

# STRATEGIES FOR SUSTAINING MANUFACTURING COMPETITIVENESS: CASE STUDIES OF AUSTRALIAN FIRMS

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## ABSTRACT

This study investigates the strategies adopted by Australian manufacturing firms to sustain their local production and competitiveness, including during the period of the recent global financial crisis. Six Australian manufacturing organisations in different sectors were selected and analysed using the market-based and resource-based views, and components of the DRAMA framework. The findings highlight several factors and company efforts to sustain manufacturing operations. These organisations pursued a range of manufacturing strategies to enable distinctive offerings in the marketplace and used various ways to differentiate themselves. This was possible through the portfolio of capabilities that determine their continued production and business performance over the period. This study provides important lessons for managers in manufacturing organisations and demonstrates how differing capabilities and strategies of firms can impact the competitiveness of local production, not only in times of economic crisis but also in the long run to sustainable competitiveness in the future.

## 1. INTRODUCTION AN OVERVIEW OF AUSTRALIAN MANUFACTURING

The Australian economy depends significantly on its manufacturing sector. Over many decades, manufacturing continued to be the dominant source of technological innovation in the business sector, such as in pharmaceuticals, biotechnology, scientific instruments and aerospace manufacturing. Trade in manufactured goods accelerated much faster than in primary commodities when considering reduced barriers to trade, rising incomes and increasing globalisation (OECD 2009). Despite the structural changes within the economy over the years, coupled with globalisation and developments internationally that have impacted on the sector, Australia's GDP has continued to depend heavily on manufacturing. The sector is a significant provider of employment and a source of export revenue for Australia.

A key issue that is often raised is the declining relative contribution of manufacturing to the Australian economy over the past fifty years, as services have emerged as an important sector. This characteristic is consistent with the pattern in many other countries and a common feature of long-term economic development. According to the Australian Productivity Commission, "The structural changes associated with these developments has meant that developed economies are becoming.... increasingly weightless, with economic power relying more on the exploitation of knowledge and services, rather than the capacity to manufacture things, dig them up or grow them" (Commonwealth of Australia 2003, p. xxi). The Australian manufacturing sector has consequently increased the focus on export orientation and intra-trade with products (import and export of similar products) such as automotive parts, pharmaceuticals, and wine to maintain its competitiveness.

## 2. MANUFACTURING STRATEGY OF AUSTRALIAN FIRMS

Hayes and Wheelwright (1984) define manufacturing strategy as consisting of a sequence of decisions that, over time, enables a business unit to achieve a desired manufacturing structure, infrastructure, and set of specific capabilities. Skinner (1996) introduced the “Manufacturing in Corporate Strategy” (MCS) theory which relates to ‘designing manufacturing systems for purpose’. MCS deals with the most important dilemma inherent in managing manufacturing organisations that includes the costly manufacturing system as well as risk in capital, size, and location. However, it is time consuming to change these factors and in order to produce outputs that satisfy the market, the manufacturing system needs to keep abreast of the rapidly changing economics, competition, technologies and government policies (Skinner, 1996). Manufacturing capabilities are an indispensable source of competitive advantage. Cheng and Bennett (2006) highlight the importance of an organisation’s core capabilities such as corporate culture, managerial, operations and marketing that have a strong relationship with performance compared to ownership or restructuring.

