New Zealand Manufacturing Sector: Its Dynamics and Competitiveness

Report for ManufacturingNZ

a division of BusinessNZ

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Acronyms and Abbreviations

AIM	Alternative Investment Market
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ANZSIC	Australian and New Zealand Standard Industrial Classification
ASX	Australian Securities Exchange
BHS	Baggage Handling System
BusinessNZ	Business New Zealand
CAGR	Annual average rate
Deloitte	Deloitte Touche Tohmatsu
EID	
F&B	Food and beverage
F&P Healthcare	Fisher and Paykel Healthcare
FTA	Free trade agreement
GDP	Gross domestic product
GFC	Global financial crisis
HBS	Hold Bag Screening
ICT	Information and Communications Technology
IO	Input-output
MBIE	Ministry of Business, Innovation & Employment
MED	Ministry of Economic Development
NYSE	New York Stock Exchange
NZECO	
NZTE	New Zealand Trade and Enterprise
NZX	New Zealand Stock Exchange
OECD	Organisation for Economic Co-operation and Development
OSA	Obstructive sleep apnoea
PBRF	New Zealand Performance Based Research Fund
R&D	Research and development
SME	Small management enterprise
SNZ	Statistics NZ

TIN	Technology Investment Network
TIN100	Technology Investment Network 100
TIR	
UCC	U.S Council on Competitiveness

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Summary and Key Highlights

There has been much talk about the decline of manufacturing in New Zealand. Castalia, on behalf of Business New Zealand (BusinessNZ), has prepared this report to see what is really going on. In particular, we wanted to study common features of high growth and successful New Zealand manufacturing firms in order to see if the lessons and experience of the dynamic parts of the sector could be applied to the whole of manufacturing.

By way of context, it is clear that manufacturing sector remains vital to the economy—it is the largest economic sector in New Zealand, contributing 14.6 percent to the country's GDP in 2012. This makes New Zealand one of the more manufacturing-heavy economies in the Organisation for Economic Co-operation and Development (OECD). This makes manufacturing more important to our economy than it is to Australia's, and on par in relative importance with Western Europe and the Unites States of America.

This is important, since New Zealanders do not typically think of themselves as living in a manufacturing economy. This misperception can lead to people taking training and career paths, and entrepreneurs to making business decisions, which could undermine the potential for growth. It is not surprising that—in the survey we conducted—high-growth manufacturing firms emphasise skill shortages and other constraints on talent-driven growth as being much more important than any effects of costs or exchange rates.

By mid-2013, there were 191,000 jobs in the manufacturing sector, making it the fourth largest employer in New Zealand. Most manufacturing jobs are relatively skilled, and our survey highlights that high growth firms are particularly skewed towards highly skilled and specialised workforces. Average manufacturing wages have increased by almost NZ$10 per hour during the period 2000-2012, and are greater than the average wages of fast growing sectors such as retail, and accommodation and food services.

There has also been a noticeable shift away from pure manufacturing to bundling of manufacturing and services. This has a number of consequences. First, official statistics based on the principal activity of a unit miss the fact that many units classified as being in the services sector are actually vertically integrated parts of manufacturing businesses. This underestimates the importance of manufacturing, but also can create misunderstanding about how the sector actually works and what skills it requires.

In any case, there is strong measured interdependence between manufacturing and other sectors in the New Zealand economy, as over 17 percent of manufacturing output results from the use of professional services and 5 percent of production is outsourced to contractors.

To get to the heart of where New Zealand manufacturing is heading, we conducted a survey and undertook case studies of 15 successful, high growth New Zealand manufacturers. These are the firms whose expansion is offsetting slow decline in some of the less successful parts of the sector, representing the kinds of businesses that will come to dominate New Zealand manufacturing over time.

We find that these firms are:

- Largely export oriented—almost all of the selected firms exported 60-100 percent of their output over the past 3 years
- Predominantly locally owned, with all but one having less than 1 percent foreign equity as part of their capital structure

- Mostly privately held, with 11 out of 15 companies interviewed being private, three publicly listed and one a cooperative
- Vertically integrated in the domestic market and in offshore markets where they have a large presence. In other words, against the common stereotype, high growth firms seem to do more in-house and less through out-sourcing
- Still manufacturing in New Zealand where it makes sense for the entire or part of the production process to do so, and
- Engaging in research, design and the provision of services. This makes high-growth manufacturing firms similar in their features to innovative services firm such as Xero.

Overall, the common factors that make successful New Zealand manufacturing competitive are:

- Talent-driven innovation rather than focus on cost-minimisation, and
- The architecture of New Zealand firms which is shaped by the country's small market.

Four common themes emerged from the survey when New Zealand manufacturers were asked to provide their views on the top public policy issues that they would raise with the Government:

- Increase in research and development (R&D) grants
- Address skills shortage
- Improve business relations in key export markets, and
- Maintain and improve stable macro-economic parameters, such as the exchange rate and the corporate tax rate.

The government has a number of significant and successful initiatives already under way to help the manufacturing sector. Alongside existing initiatives, we recommend that the Government:

- Develop an overarching Manufacturing Policy. The objective of such a policy is not to provide protection or further support, but to ensure coherence across various policy setting
- Positively communicate that the manufacturing sector is a vibrant and integral part of the economy. This may seem like a small thing, but misperceptions about the nature and the future of the sector are contributing to skill and capital shortages
- Expand existing programmes that have shown demonstrable success
- Encourage more collaboration with research institutions and companies internationally
- Tailor export promotion to market circumstances
- Increase the supply of skilled workers, and
- Continue reducing the procedural bias against New Zealand companies in Government procurement.

1 Introduction

There has been much talk about the decline of manufacturing in New Zealand. Some see it as a crisis requiring urgent action. This perspective leads to calls for government support to preserve the existing manufacturing activities. Others view it as a natural part of the re-weighting of developed economies towards services and the shift of manufacturing to emerging markets. This perspective often results in advocacy for the support of other sectors, and assistance in helping workers transition from the dying sectors.

Neither perspective represents a realistic description of the New Zealand manufacturing sector or its prospects.

The manufacturing sector in New Zealand has been studied at some length over the last 2 years, such as:

- **The Ministry of Business, Innovation & Employment (MBIE), High Technology Manufacturing 2013**—This report aims to provide a comprehensive report card on the state of New Zealand's high and medium-high technology manufacturing sectors by looking at employment, exports, expansion and R&D productivity and financial performance, as well as a general overview of the businesses within the sectors and the impact of the economy
- **Reserve Bank of New Zealand, Building a Picture of New Zealand Manufacturing, November 2012**—As part of the Reserve Bank's Analytical Note series, the report gives insight into the New Zealand manufacturing sector by looking at what New Zealand manufacturing does, who consumes New Zealand's manufacturing output and a look at the current state of the sector before and after the global financial crisis (GFC)
- **Technology Investment Network (TIN), TIN 100 Report 2012**—The report provides an annual analysis of New Zealand's largest globally-focussed companies in the hi-tech manufacturing, biotech and information and communication technology (ICT) sectors. It provides profiles on the sector's fastest-growing companies, a review of company ownership and economic impact, an analysis of market sectors and R&D spending and a regional analysis
- **Food & Beverage Information Project 2011** (MBIE)—This project offered a comprehensive overview of the state of New Zealand's food and beverage (F&B) sector. The study analysed the main sub-sectors, such as processed foods, dairy, and seafood, and provided an overview of how the sector is performing in its major markets.

The objective of this paper is to go beyond those reports by identifying the most dynamic and rapidly growing parts of the sector and drawing insights for the sector as a whole from their experience. The study primarily draws on case studies of 15 rapidly growing companies.

The Report contains:

- In Section 2, we set out background information on the dynamics of the overall manufacturing sector and sub-sectors in New Zealand
- In Section 3, we distil the features of high performing New Zealand manufacturing firms using case studies from a range of successful and fast growing manufacturers from a range of sub-sectors
- In Section 4, we study the drivers of competitiveness in global and local manufacturing, informed by the case studies of New Zealand manufacturing firms, and
- In Section 5, we describe the types of practical Government policies that can promote growth in the manufacturing sector.

1 Dynamics of the Manufacturing Sector

We start by setting out background information on the dynamics of the overall manufacturing sector and sub-sectors in New Zealand.

1.1 How is manufacturing defined

Any statistical analysis of the manufacturing sector has to rely on the Australian and New Zealand Standard Industrial Classification (ANZSIC). Under this system, the manufacturing sector includes units predominantly used in the physical or chemical transformation of materials, substances or components into new products (except agriculture and construction).

There are a number of problems with this classification:

- First, the boundaries between sub-sectors are poorly defined as many companies produce multiple products.
- Second, as we discuss further in section 3 many companies do not fall purely into the manufacturing categorisation. Most manufacturing companies increasingly combine product transformation traditionally associated with the sector with a wide range of services.

This can lead to considerable confusion. Allocating some units in the same company to manufacturing while other units are allocated to services can create the wrong impression about skill levels and employment in that company. For example, many growing companies may transfer staff from manufacturing to service units. This could create the impression of a decline in manufacturing and growth in services, but the services are intimately connected with the manufacturing activities.

Box 1.1: Catalysts shaping product-service packages

Our research—covered in more detail in Section 3—suggests that high growth manufacturing firms in New Zealand are creating new business offerings which link products and services together. Catalysts shaping these new product-service packages include:

- the increasing power of the client and demands for customisation
- the shift towards outsourcing of both production and business related activities
- new products and technology, especially radical or sophisticated, generating customer demands for information, training, help desks and similar services, and
- efforts to capture distant markets through collaborations with local distributors and services companies.

New Zealand manufacturers now consider themselves as not only specialist manufacturers but also marketers, sellers and service providers.

As a result, while official statistics make such analysis difficult, we are interested in understanding manufacturing as the complete set of activities that make up a value chain, including (but not limited to):

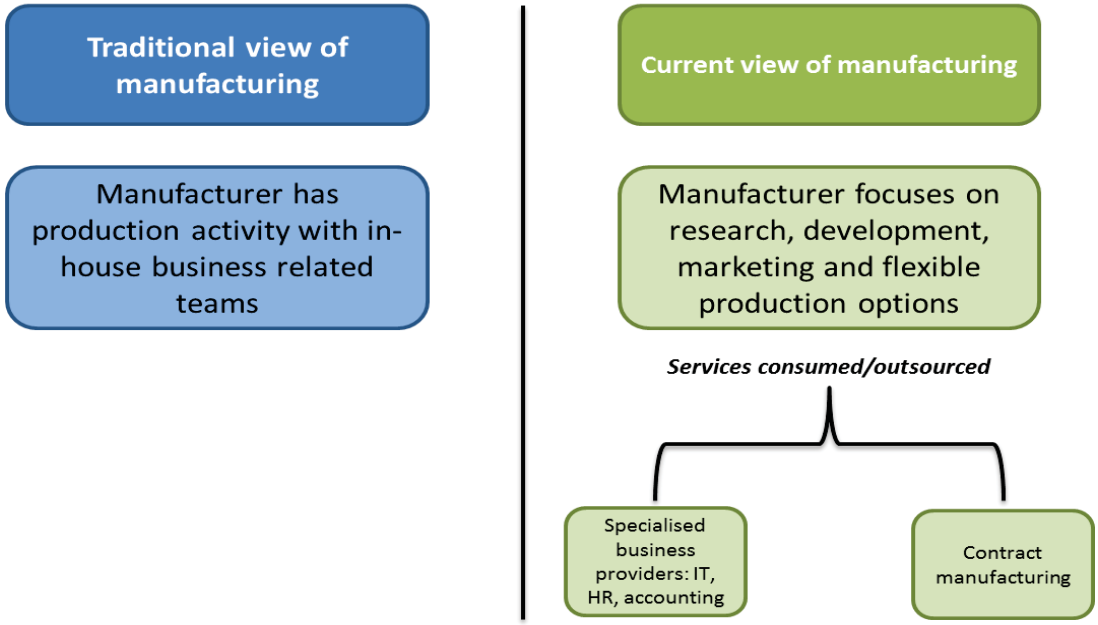
1. Understanding a customer's need (market research, existing customer relationships, response to tenders, intuitive foresight etc.)
2. Designing a solution to meet that need (what is being offered? Research, product, process, packaging, installation, communication, cost etc.)
3. Organising for the production or creation of that solution (material selection, procurement, investment in production facilities and tooling, outsourcing or

part outsourcing, access to skilled workforce and/or training and development, development of new processes etc.)

4. The production process itself (lead-times, planning, efficiencies, quality, reliability, batch sizes, etc.)
5. Distribution of that product and support services (warehousing, wholesale, retail or agency arrangements)
6. Promotion and marketing (brand development, 'call to action'), and
7. Continued support service for the product's life (warranties, repair, modification, upgrades, replacements, responsiveness, effect on repeat business).

'Traditional' manufacturing would have been seen to include elements 3, 4 and 5 and sometimes the design element 2. The traditional and modern view of manufacturing is illustrated below.

Figure 1.1: The changing view of manufacturing



1.2 The importance of New Zealand's manufacturing sector

In this section, we analyse the manufacturing sector using official government statistics.

1.2.1 The contribution of New Zealand manufacturing to the economy remains vital

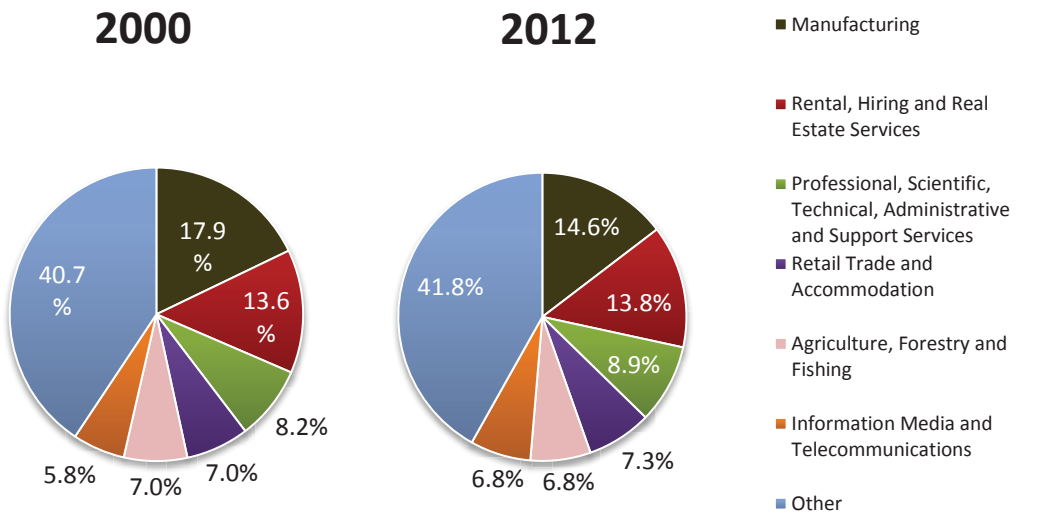
Despite persistent depictions of manufacturing by some observers as a sector in irreversible decline, the manufacturing sector in fact remains a huge contributor to the New Zealand economy.

The New Zealand manufacturing sector has continued to maintain a strong position within the New Zealand economy. Despite a small decline in the sector's measured share of GDP since 2000, at the end of 2012 it remained the largest sector of the economy (see Figure 1.2). Over the same period, the total output of the manufacturing sector has

increased—the real value of manufacturing GDP grew at an annual average rate (CAGR) of approximately 0.75 percent, from NZ$17.3 billion to just over NZ$19 billion.

Some of the measured decline in output reflects outsourcing of business related services—such as finance, IT, legal or logistics—affecting production and employment within manufacturing. Therefore, growth in other sectors, in part, reflects outsourcing from the manufacturing sector, and growth of service units within manufacturing firms.

Figure 1.2: Share of GDP by sector



Note: GDP used is the product measure, expressed in 1995/1996 prices

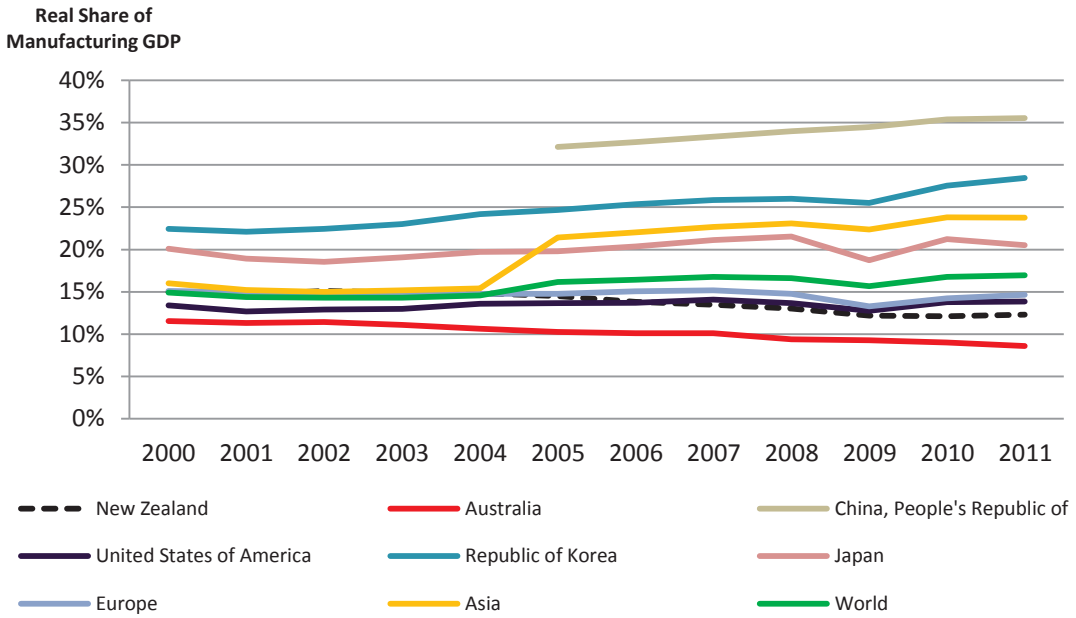
Source: Statistics NZ: Infoshare

1.2.2 How does New Zealand's manufacturing sector compare to other OECD economies?

The New Zealand manufacturing sector is more important to our economy than manufacturing is to many other OECD countries, such as Australia. This is highlighted in Figure 1.3 which shows the manufacturing sector's share of GDP for a number of countries since 2000. The current contribution of New Zealand's manufacturing sector to the country's GDP is similar to levels in Europe and the United States.

On a global scale, the contribution of the world's manufacturing sector to the world's GDP has risen since 2004 due to the growth in the Asian manufacturing sectors. The manufacturing sector's share of the Asian region's GDP jumped from 15 percent in 2004 to 21 percent to 2005, and to 24 percent by 2011. This is largely due to the surge in China's manufacturing—in 2005 the sector contributed to 32 percent of the Chinese GDP, increasing to 36 percent by 2011.

Figure 1.3: Real share of manufacturing GDP, 2000-2011



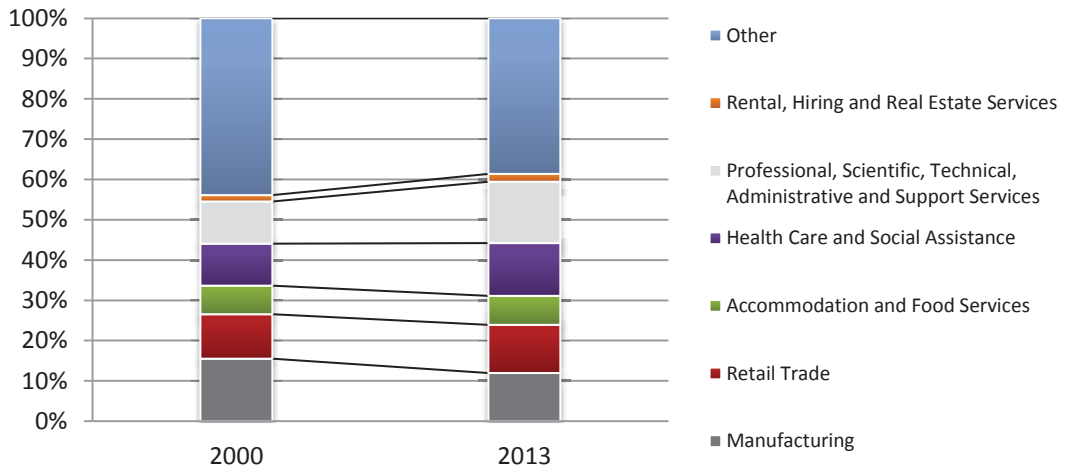
Note: GDP is at purchaser's prices. This is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Prices are expressed in 2005 US Dollars.

Source: The World Bank: DataBank

1.2.3 Manufacturing sector is one of the largest employers in the country

The manufacturing sector remains one of the largest employers in New Zealand. By mid-2013, there were 191,000 manufacturing jobs. This is reflected below in Figure 1.4. Manufacturing now ranks as the fourth largest employer—the largest employer is the "Professional services, scientific, administrative and support services" sector which has increased its share in jobs from 11 percent in 2000 to 16 percent in 2013. However, the professional services sector provides significant inputs into manufacturing and, to a significant extent, depends on manufacturing for its growth. Many professional jobs are in units within manufacturing companies.

Figure 1.4: Sector share of jobs, 2000-2013



Source: Statistics NZ: Infoshare

Manufacturing has historically been perceived as a low skilled sector. This perception is not consistent with trends and our case studies, which show that the manufacturing sector has a high demand for highly skilled and specialised jobs.

While the total employment in the narrowly measured manufacturing sector continued to decline over the last decade, its total output increased, resulting in higher manufacturing GDP and higher wages per worker in the sector.

Across the economy there has been a shift towards highly skilled jobs. Figure 1.5 illustrates the increase in highly skilled employees between 2009 and 2012 and the simultaneous decrease in lower skilled employees.

Additionally, Statistics NZ (SNZ) states that this drop in skill level 5 employment—explained in Box 2.2—in 2012 was mainly due to a decrease in both full time and part time positions in the manufacturing sector rather than the retail trade and accommodation sector—the two largest sectors with skill level 5 occupations. In other words, there has been a generalised shift towards higher skilled employment in the New Zealand manufacturing sector. This shift appears to be more rapid than in any other sector.

The number of part time workers in the manufacturing sector has also dropped from 15,800 to 15,300 between 2009 and 2013. Similarly, full time employment in the manufacturing sector decreased from 172,100 to 163,500 over the same period.[1]

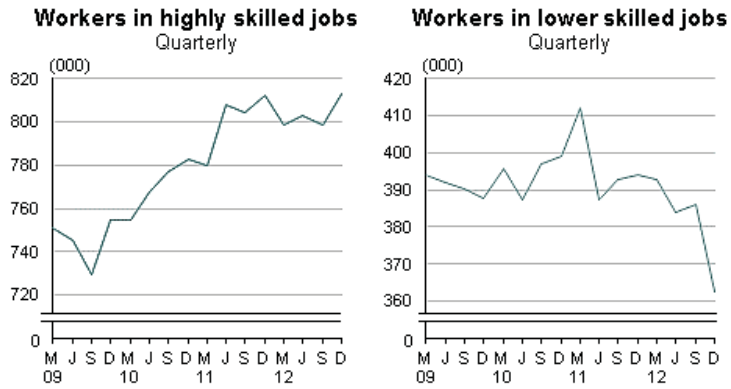
Box 1.2: Australian and New Zealand Standard Classification of Occupations (ANZSCO) Categories

ANZSCO categorizes an occupation to one of five skill levels—skill level 1 being highly skilled, skill level 3 being skilled and skill level 5 being lower skilled. A skill level is based on the range and complexity of tasks performed in a particular role rather than an individual's qualification. According to ANZSCO, various manufacturing occupations fall under skill level 3, 4 or 5. Manufacturing occupations under skill level 3 are technicians and trade workers; process workers are categorised as skill level 4 and factory process workers are categorised as skill level 5.

Source: Australian Bureau of Statistics (ABS): ANZSCO - Australian and New Zealand Standard Classification of Occupations, First Edition, Revision 1

[1] Statistics NZ: Economic Survey of Manufacturing (March 2013)

Figure 1.5: Total economy-wide workers in highly skilled jobs and lower skilled jobs (2009-2012)



Source: Statistics NZ: Economic Survey of Manufacturing (March 2013)

As in other sectors, however, manufacturing employs a mix of high skill and low skill workers: this is important in itself, as it provides avenues for on the job training and advancement. The results from the 2006 Census of Population and Dwellings Report (2006) are summarised in Table 1.1.

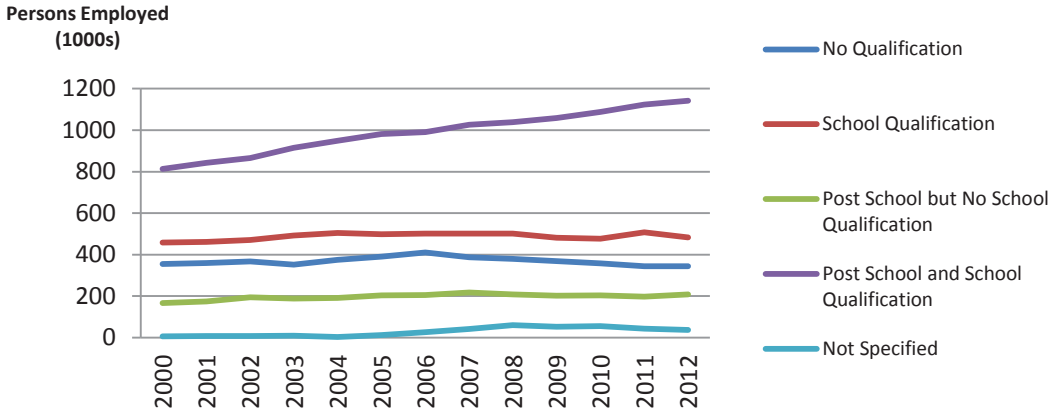
Table 1.1: Qualifications held by employees in the manufacturing sector (2006)

Occupation	No Qualification	School Qualification	Vocational Qualification	Bachelor Degree or Higher
Specialised Managers	13%	34%	31%	20%
Food and Related Products Processing Machine Operators	39%	29%	25%	2%
Labourers	43%	34%	15%	3%
Metal Moulders, Sheet-Metal and Related Workers	24%	27%	45%	1%
Metal and Mineral Products Processing Machine Operators	34%	34%	20%	5%
All Occupations in New Zealand	19%	35%	27%	19%

Source: Ministry of Business, Innovation and Employment: Employment and Skills Snapshot - Manufacturing

More generally, any employment growth which has occurred in New Zealand has been for people with better qualifications as shown in the figure below.

Figure 1.6: Qualifications held by persons employed in the labour force, 2000-2012

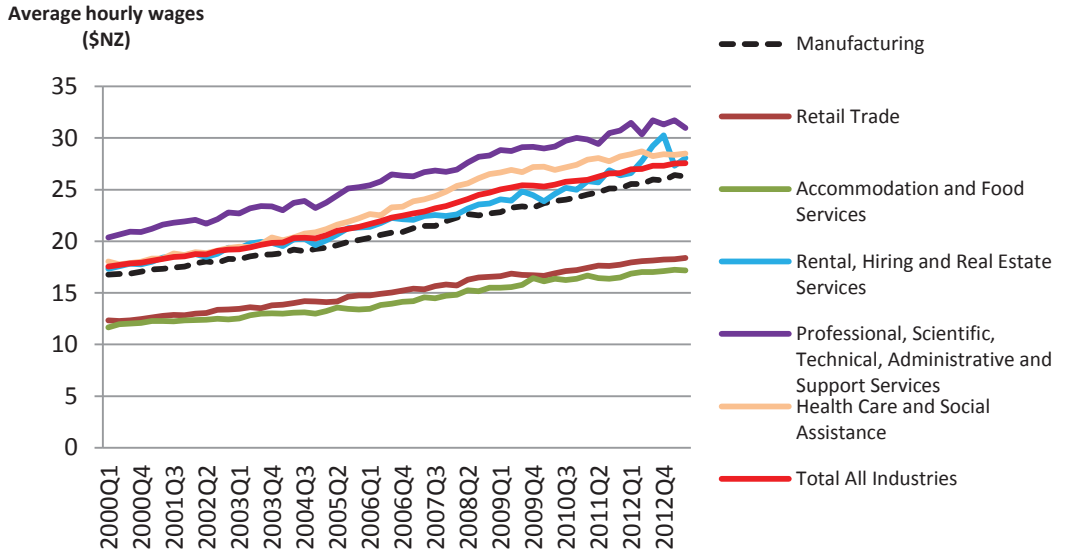


Source: Statistics NZ: Infoshare

1.2.4 Manufacturing wages are relatively high compared to fast growing sectors

Although manufacturing wages have historically been marginally lower than the average hourly wage across the economy (see Figure 1.7), they have increased by almost NZ$10 per hour during the period 2000-2012. Additionally, average manufacturing wages are greater than the average wages of fast growing sectors. However,as they are lower than the national average, this may mask the attractiveness of the manufacturing sector relative to these fast growing sectors such as retail trade, and accommodation and food services.

Figure 1.7: Real Hourly Wages, 2000-2012



Source: Statistics NZ: Infoshare

1.3 There are significant variations in performance within the New Zealand manufacturing sector

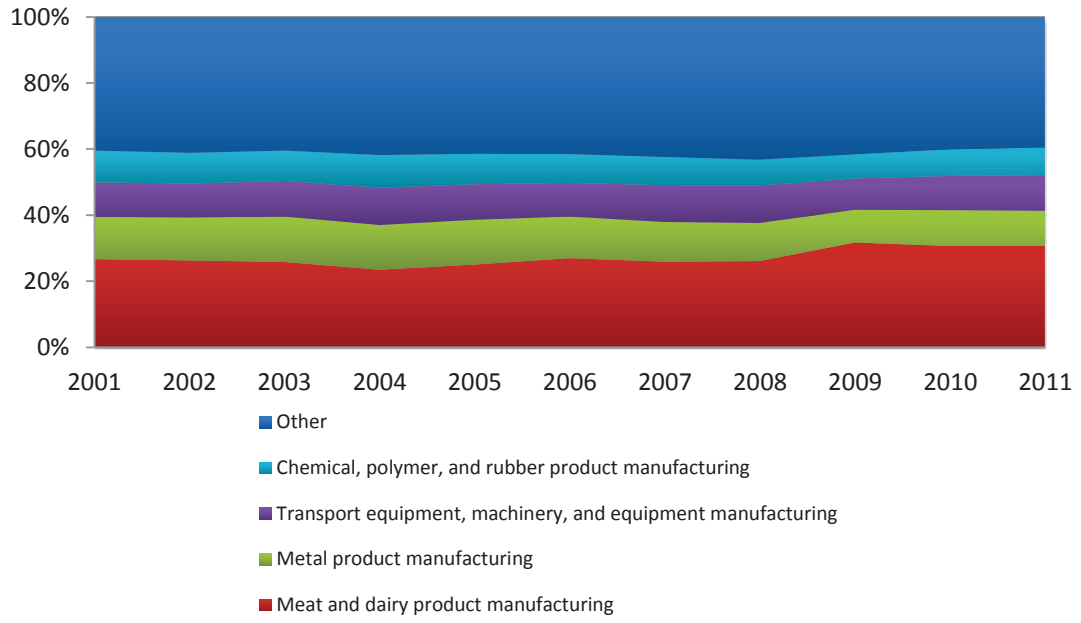
In this section we focus on what is happening within New Zealand's manufacturing sector:

- In section 2.3.1, we describe how the performance of the manufacturing sector is influenced by the largest sub-sector, the meat and dairy product manufacturing sector, and
- In section 2.3.2, we explain the interdependence between the manufacturing sector and other New Zealand sectors.

1.3.1 Meat and dairy product sub-sector is growing in importance

There are 13 sub-sectors within the manufacturing sector according to SNZ. The largest of these sub-sectors in terms of sales is the meat and dairy product manufacturing division which dominates the manufacturing sector, and accounts for NZ$7 billion in sales. This sub-sector has significantly grown over the past decade as its contribution in terms of manufacturing sales has increased from 26 percent in the fourth quarter of 2000 to 33 percent in the final quarter of 2012 (Figure 1.8). In contrast, the other sub-sectors have remained fairly stable in terms of their contribution to the sector's sales.

Figure 1.8: Share of sales in manufacturing sub-sectors, 2000-2012



Source: Statistics NZ: Infoshare

There is a strong correlation between the sales performance of the meat and dairy sub-sector and the sales performance of the manufacturing sector. Since 2010, the importance of the meat and dairy sub-sector to the growth of the manufacturing sector has been even more evident. If the meat and dairy product sub-sector was excluded from the manufacturing sector, total sector sales would remain flat.

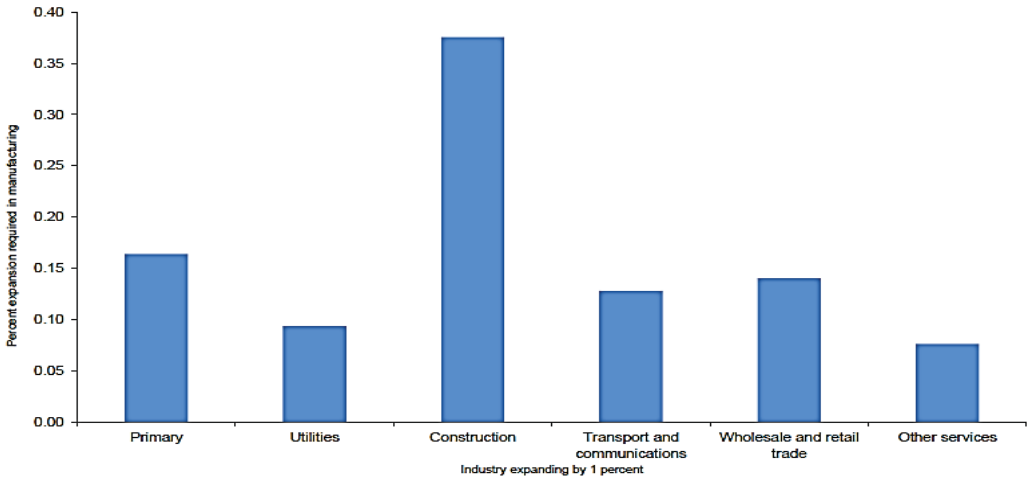
1.3.2 The interdependence between manufacturing and the other sectors

New Zealand's manufacturing output is consumed by domestic and overseas consumers for a wide range of uses. SNZ's latest available input-output (IO) table (March 2007) indicates that 40 percent of New Zealand's manufacturing output is exported with the remaining sold to domestic consumers.

The high proportion of intermediate consumption of manufacturing sector output demonstrates the strong interdependence between manufacturing and other industries in the New Zealand economy. According to SNZ's I-O tables, the construction sector is

the most reliant on output from the manufacturing sector. For example, a 1 percent expansion in construction activity requires a 0.38 percent expansion in manufacturing activity (see Figure 1.9).

Figure 1.9: Percentage of expansion required in manufacturing sub-sectors to provide a 1 percent expansion in other industries (nominal, March 2007)



Source: Reserve Bank of New Zealand Analytical Notes: Building a picture of New Zealand Manufacturing (November 2012)

Estimates based on New Zealand's IO tables indicate that the amount of services used by manufacturers equated to a 17 percent contribution to the total basic price of manufacturing goods.[2] This highlights the interdependent nature of the two sectors.

Additionally, manufacturing firms have outsourced some or all of their production process. The IO tables estimate that 4 percent of the total basic price of manufacturing goods is sourced from services incidental to manufacturing (outsourcing of the production process on a fee or contract basis).

1.4 The performance of the manufacturing sector post-GFC

Along with many OECD countries around the world, New Zealand went into recession in 2008 and the overseas and domestic demand for New Zealand manufacturing output decreased, affecting the manufacturing sector severely.

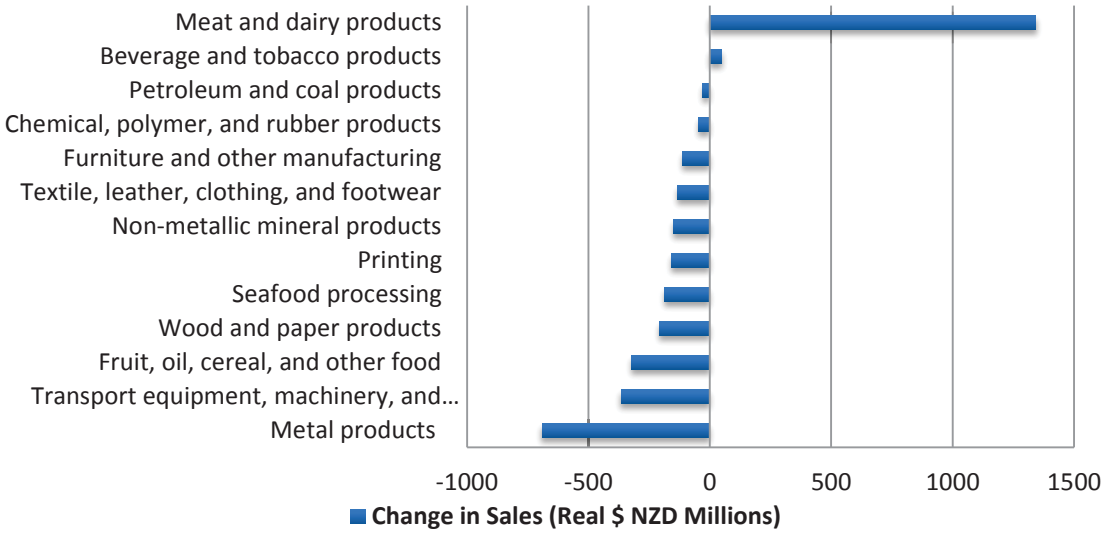
The state of the manufacturing sub-sectors post-GFC

Since the GFC two different stories have emerged concerning the performance of the manufacturing sub-sectors. Only two sub-sectors recorded sales levels higher post-GFC, whilst all other sub-sectors have yet to recover fully. This contrast in fortunes is shown in Figure 1.10.

The better performing sub-sectors are meat and dairy products, which has achieved sales levels of approximately $1.3 billion greater than 2008, and the beverage and tobacco product sub-sector which has exceeded 2008 sales levels by $49 million.

[2] Services are defined as the combination of the following ANZSIC sectors— Transport, Postal and Warehousing, Information Media and Telecommunications, Financial and Insurance Services, Rental, Hiring and Real Estate Services, Professional, Scientific and Technical Services and Administrative and Support Services.

Figure 1.10: Changes in seasonally adjusted manufacturing sales, 2008–2013

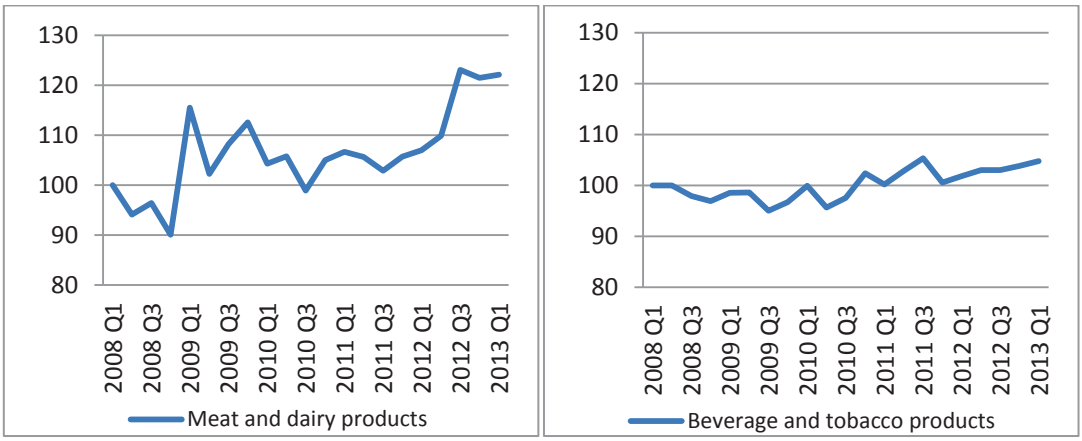


Source: Statistics NZ: Infoshare

The pace of recovery has varied across sub-sectors

The duration in which the sub-sectors recovered varied between the two sub-sectors. The meat and dairy product sub-sector made a quick recovery, having exceeded 2008 sales levels by early 2009. However, the beverage and tobacco product sub-sector exceeded 2008 sales levels by late 2010.

Figure 1.11: Recovered sub-sectors in terms of sales, 2008-2013

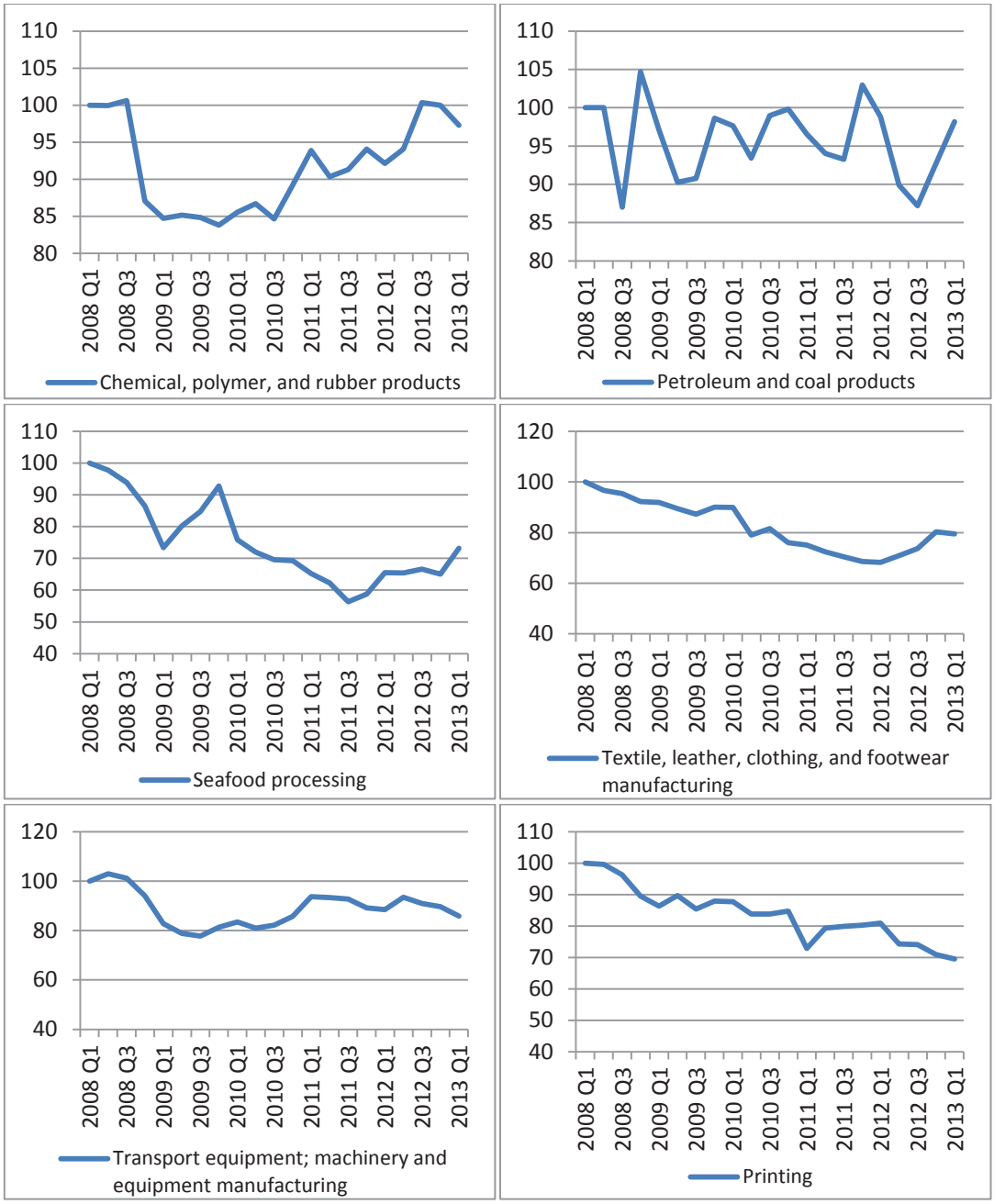


Source: Statistics NZ: Infoshare

In contrast, a majority of the sub-sectors have yet to recover (see Figure 1.12), although there are promising signs of recovery—chemical, polymer, and rubber products, and petroleum and coal products are recovering, or have recovered momentarily, post-GFC. Similarly, the seafood processing sub-sector is showing signs of recovery.

However, sub-sectors such as printing, textile, leather, clothing and footwear manufacturing, and transport equipment, machinery and equipment manufacturing have steadily declined since the GFC.

Figure 1.12: Recovering and declining sub-sectors in terms of sales, 2008-2013



Source: Statistics NZ: Infoshare

1.5 The difference in employment between sub-sectors

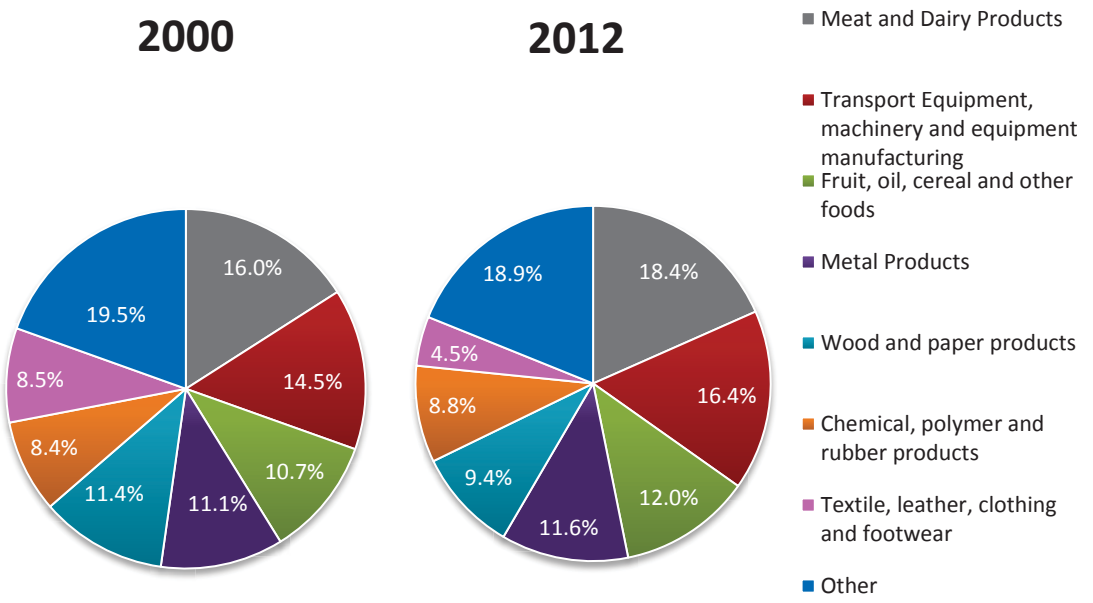
Of the total 191,000 jobs in the manufacturing sector (June 2013), the largest employer was the meat and dairy sub-sector, accounting for 18 percent of total jobs filled, or about 36,000 jobs. This is followed by the transport equipment, machinery and equipment sub-sector, accounting for 16 percent of manufacturing jobs.

Since 2000, the meat and dairy sub-sector's share of manufacturing employment has increased from 16 percent to 18 percent. Over the same period, the share of two sub-sectors has decreased:

- Textile, leather, clothing and footwear manufacturing, from 8 percent to 5 percent, and
- Wood and paper products manufacturing from 11 percent to 9 percent.

In contrast, the overall share of the fruit, oil, cereal and other foods sub-sector increased from 11 percent to 12 percent over the 12 year period. Similarly, the transport equipment, machinery and equipment manufacturing sector's share rose from 15 percent to 16 percent as did the chemical, polymer and rubber products share which rose from 8 percent to 9 percent. A fuller breakdown for the various sub-sectors is provided in Figure 1.13.

Figure 1.13: Share of manufacturing employment amongst sub-sectors



Source: Statistics NZ: NZ.Stats Database

2 Features of successful manufacturing firms

Despite persistent depictions of manufacturing as a sector in irreversible decline by some media, New Zealand manufacturing in fact remains a huge contributor to the economy, with diverse capabilities and business approaches creating opportunities for a prosperous future.

This section presents results from the case study questionnaires and interviews to assess whether there are particular features and patterns that are helpful in identifying what makes high-growth New Zealand companies successful. Detailed company profiles are provided in Appendix A.

Our insights are based on the firms interviewed ("Respondents") and should not be construed as a set of broad-brush findings that apply to the whole manufacturing sector. Rather, we view the findings as providing valuable lessons to the rest of the manufacturing sector.

The rest of this section is structured as follows:

- Section 3.1 provides a brief overview of the research methodology
- Section 3.2 outlines the characteristics of output produced by successful firms
- Section 3.3 analyses the results of the case studies to distil common themes and features including the:
  - major role of exports for successful firms
  - organisational and capital structure of these firms, in particular the strength of New Zealand owned firms
  - operational structure; and
  - role of services.

2.1 Research Methodology

In order to provide fresh new insight into the New Zealand manufacturing sector, we focused our attention on high growth manufacturing firms in New Zealand. In conjunction with Business New Zealand (BusinessNZ), we developed and circulated a survey questionnaire to over 30 firms. The criteria used by BusinessNZ for selecting these firms were to:

- Focus on small-to-mid sized companies
- Ensure cross sub-sector coverage, including firms identified in the Ministry of Economic Development's (MED's) Food and Beverage directory high growth companies selected from Technology Investment Network 100 (TIN100)
- Study publicly listed and privately owned firms, and
- Have a cross section of domestic and foreign ownership.

Fifteen firms volunteered to participate in the initiative. Each firm completed the survey questionnaire and most also explained their responses in a telephone interview. These surveys were conducted by both Castalia and BusinessNZ and completed by senior executives.

The information collected included company and product overviews, production performance, key features and characteristics of each firm, financial statistics, and respondents also gave their views on drivers of competitiveness, training and areas for policy intervention (in some cases firms provided no financial information or provided it to BusinessNZ confidentially). As a result, coverage of financial performance and financial ratios of the firms covered in the survey varies in this Report. Where possible, we represent the information as ratios rather than absolute numbers to provide comparability.

Table 3.1 provides a list of the respondents, their turnover, employees and year the company was established.

Table 2.1: Overview of participating firms

Company	Turnover in 2012 (NZD Millions)	Year founded	Number of Employees
3i Innovation	N/A	2008	~10
ABE's Bagel	$7.4	1996	45
BSC Group	$61.6	1993	324
Delmaine	$70	1980	~220
Endace	$51.0	2001	147
F&P Healthcare	$516.7	1971	2758
Frucor	$406.8	1962	929
Fusion	$27.3	2001	53
The Gallagher Group	$187.0	1938	781
SKOPE Industries	$105.0	1942	~350
Southern Spars	N/A	1984	440
Temperzone	$181.0	1956	~500
Tru-Test Group	$103.4	1964	460
Watties	$735.6	1934	~1200
Westland	$534.0	1937	~450

Notes:
1) Delamine 2012 turnover obtained from the article on www.stuff.co.nz: Delmaine chases export opportunities (19 Nov 2012).
2) Watties 2011 turnover obtained from the MBIE's Food and Beverage Information Project.

2.2 Successful firms predominantly manufacture final goods with high import content

The proportion of manufacturing output classified as either intermediate or final goods varies amongst sub-sectors. For example, in New Zealand output from the minerals sub-sector is predominately used to produce another good or service (intermediate consumption) whereas output from other food, beverage and tobacco manufacturing is predominately consumed as final use goods (final consumption).

Our case studies show that these firms are predominantly producers of final goods and their outputs fall under five broad ANZSIC classifications:

- meat and dairy product manufacturing
- fruit, oil, cereal and other foods

- beverage and tobacco product manufacturing
- metal product manufacturing and transport equipment, and
- machinery and equipment manufacturing.

Table 2.2 below summarises the products that the participating high growth companies manufacture.

Table 2.2: Products manufactured by high growth firms

Company	Products Produced
3M	Active in road LED guidance systems
Abe's Bagel Bakery	Bagels and Bagel Crisps
BCS	▪ Airport systems (Primary Customers): Baggage handling systems and offering operation and maintenance services ▪ Logistics firm needs: General transport conveyor and sortation systems ▪ SaS (Services and Solutions): Manufacturing of software systems to self-check-in baggage units.
Delmaine Fine Foods	A wide variety of olives and pickles, baked goods, rice, tinned tomatoes & beans, mustards, oils and vinegars
endace	High performance (100% packet capture) internet network recording systems to measure, monitor, analyze, protect and troubleshoot some of the fastest and most complex networks
Fisher & Paykel Healthcare	Products and systems for use in respiratory care, acute care, and the treatment of obstructive sleep apnoea
frucor	Non-alcoholic beverages such as the energy drink, V
FUSION	Marine, car and lifestyle entertainment products
Gallagher	Animal management equipment, security, fuel systems and contract manufacturing
Skope	Commercial refrigeration and food service products for the hospitality and retail sectors
SouthernSpars	Marine products such as carbon fibre masts and booms for yachts
temperzone	Air-conditioning and ventilation products
Tru-Test Group	▪ Livestock productivity solutions such as animal containment, weighing, electronic identification, dairy automation and on farm milk cooling for farms around the world ▪ Contract manufacturing solutions for electronic products
Wattie's	Frozen and packaged fruit and vegetables, sauces, baby food, cooking sauces, dressings and pet foods
Westland Milk Products	Milk powders, butter, milk protein concentrates, and nutraceutical products

The manufacturing sector sources 22 percent of its inputs directly from overseas. Within this sector average, there is a broad range of imported content.

Both Fisher and Paykel Heathcare (F&P Healthcare) and Tru-Test Group import 95-100 percent and 80 percent respectively of their inputs for manufacturing. ABE's Bagel Bakery indicated that all of their crisp packaging comes from China and all of their flour comes from Australia, thus these two would make up the bulk of costs for Crisps & Bagels. They concluded the discussion by stating that close to 70 percent of inputs is imported.

Firms such as Southern Spars, SKOPE, F&P Healthcare, the Gallagher Group, the Tru-Test Group, the BCS Group and Temperzone all import materials such as various metals, plastics and electronic components and equipment. Items include copper, aluminium, steel, motors, compressors, glass sandwiches and so on.

In contrast, Southern Spars imports 20 percent of its input for manufacturing. Westland imports lactose which equates to approximately 12 percent of the inputs used in their manufacturing process. This was an increase of 9 percent from 2010 and they believe this figure will increase.

2.3 Characteristics of successful manufacturing firms

This section looks at the characteristics of high growth manufacturing firms. We show that successful manufacturers are:

- Largely export oriented
- Predominantly locally owned
- Mostly privately held
- Vertically integrated
- Still manufacturing in New Zealand where it makes sense for the entire or part of the production process to do so.

In addition, we analyse the firms' experience of the blurring boundary between manufacturing and services. Finally, we compare the features of successful manufacturing firms with those of high growth technology services firm, Xero.

2.3.1 Successful manufacturers are largely export-oriented

In Section 2 we stated that approximately 40 percent of total manufacturing output is exported and that the proportion exported varies significantly across sub-sectors. Our case studies show that exports for successful firms are significantly greater than the sector average and that these firms are highly export-oriented.

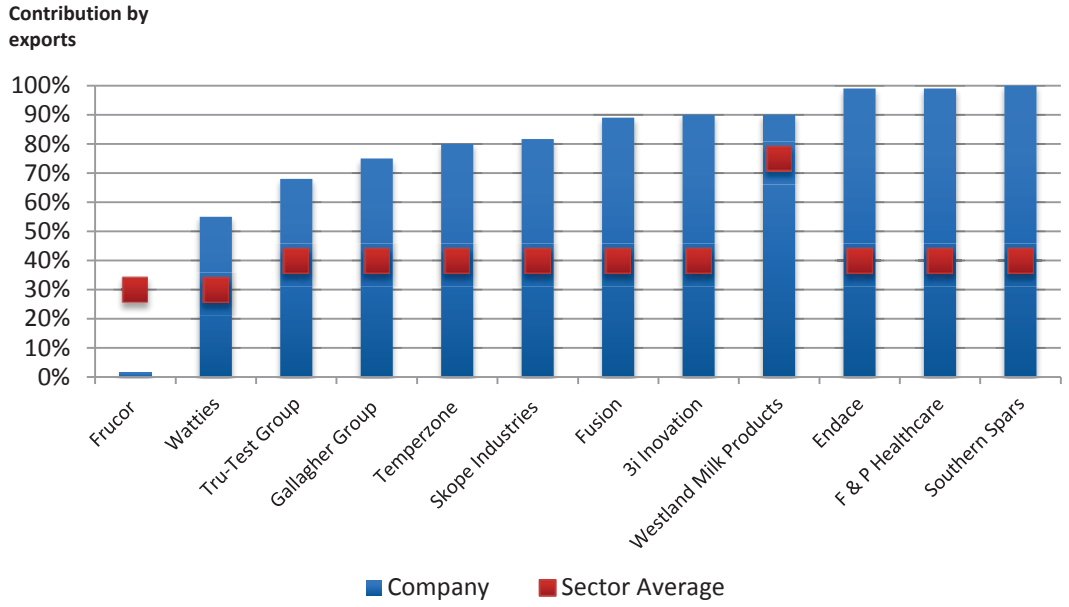
Almost all of the selected firms had exported approximately 60 to 100 percent of their output over the past 3 years. This reflects, for some sub-sectors, the limited opportunities for growth in a small local market driving firms to focus on export markets.

Three firms stand out as heavily export-oriented: F&P Healthcare, Endace and Southern Spars. Over the last 3 years, over 99 percent of their revenues were derived from exports.

At the other end of the spectrum, Frucor—who manufactures, markets and distributes a range of fruit juices, fruit drinks, energy drinks, waters and soft drinks— reported that only 1 percent of their revenue comes from exports. This figure understates the sales of Frucor in export markets as several companies manufacture and distribute Frucor's products in those markets.

Figure 2.1 illustrates the approximate output exported for some of the participating firms.

Figure 2.1: Total output exported, 2010-2012



Australasian region is the core export market for New Zealand firms

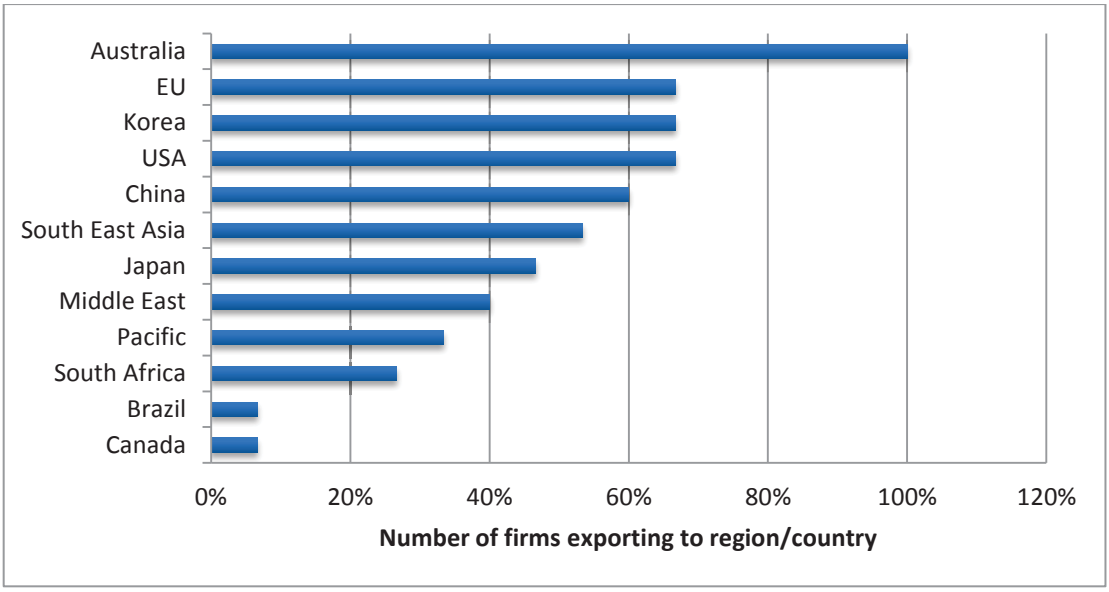
Our case studies reveal that, consistent with the manufacturing sector as a whole, a majority of manufacturing output is predominately exported to Australia and Asia. Strong ties between the participating firms and the Australian and Asian markets are prominent, irrespective of what sub-sector they are in.

Every firm which participated in the survey indicated that they export to Australia. Some indicated that Australia is their largest market, such as SKOPE and the BCS Group. For example, 80 percent of revenue for SKOPE is derived from exports to Australia.

Asian countries such as China and the Republic of South Korea (Korea) were found to be the top export markets amongst the firms surveyed. Figure 2.2 illustrates that 67 percent of Respondents export to Korea (along with the United States and the European Union) and 60 percent of participating firms export to China.

The growing importance of the Asian market is evident with companies such as Westland Milk Products stating that revenue attained from exporting to China has increased from 5 percent to 20 percent of total sales over the past 5 years. Furthermore, there has been a growing importance in the South-East Asian region with an increase in direct sales and distribution offices being located in this region which will be discussed later in this report.

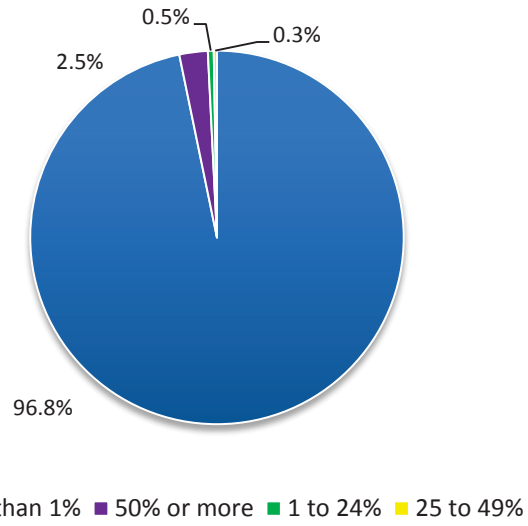
Figure 2.2: Most popular export destinations



2.3.2 Domestic ownership dominates the manufacturing landscape

New Zealand manufacturing firms make up approximately 5 per cent of all business enterprises in the New Zealand economy.[3] A majority of these firms are domestically owned with approximately 97 percent of manufacturing firms having less than 1 percent foreign equity as part of their capital structure. This is illustrated in Figure 2.3.

Figure 2.3: Foreign equity share in manufacturing firms



Source: Statistics NZ: NZ.Stat Database

This near 100 percent domestic ownership for the manufacturing sector is also evident within the successful firms which participated in our survey. Every firm interviewed is a domestically owned company with the exception of Frucor, Endace and Southern Spars.

[3] Average calculated from 2000-2012 using the NZ.Stat database (SNZ).

Frucor was founded in the 1960s and has evolved from a small New Zealand juice business that was part of the original Apple and Pear Board, into a leading Australasian drinks company and the market leader in energy drinks in Australia and New Zealand. Since 2009 Frucor has been wholly owned by a leading Japanese F&B company, Suntory Group which was recently listed on the Tokyo stock exchange.

Endace was founded in 2001 and was the first New Zealand company to be listed on London's Alternative Investment Market (AIM) when it was floated in mid-June 2005. However, in February 2013 the United States based Emulex Corporation acquired control of Endace, and beneficial ownership of 89 percent of Endace's shares. By March it received 99.9 percent of Endace's shares and Endace is now a division of Emulex.

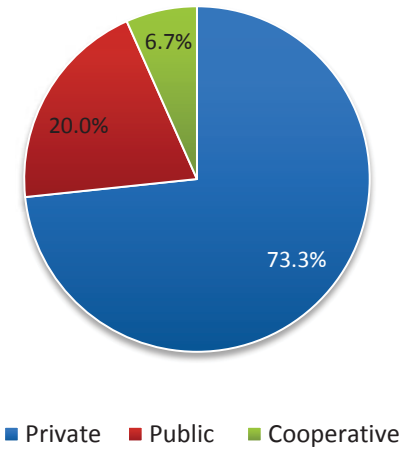
Southern Spars, which was founded in 1984, is a family business with outside professional management. There is an independent board including one family member. Foreign ownership is at 75 percent and the remaining shareholders are local.

Other companies which have a minute amount of foreign equity within their capital structure are F&P Healthcare, and Tru-Test Group.

2.3.3 Most successful manufacturing firms are privately owned

Results from the survey indicated that out of the 15 companies interviewed, 11 were private companies, three were public companies and one was a cooperative. This is illustrated in Figure 2.4 below.

Figure 2.4: Company ownership of participating firms



Of the 11 private companies, five of them were family businesses. These included the Gallagher Group, SKOPE industries, Southern Spars, Delmaine Fine Foods and ABE'S Bagel Bakery.

All of these firms have family members involved with the company's operations such as Sir William Gallagher, the son of the founder of the Gallagher group, who holds the CEO position of the group. Similarly, Robert Stewart the owner of SKOPE Industries is the Chairman of the Board whilst his decedents, Guy and Alexandra Stewart hold the position of Managing Director and Deputy Chairperson, respectively. Southern Spars also has a family member sitting on the company's independent board. These three companies are the only private companies which have outside professional management involved with the company operations.

Our survey was completed by three public companies—F&P Healthcare, Endace and Tru-Test Group. F&P Healthcare is a publically listed company, featuring on the New Zealand Stock Exchange (NZX) and the Australian Securities Exchange (ASX). It is 40 percent foreign owned with the company's largest shareholder being the United States based Capital Group Companies which has close to an 8 percent share in the company. The remaining 60 percent of the company is New Zealand owned with the largest New Zealand shareholder being AMP Capital Investors (NZ) Limited which has a share of approximately 6 percent in the company. In contrast, Tru-Test Group is a publically unlisted company. Lastly, Endace is now a division of the New York Stock Exchange (NYSE) listed corporation, Emulex.

Westland Milk Products, the only cooperative who participated in the survey is made up of more than 330 shareholders. Companies in the dairy market such as Westland are typically organised as cooperatives and make up 95 percent of the dairy market[4].

2.3.4 Vertical integration vital to the success of firms

A common feature of high growth firms is that they are highly vertically integrated in the domestic market and in offshore markets where they have a large presence. Not only is it dependent on the market but the type of product manufactured.

Several of these companies only manufacture in New Zealnd. In addition, they have established sales and distribution offices not only in New Zealand, but also in their larger offshore markets, such as Australia and Asia.

Companies such as SKOPE Industries, BCS Group, F&P Healthcare, Westland and Temperzone have established sales and distribution offices in the Asian region. Such companies are motivated in having direct sales teams in this region so that they are in control of customer relationships. These companies have established offices in China (SKOPE and Westland), Malaysia (BCS Group), Singapore (Temperzone and Westland) and South Korea (F&P Healthcare).

Furthermore, most of the participating firms have indicated that they have a direct presence in Europe (Endace, Frucor, Fusion, Westland, Southern Spars and the Gallagher Group), South Africa (The Gallagher Group and Southern Spars) and the Americas such as the United States, Canada, Chile, Argentina and Brazil (Endace, