, a Trade NZ consultant, and explained his idea.

Following Peter's positive response, they then proceeded to pitch the concept to four potential Canterbury winery partners; Giesen Wine Estate, Rossendale Winery, St. Helena Wine Estate, and Sandihurst Winery.⁷ They all recognized that the potential existed to exploit a performance gap initiative to capture benefits through the establishment of a cooperatively-owned market promotion business that would enable them to raise the profile of both Canterbury as a wine producing region and their individual wineries, while at the same time significantly reducing their individual promotional costs. Their initial strategy was to place one entry into each regional NZ wine fair under a collective "Cellars of Canterbury" banner, while still retaining the separate brand identities for their individual wines on the stand. This allowed them to share the attendance duties among the partners and spread the fixed costs of entry, time, and travel. To achieve this, they established a registered limited liability company, "Cellars of Canterbury," enacted a constitution for the new company and developed a set of ground rules, including a formula for entry and exit of partners. Each winery held an equal share in the business and they

⁶ The NZ trade development board (Trade NZ) established a business development program aimed at encouraging the formation of hard business networks (HBN) between individual companies and promoted it at various events. Their rationale was that if businesses were prepared to cooperate together they could compete more successfully in the international market place.

⁷ For details of individual wineries see Appendix A

maintained a completely 'flat' business structure meaning they all had equivocal voting rights and nobody was assigned to any specific duties. This initial organizational structure provided a stable balance between rigidity and flexibility as will become apparent.

Along with the collective promotion strategy, they employed an external wine consultant to monitor and improve the quality of wine produced by each winery and made regular tours of each other's vineyards and wineries. These gatherings not only provided a joint learning opportunity for the transfer of tacit knowledge and core competence development in wine production, it also provided an opportunity for the partners to pursue additional performance gap initiatives; Rossendale and Sherwood purchased a bottling plant together, partners traded fruit with each other and shared storage facilities.

These gatherings also allowed for opportunity gap initiatives to be explored, such as, selling 'six-packs' that contained a range of their wines by mail order and developing some small export trade relationships with distributors in Canada, Cook Islands, Fiji, Falkland Islands, Hong Kong, India, Rarotonga, and Sri Lanka. These were not ideal markets to enter but the options were limited by the inflexibility of the previous exclusive arrangements some of the wineries had developed with distribution agents in the more attractive UK and USA markets. However, they did provide an opportunity for St Helena and Sandihurst to gain experience exporting which they had previously not attempted.

Operationally 'Cellars of Canterbury' presented buyers with an order form that included all of the wines produced by each of the individual wineries. Prices included an additional commission fee which went to the 'Cellars' company so wines were in fact more expensive than if purchased directly from the winery. As Peter Elvy (2000) indicated, "this system appealed to

the small distributors they dealt with, since by dealing with just one company they were presented with a multitude of wines to select from, a whole wine list in fact”.

The joint venture operated in this manner for the 1996/1997 wine season and proved very successful at raising the profile of Canterbury wine in NZ and in particular the ‘Cellars of Canterbury’ name. However the public failed to grasp the concept of what ‘Cellars of Canterbury’ stood for and the individual wineries had somewhat lost their individual identities beneath this collective banner, as the public would arrive at shows looking for the individual brands unable to find them because they were all within the ‘Cellars’ tent.

Local Market Focus

Consequently, the directors of ‘Cellars’, who were also the owners of the individual wineries, felt they had sacrificed some of their own individual brand equity in their effort to establish the “Cellars of Canterbury” brand. In an endeavor to re-establish the strength of their individual wine labels, they changed their strategic intent and re-focused the organizations efforts on securing a stronger position on the wine lists of licensed restaurants in the local Christchurch City market. They had identified an opportunity gap for new market development that required taking their base product and releasing it into a new but familiar market. Since the necessary marketing competencies were beyond the boundaries of the firm, they employed a specialist salesperson on a commission basis to develop this market.

This action was particularly significant in the evolution of ‘Cellars of Canterbury’ since they not only performed a modular innovation, but by reorganizing the existing resources of the individual wineries they effectively performed an architectural innovation in creating a separate supply chain that could operate in parallel with their existing private enterprises. The existing

wineries still supplied their respective private markets but now they also had a supply chain capable of delivering product into the market under the 'Cellars of Canterbury' banner.

Previously they were simply combining their promotional resources, however, now they had a completely independent and interactive supply chain in operation.

The local salesperson performed well and it was not long before the wines of the 'Cellars of Canterbury' partners could be found in many dining establishments of Christchurch City. An appealing attribute of the 'Cellars' organization was the variety of wines they could offer a restaurateur. By dealing with just one vendor, with one wine list, the restaurateurs were confronted with a selection of 30 or more wines from which to choose from. However, market preferences were changing and among their list of wines there was one particular style, Marlborough Sauvignon Blanc, which they could not provide that was becoming of ever increasing importance to maintain market share and enter new markets in the future. This placed increased pressure on 'Cellars' to respond to the changing market demands.

Addition of Morworth Estate

By September 1998, Sandihurst winery had decided that the path that 'Cellars of Canterbury' was beginning to follow did not match their initial expectations or desired destiny, hence, they requested permission to exit the organization. This did not cause any problems for 'Cellars', as a formula for exit and entry had been developed at the time of establishment should such circumstances arise. Having an exit strategy in place was particularly important, as it allowed the organization to easily perform a modular innovation and simply replace the Sandihurst component of their supply chain while retaining the overall integrity of the organizational system. The issue then became identifying a suitable replacement component that would provide

the most valuable set of complementary core competencies and resources to the system. During the preceding months numerous parties had enquired about the possibility of joining ‘Cellars of Canterbury’. Among the enquiring parties were a large winery from the Waipara sub-region of Canterbury and a joint syndicate of very small vineyards⁸. However, of the interested parties, it was Morworth Estate, a winery smaller than any of the existing members, whose mix of core competencies and resources, were most appealing to ‘Cellars of Canterbury’. In particular, the owner, Chris Morkane, was also managing director of ‘Gardener Smith’, a large Australian commodity trading company, thus he brought a wealth of international business and export trading experience to the table. They offered the share to Morworth, who promptly accepted the invitation and the modular innovation or component swap was completed.

Joint Vineyard Purchase

As the markets for each of the individual wineries wine grew, they experienced an ever-increasing demand for Marlborough Sauvignon Blanc, which by this time had gained profound recognition both domestically and internationally.⁹ Recognizing the vital importance of Sauvignon Blanc to the success of their wineries, Sherwood and Giesen both completed modular innovations, purchasing Sauvignon Blanc vineyards in Marlborough to secure additional supply. As opposed to following suit and purchasing vineyards, the other wineries decided instead to contract with Giesens for their Sauvignon Blanc grape and wine requirements. Giesens thus by default became the key Sauvignon Blanc supplier for the group, as they had the largest supply available. However, as orders grew they began to find it ever more difficult to meet the group’s

⁸ This would have meant that one person represented 6-8 wineries who collectively held a one fifth share in ‘Cellars of Canterbury’, which understandably presented an undesirable situation.

⁹ NZ has won the Silverado Trophy for the best Sauvignon Blanc at one of the world’s most prominent wine competitions – The International Wine and Spirit competition – nine times since it was first established 11 years ago.

requirements, whilst still covering their own needs and obligations. A more permanent arrangement was required.

So in November 1998, literally only weeks after the addition of Morworth Estate to the cooperative, the directors undertook another modular innovation purchasing two separate 36 and 20 acre lots of fully grafted, crop holding, Marlborough Sauvignon Blanc vineyards. This was quickly followed by the purchase of an additional 20 acres. The land purchases were made under a newly registered company name “Cellars of Marlborough”¹⁰. At the time many of the wineries did not have the financial capacity to support this transaction from private resources; however by acting together through ‘Cellars of Canterbury’, they were able to secure the necessary debt financing to support the purchase. The jointly owned vineyards were then subdivided into five separate titles to maintain the provisions of their exit strategy. By completing the modular innovation of purchasing the vineyards, ‘Cellars’ had addressed both a performance gap in their operations by improving the quality/price conditions of their Sauvignon Blanc and an opportunity gap in their marketing by relaxing the Marlborough Sauvignon Blanc procurement volume constraints they previously faced.

This decision, however, meant that ‘Cellars of Canterbury’ suddenly went from a group of five companies trying to build their brands collectively, with a monthly contribution of \$540 per month to keep their office open, to a capital asset owning company which required payments of \$6000 per month per winery to support the maintenance and management of their new collectively owned vineyards. This forced ‘Cellars of Canterbury’ to reevaluate the performance

¹⁰ At the same time they registered a further ‘shelf’ company, “Cellars of Hawkes Bay” with the thought in mind that they may one-day purchase vineyards in this region to provide access to the heavy red wine varieties that can be produced in this area.

gap in their chain structures and under take a series of architectural and modular innovations. They agreed that the fruit from the jointly owned vineyards would be crushed to juice on contract in the Giesens' plant in Marlborough then trucked to Canterbury and evenly split five ways between the company partners. They would each buy their share from the 'Cellars of Marlborough' company at market value and spread this cost over a 12-month period (the same \$6000/month), this way the company could fund the maintenance and management of the vineyards under contract and meet the interest cost of financing. With all the added transactions and extra administrative work involved it became time for Peter Elvy to step aside and for 'Cellars of Canterbury' to begin leasing their own office and employing a part-time administrator. The option was also available to put this work through the office of one of the partner's wineries, however, they all agreed that it would be better to incur the extra cost of duplicating these resources in order to keep this side of the business independent.

International Promotion

By the end of 1998 'Cellars of Canterbury' felt the local market opportunities had been exhausted. The local salesperson had done a good job domestically marketing the individuals' wines, however, the domestic market was becoming increasingly more competitive, the number of suppliers was increasing rapidly and overall demand for wine was stabilizing. Further expansion of market share within the domestic market place would require them replacing the wine of another producer on restaurant wine lists, and sooner or later they could just as easily be replaced themselves. Entering the supermarket trade was not a viable option for the smaller members of 'Cellars' either, as the cost of retaining shelf space made the profit margins too narrow. The cost of servicing the small orders they were receiving from restaurants throughout

NZ was also becoming too great. Hence, they needed to locate larger volume markets for their products.

Thus, a decision was made to change the strategic intent of the organization. They identified an opportunity gap whereby they would focus their efforts internationally and expand the export trading side of their businesses. The European wine market was identified as the logical setting since the wines of the new world were gaining popularity in this region. Once again they initially pursued a productivity gap approach by entering some high profile promotional events, such as, the Vin Expo in Bordeaux, the London wine trade fair, and various other wine tasting events throughout the United Kingdom under the “Cellars of Canterbury” banner. This realized the same savings of fixed costs as before, however, since this time they were entering an unfamiliar marketplace, to gain access to the requisite core market knowledge and competencies, the wineries individually contracted distribution agents to represent their wine labels within each foreign market. This strategy revealed varying levels of success for each partner, predominantly based on the caliber of the agent and the priority of their wine within the agent’s portfolio. By aligning themselves with these independent distribution agents, often with agreements for exclusivity in place, they had effectively given up control of the retail end of their supply chain. This left them in an almost helpless position when their agents were not moving the volumes that the Cellars members desired for their individual brands. To further complicate matters, the laws of brand equity in some countries required that firms wishing to break their exclusive agency or brokerage contracts are required to reimburse the agent for the present value of the brands future market earnings that they had assisted in developing. This can be an extremely expensive proposition if the market was developed from scratch.

After the mediocre results of their market entry strategy into Europe, ‘Cellars of Canterbury’ enacted yet another change to their strategic intent, refocusing their efforts on the United Kingdom (UK) and rapidly expanding United States (US) marketplaces. In doing so they initiated a series of modular and architectural innovations. Both of these markets required a volume wine label, hence they created a generic “Cellars of Canterbury” wine label in the super premium range. An internationally renowned wine maker was contracted to produce a series of three super premium wines under the “Cellars of Canterbury” label for these two markets. They also enlisted the competence of a specialist international sales and distribution agent, employed on a commission basis. Within three months, the salesman had secured distribution outlets in both the UK and US markets. In the UK ‘Cellars’ were aligned directly with a retailer, who happened to be one of the largest wine importers into the UK. In doing so they cut out two middlemen from the supply chain, providing significant savings for ‘Cellars’ and allowing them to be far more price competitive on the retailer’s shelf. The UK retailer’s familiarity with the international winemaker’s reputation also provided an important implicit guarantee about Cellars of Canterbury’s integrity and legitimacy. Thus, by performing a modular innovation to their supply chain they replaced the local salesperson with an international salesperson and transformed what was a domestic supply chain into an export supply chain to deliver product into the two largest export markets for wine in the world. The flexible architecture of their supply chain allowed this conversion to be performed in an almost costless, efficient manner. The decision to internalize this function as the means to capture and control the required competencies is in keeping with the guidelines of the Familiarity Matrix when entering unfamiliar markets, unlike the ‘arms length’ transactions with independent agents that ‘Cellars’ had previously used.

The above analysis of ‘Cellars of Canterbury’ presents an empirical case about how a firm can successfully develop a flexible supply chain architecture that reduces the rigidities of a dominant logic thereby facilitating the continuous process of modular innovations (swapping of components) and architectural innovations (restructuring of chain relationships) as the underlying market conditions and thus firm’s strategic intent change.

7. Conclusion

How can firms create and capture value in highly volatile markets is a major issue currently confronting many firms within the agricultural sector. This paper develops and applies a theoretical framework to analyze the role and use of flexible supply chains in achieving value creation to a case study of ‘Cellars of Canterbury,’ a wine marketing and distribution cooperative in New Zealand. Viewing the evolution of this firm through this conceptual framework goes some way to explaining what at first may appear to be random changes and choices of strategic direction. In summary, the framework depicts a process whereby: growth begins with a streamlining of the current business to provide funds to exploit the opportunity gap. Maximizing the opportunities presented to a firm requires the setting of a strategic intent. Realizing a strategic intent requires that a firm identify, cultivate, and exploit core competencies. However, core competencies can be task specific and may not provide a perfect match to the new product/market. They can also act as core rigidities and restrict a firm from successful innovation. Cultivating new competencies from ‘scratch’ can take many years, therefore, the optimal way to build the required new competencies, may be to acquire them from another firm or individual already endowed with the desired capabilities. The mechanism used to do this, generally depends on how far the opportunity lies beyond the current firm boundaries. Choice of

the correct entry mechanism reduces the risk of failure and maximizes gains to the existing business.

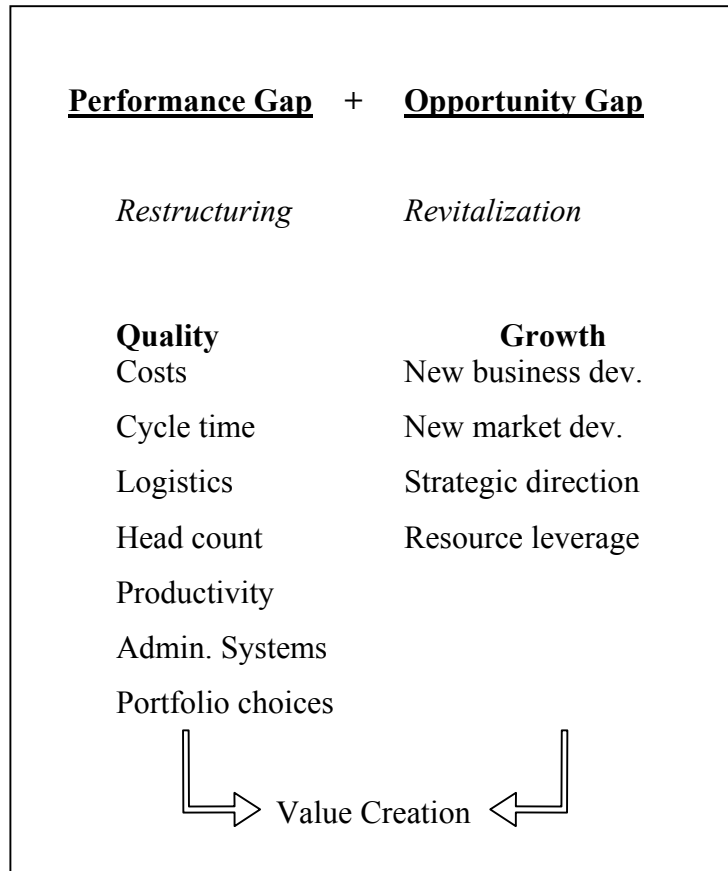
By approaching firm growth and strategic decision making through this framework it is easy to see how cooperation between firms relates back to value creation and growth. ‘Cellars of Canterbury’ have shown time and again how they have been able to propel the firm in a new direction by shifting their strategic intent and leveraging their resources against the competencies of others by forming mutually beneficial business relationships. It is clear that if ‘Cellars of Canterbury’ had attempted to keep all activities in house that it would not have been possible for them to advance as they have. By reaching beyond the firm to source particular skills through a flexible supply chain architecture they have avoided the concern of core rigidities and sped the process of evolution of this firm, which now has a much more robust form and function than its initial format. Moreover, the individual’s private entities have grown and prospered in conjunction with the co-operative.

References

- Afuah, A. (1998). *Innovation management*. Oxford, NY: Oxford University Press.
- Arthur, B. (1988). Competing technologies: an overview. In Giovanni Dosi et al. (eds), *Technical change and economic theory*, 590-607. NY: Columbia University Press.
- Barney, J.B. (1996). *Gaining and sustaining competitive advantage*. NY: Addison-Wesley.
- Bettis, R.A., & Prahalad, C.K. (1995). The dominant logic: retrospective and extension. *Strategic Management Journal*, 16, 5-14.
- Boehlje, M. (1999). Structural change in the agricultural industries: how do we measure, analyze, and understand them? *American Journal of Agricultural Economics*, 18:5, 1028-1041.
- Burton-Jones, A. (1999). *Knowledge Capitalism: Business, Work, and Learning in the New Economy*. Oxford: Oxford University Press.
- Clark, K. B. (1985). The interaction of design hierarchies and market concepts in technological evolution. *Research Policy*, 14, 235-251.
- Cooper, M. (1984). *The wines and vineyards of New Zealand* (1st ed.). Auckland, N.Z: Hodder & Stoughton.
- Cyert, R.M., & March, J.G. (1963). *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.
- David, P.A. (1985). Clio and the economics of QWERTY. *American Economic Review*, 75, 332-337.
- Elvy, P. (2000). Personal Communication, December, 2000.
- Galbraith, J. (1973). *Designing Complex Organizations*. Reading, MA: Addison-Wesley.
- Hamel, G., & Prahalad, C.K. (1989). Strategic intent. *Harvard Business Review*, 89:3, 63-75.
- Henderson, R.M., & Clark, K.B. (1990). Architectural innovation: the reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly*, 35, 9-30.
- Lawrence, P.R., & Lorsch, J.W. (1967). *Organization and Environment: Managing Differentiation and Integration*. Homewood, IL: Irwin.
- Leonard-Barton, D. (1992). Core capabilities and core rigidities: a paradox in managing new product development. *Strategic Management Journal*, 13, 111-125.
- Lorenzoni, G., & Lipparini, A. (1999). The leveraging of interfirm relationships as a distinctive organizational capability: a longitudinal study. *Strategic Management Journal*, 20, 317-338.

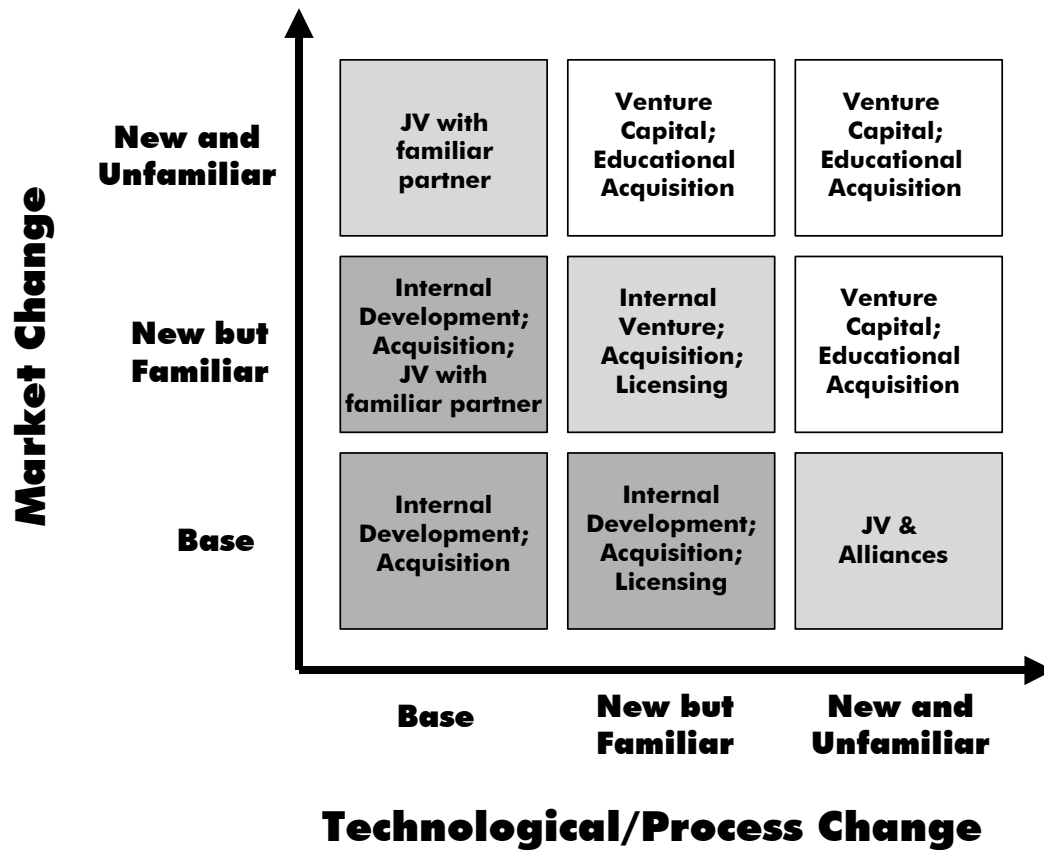
- Nelson, R., & Winter, S. (1982). *An Evolutionary Theory of Economic Change*. Cambridge, MA: Harvard University Press.
- Prahalad, C.K. (1993). The role of core competencies in the corporation. *Research/Technology Management*, 36, 40-47.
- Prahalad, C.K., & Bettis, R.A. (1986). The dominant logic: a new linkage between diversity and performance. *Strategic Management Journal*, 7, 485-501.
- Prahalad, C.K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 90:3, 79-90.
- Roberts, E.B., & Berry, C.A. (1985). Entering new businesses: selecting strategies for success. *Sloan Management Review*, 26, 3-17.
- Schumpeter, J.A. (1942). *Capitalism, Socialism, and Democracy*. Cambridge, MA: Harvard University Press.
- Sonka, S. (2000). Challenges in Managing the business. *Paper presented at the AAEA Pre-conference workshop "Policy Implications in the Changing Structure of the Food System."* Tampa Bay, FL, July 29, 2000.
- Teece, D.J., Pisano, G., Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18, 509-533.
- Winegrowers of New Zealand. (2000). *The BNZ wine and grape industry statistical annual, 2000*. Auckland: Winegrowers of New Zealand.

Exhibit A: Aspects of Value Creation



Source: Prahalad, C.K. (1993).

Exhibit B: The Familiarity Matrix



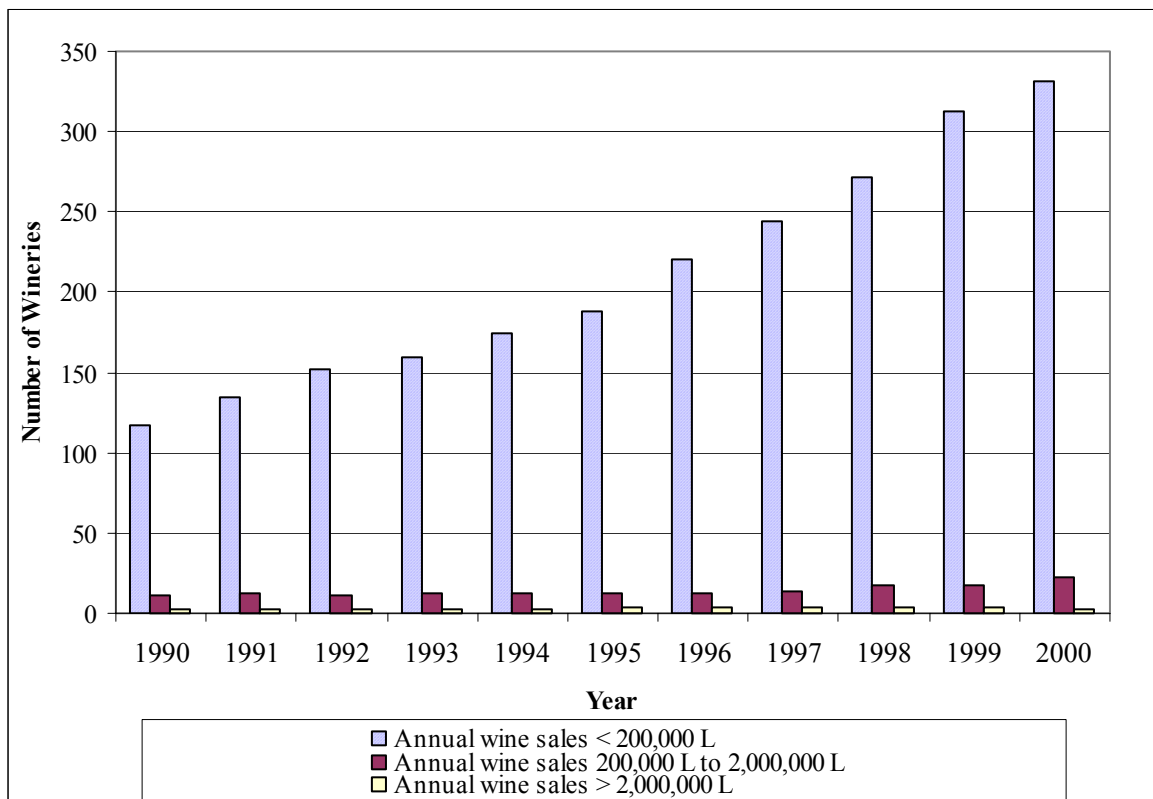
Adapted from Roberts, E.B., & Berry, C.A. (1985).

Exhibit C: A Framework for Understanding Innovation

		<i>Components</i>	
		<i>Unchanged</i>	<i>Changed</i>
<i>Linkages between Components</i>	<i>Unchanged</i>	Incremental Innovation	Modular Innovation
	<i>Changed</i>	Architectural Innovation	Radical Innovation

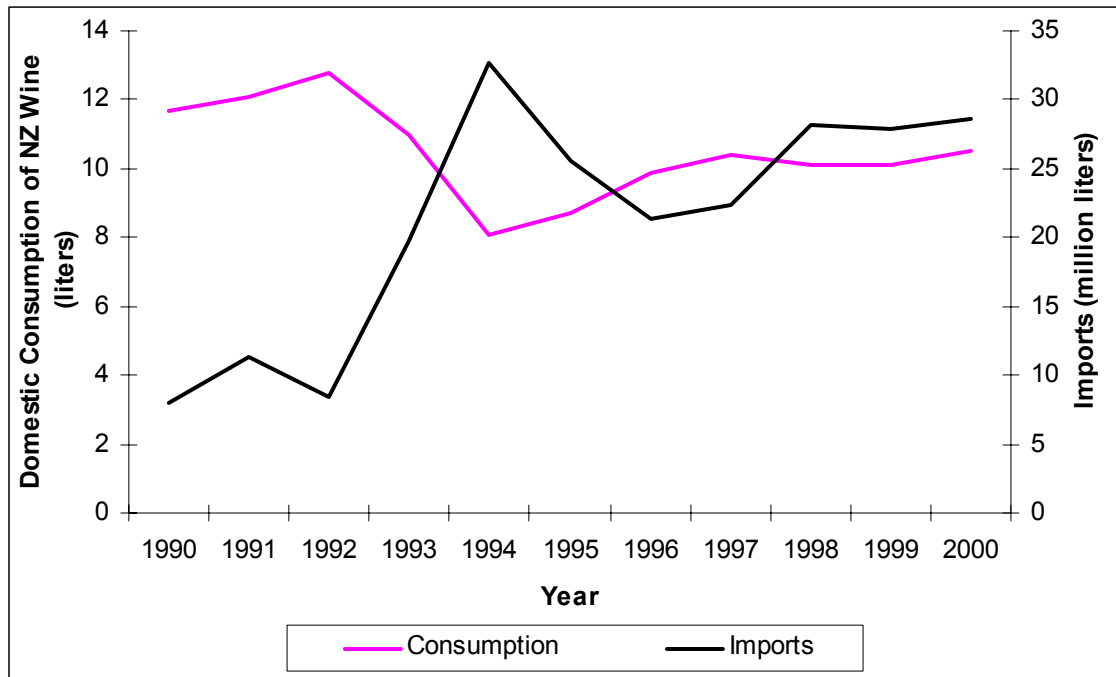
Adapted from Henderson, R.M. and Clark, K.B. (1990).

Exhibit D: New Zealand Wine Industry Structure 1990-2000



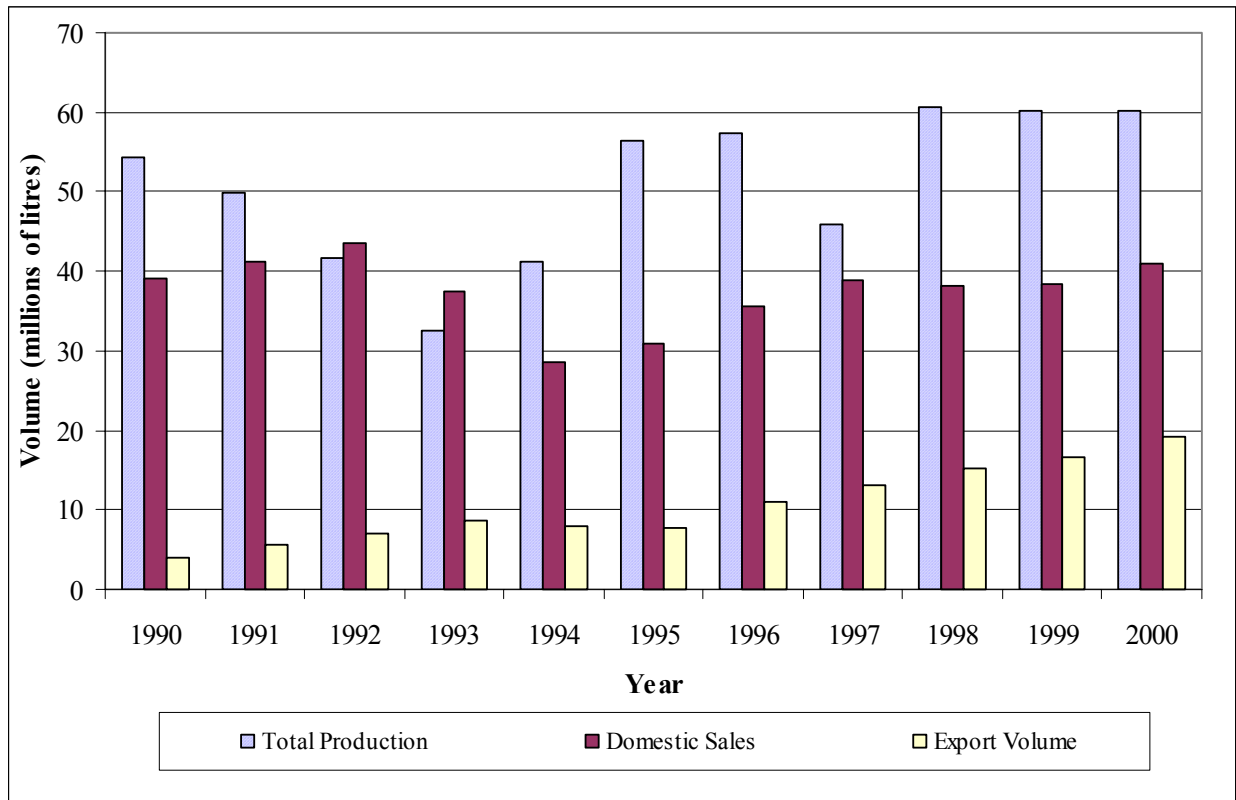
Source: Winegrowers of New Zealand. (2000).

**Exhibit E: Consumption per Capita of NZ Wine against
Volume of Wine Imported**



Source: Winegrowers of New Zealand. (2000).

**Exhibit F: Annual Production, Domestic Sales, and Exports
of New Zealand Wine (by volume)**



Source: Winegrowers of New Zealand. (2000).

Appendix A: Description of the ‘Cellars of Canterbury’ business partners’ private entities

Giesen Wine Estate

The Giesen Wine Estate is the largest wine producer in the Canterbury region. The three Giesen brothers emigrated from the wine-growing region of Rheinpfalz, Germany in 1980. They established their original 18-hectare vineyard in Canterbury in 1981. They now own 30 ha of vineyard in Canterbury along with a further 64 ha in Marlborough and lease additional Marlborough vineyards to procure the 2,000 tonnes of grapes they are set to crush in the 2001 harvest. Initially they focused on production for the local Christchurch market but have since expanded this to encompass the remaining domestic market in New Zealand and have been exporting since 1987. They currently supply markets in the USA, Canada, England, Germany, Denmark, Asia, Australia, Tonga, and Fiji. Their principal wine varieties are Sauvignon Blanc, Chardonnay, Riesling, and Pinot Noir.

St Helena Wine Estate

St Helena, a family owned operation headed by Robin Mundy was the first commercial winery established in Canterbury and dates back to 1978. Before entering the wine and grape industry, the Mundy’s were large vegetable producers in Canterbury and have a long history in agricultural production. Approximately 250 tonnes of grapes are cropped from the existing 24 hectares of vineyard in Canterbury with another 4 hectares recently planted yet to come into production. A further 150 tonnes of fruit was purchased from the Marlborough region in 2000 to produce a total of 30,000 cases of wine, the aim is to bottle and sell 45,000 cases from the 2001 vintage. Marlborough Sauvignon Blanc is the principal product followed by Canterbury Pinot Noir. Up until 1996 St Helena concentrated solely on the domestic market but was introduced to

exporting through their involvement in 'Cellars of Canterbury' and now service markets in the UK and USA.

Sherwood Estate Wines

Sherwood Estate, owned by Mr and Mrs Dayne Sherwood produced its first wine in 1990. They now own 25 hectares of vineyards between Canterbury, the sub region of Waipara, and Marlborough, and contract for a substantial amount more fruit to produce their annual production of 17,000 cases of wine. Dayne himself has a business degree and worked for a chartered accountant before obtaining a postgraduate diploma in viticulture and oenology and setting up his own winery. Sherwood Estate operates a restaurant as a sideline but has always exported 80-90% of their production. Their principal varieties are Pinot Noir, Sauvignon Blanc, Chardonnay and Riesling.

Rosendale Wines

The first Rosendale wine was produced in 1993. The winery forms just part of the Rosendale enterprise, which comprises a restaurant, and a beef production and export operation. The proprietors, Brent and Shirley Rawstron became interested in wine as a complement to their beef exports to Germany in the late 80's. They both gained postgraduate diplomas in viticulture and wine making from Lincoln University and now have 4 hectares of vineyard on their 140-hectare property in Canterbury. They employ a professional wine-maker to process their annual production of 6000 cases, half of which is sold through their private restaurant. The remaining produce is sold through local Christchurch markets, and export markets in the UK and Germany. Their principal varieties are Pinot Noir, Chardonnay, and Sauvignon Blanc.

Morworth Estate

Morworth Estate bought into the 'Cellars of Canterbury' cooperative on the departure of Sandihurst Wines, one of the original partners. Morworth Estate, a family owned winery was established in the mid 90's and has been amidst a phase of expansion ever since. They crushed 100 tonnes of grapes in the 2000 vintage and are set to increase this to 140 tonnes in 2001. Chris Morkane, the head of the family is managing director of Gardener Smith a large Australian commodity trading company and thus has a long history in export trading and international business. He has applied this knowledge to the family winery, which presently exports 75% of its production. They have also recently built a restaurant at the site of their vineyard and winery in Canterbury.