The recent concerns about Australian manufacturing competitiveness appeared in the 1990s. Samson and Ford (2000) compared Australia against its neighbouring country New Zealand, and found that New Zealand appears to be significantly ahead in manufacturing practices and performance. According to the authors, lack of labour market flexibility was the main barrier for Australians, allowing New Zealand firms to perform better in managing people, leadership, and quality management factors, despite the similar culture and histories of the two countries. When globalising their operations, Australian firms have found more difficulty operating in different business environments and dealing with different cultures than could be anticipated even in places like Britain (Fenwick, Edwards, Buckley, 2003). For these authors, Australian managers underestimate the actual differences between the Australian and British way of doing business. Kayis and Kara (2005) show that Australian firms have changed their global supplier base very little in a 5-year period. A slight increase in the number of customers has taken place in the same period, which causes these authors to find that the supplier and customer relationships need improvement in Australian firms. Schoenherr (2010) conducted a multi-country survey and found that for 63.3% of Australian companies their most important supplier was international. This figure is considered low when compared against other countries like Austria, China, and Taiwan; although of a similar level to Germany and Ghana. With regard to performance objectives of manufacturing systems, Karim, Smith, and Halgamuge (2008) identified the main competitive objectives of Australian manufacturing firms. In a survey, 165 responses indicated that product quality and reliability are the main attributes for manufacturing competitiveness while price was rated as a less important factor.

Singh, Smith, and Sohal (2005) have suggested that the automotive industry should acknowledge the complexity in their supply chains. They say that despite of the success of the automotive industry in Australia, this sector need to address a number of structural weaknesses. In a broader scope through a large-sample survey, Challis, Samson, and Lawson (2005) found that Australian and New Zealander firms that have given priority to ‘softer’ human aspects have achieved better manufacturing performance.

## 3. METHODOLOGY

The study described in this paper adopted an exploratory qualitative approach to investigate factors contributing to the survival and continued competitiveness of manufacturing organisations in Australia. Qualitative methods emphasise the value of individual experiences and views, as encountered in real-life situations (Bygrave, 1989). The case study research strategy was adopted because it is exploratory in nature and accommodates better the investigation of complex and contemporary events (Yin, 2003). The study incorporated components of the DRAMA framework (Decision Rules for Analysing Manufacturing Activities) devised by Bennett and Forrester (1990). Six manufacturing organisations were selected based on purposive sampling. These included 4 companies in the Adelaide region and 2 in Melbourne where managers involved in manufacturing and operations were interviewed. The visits were all undertaken in November and December 2010. Interviews were recorded and transcribed as well as written notes being taken. Unstructured interviews were held with managers and also employees in some of the organisations.

It was felt that responses from different perspectives could provide greater depth and quality when writing up the case study. When analysing the data, emerging themes were clustered together. Data analysis involving data reduction and verification were undertaken throughout the duration of the study (Miles and Huberman, 1984).

#### 4. FINDINGS & DISCUSSIONS

##### 4.1 Background to the case studies

The six organisations involved in the in-depth case study research comprised firms from various sectors. All are involved in manufacturing operations, but with widely different products. To maintain the confidentiality of firms, they have been labelled as Firms A-F. Table 4.1 shows a profile of the firms involved in the case studies.

Table 4.1 - Profile of the Australian organisations studied

Firm	No of Employees	Organisation Structure	Years in operation	Products
A	23	Single privately owned business	17	CNC machined parts
B	250	Single privately owned business	162	Wine
C	328	Subsidiary of a multinational corporation	91	Automotive components
D	29	Subsidiary of a multinational corporation	54	Automotive components
E	50	Single privately owned business	32	Food products
F	100	Subsidiary of a multinational corporation	72	Paper-based products/stationery

##### 4.2 Market-based Factors

Prior research by Segarra and Callejón (2002) on manufacturing firms in Spain during times of market turbulence shows that industries with large investment costs such as those with economies of scale and natural resources tend to be less affected compared to other industries. This could relate partly to the diversification strategies adopted by Firms B and F. Firm F, the paper manufacturer, managed to maintain production at a sufficient level. This was through the accumulation of capital assets and machinery over the years, which allowed it to diversify and expand the product range.

However, Company F manufactured paper stationery products primarily for the local market and exported very little. The managers were optimistic about sustaining production levels since the brands represented 'Australian made' products which gave consumers confidence of quality stationery despite minimal barriers to entry for stationery products by competitors. Similarly Firm B, the large wine producer, invested considerably in wine production equipment and packaging machinery so consequently was able to produce large volumes at a very low cost per unit. It could diversify wine products using consumer and market research and by offering different vintages, varieties and blends of wine to sustain its market share. For instance, the introduction of particular Pinot Grigio and Cabernet Sauvignon blends for export markets provided an everyday affordable wine for UK and other European consumers during the economic crisis. This strategy was based on careful market analysis and developmental work by its winemakers to cope with the economic turmoil. The only barrier to entry in the UK and European markets was the large retail supermarkets' choice of wine and fixed price points. However, the manager indicated that they were facing competition from wine producers in Chile and Argentina, who were also exporting to the same regions. This leads to another important factor that impacts market conditions for these firms: changing consumer purchase patterns during periods of economic downturn. Changes to their perceptions of the value of lower-and higher-priced products may fundamentally alter what consumers (and retailers) choose to buy. One manager felt that firms producing packaged consumer products tend to be more

affected than those producing commodity or industrial products. The shift of most consumers away from more expensive products is a widespread trend. The food manufacturer (Firm E) reiterated the trend towards evolving manufacturing strategies based on consumer dynamics and how well positioned their products need to be for recovery.

Another area most frequently mentioned during the interviews with managers was the competitiveness of China and impact on markets. For instance, Firm D moved most of its Australian manufacturing to China in 2005 for cost reasons, which resulted in a huge downsizing of the local operation. One manager interviewed indicated that China has been experiencing a process of capital accumulation including new technologies and new production equipment, which makes it hard for Australian firms to compete against Chinese ones. The managers in Firms C and E stressed how low wages have been contributing significantly to China's manufacturing competitiveness. However, labour productivity is low and affecting the quality, and ultimately the confidence in products produced there, which made these factors become issues of concern for the food manufacturer. On the other hand, the general manager in Firm F saw China's increasing labour costs as a trend that would create issues for most suppliers located there.

### **4.3 Resource-based factors and Performance objectives**

#### *Quality Performance*

Quality is a major performance objective for many the companies, especially when operating in periods of recession. Firm A (CNC machining) strives to provide both product and service quality to its customers. According to the owner, the company could beat the competition from China on customer service and quality, but not on price. In Firm B, the main strategy for overcoming competition in the wine industry is to develop new varieties of wine and sell these to customers. It had taken 27 years for the company to establish its position in the market as a producer of good quality wine. Firm C focuses on manufacturing quality automotive brakes and is the sole supplier to Toyota in Australia. As a food product manufacturer, Firm E ensures quality ingredients from its suppliers to meet quality standards, where food specifications, plate, and bacteria count are all important. Most of Firm E's suppliers are located in Europe and their Quality Assurance staff occasionally visit these suppliers' premises to ensure compliance with standards. The business sees its manufacturing operations as value adding in food products, especially in their patented process of manufacturing cylindrical rolls of seasoned stuffing for chickens. In Firm F, the strengths of the business lie in its service capabilities from a distribution perspective, its brands, its local manufacturing, environmental practices, and customers' willingness to pay a premium for quality Australian-made products. Another important aspect of its strategy is the integrated service offering to customers, which provides a broad range of quality services and products.

#### *Speed of Delivery*

With regard to speed of delivery as an operations strategy, Firm D assesses what can be delivered in terms of value and being on time. In the 1990s the company had a reputation for performing excellently in the manufacturing area with Just-in-Time competencies. Firm A also emphasises quick delivery, but with the approach of timely response being in line with the "Just-in-Case" (JIC) system, rather than the "Just-in-Time" (JIT) system. It represents the long-term planning of supplies and the active role inventory plays in the process. While JIT is based on a more horizontal hierarchy, which consists of strong cooperation and interaction between workers, and workers' initiative, teamwork and multi-functionality, JIC may imply a rigid, vertical hierarchical structure, requiring workers to specialise (Alfasi and Portigali, 2004).

#### *Dependability*

Dependability was also found to be a key strategic objective. In Firm E, although there are minor issues with the shelf life of products, the firm is considering moving away from 3-shift, 24-hour production and investing heavily in more machinery to run parallel production instead. This method of running two production lines concurrently is more reliable and avoids problems with machine wear and breakdowns.

The idea of parallel production runs is more cost effective when considering the premium paid in salary for night shifts or overtime labour. Furthermore, there is less start up time and more scope for continuous runs. Most machinery and equipment are sourced from overseas, particularly from China because of its lower cost. The manager appreciated the lower quality of such machinery and equipment compared with that from traditional suppliers in Germany and Australia, but explained that the business needed to survive using inferior machines because the high quality machine manufacturers had gone out of business competing with their Chinese counterparts. Firm C on the other hand formally adopted quality systems and lean production methods to ensure its provision of expected service to their customers.

### *Flexibility*

Improvement of flexibility was found to be an important capability for competing during the financial crisis. Firm E's operations and strategy was affected by the economic downturn and it had to change the product mix and increase the volume of products for lower end prices (rather than high end prices such as exotic products). Although volumes had increased, the value was still lower – but this strategy managed to sustain the business. This was an effective move since the recession badly affected high end food producers and restaurants. Apart from the manufacturing operations, Firm E has also diversified and maintains a relatively small retail function in the business selling other dry food products. This is based on their prior established relations and ability to purchase direct from manufacturers, and therefore the ability to sell at competitive prices. The strategy for Firm E for the next 10 years is to increase its efficiency and outputs by about 10 - 15% a year and to adhere to a feasible product range. Similarly in Firm F, the organisation is continually growing its product range and taking opportunities to make new products. But the strategy was to expand the range through the brands that they have established in the last five years rather than making different products that required buying new machinery. The manager finds it tough to compete with cheap competitive products imported into Australia. Although its product brands have some value in the marketplace coupled with its strong relationships, distribution, and service capabilities, a lot of the products are commodity items. Firm A adopts a different approach by ensuring that most of its employees are multi-skilled machinists. Since the CNC machines operate automatically one person can operate up to 4 machines at a time.

### *Cost*

As companies face the current economic downturn, they tend to launch cost reduction initiatives as one of their strategies to sustain local production. When the global recession happened in 2008, it quickly affected Firm A because as well as helping the company to grow fast previously its type of customer was also among the first to cut or reduce orders. The Managing Director expressed regret about having to make good employees redundant but he was able to rehire some of them subsequently. The firm does not export to any overseas markets other than New Zealand because of the high costs of shipping. In Firm D, when the previous plant in Melbourne closed most of the products were at the end of their life anyway, so it was a logical time to move production. Moving manufacturing to China was a strategic move and only saved around AUD 1 or 2 per unit. It was not simply a case of moving offshore just to save money as many people thought at the time. Today, around 90% of Firm D's products supplied to the Australian market come from China and 10% are from the Australian facility. However, nearly all the component parts are made in China and what is done in Australia is only simple assembly without any pressing, machining, or plastic moulding.

## **5. CONCLUSIONS**

The nature of competition for these manufacturing firms has changed because of the business environment being more complex with changes in technology and customer expectations. The findings suggest that these Australian companies have a good awareness of the elements of the market environment and the relationships with their competitive strategy. These firms adopted a strategy, or a combination of strategies, to maintain sustainable operations. Australian firms tend to have a number of

different competitive priorities compared with counterparts in other industrialised countries, resulting from unique features of the domestic market and geographical context. The companies did not have a long heritage, which is a common characteristic in the Australian manufacturing industry and this tended to make them more flexible and adaptable to change. It appears that in Australia, successful organisations pursue a portfolio of manufacturing strategies to make their offerings distinctive in the market place and that while a firm may choose multiple ways to differentiate itself from competitors, its manufacturing resources may be used to selectively enhance some of its strategic thrusts.

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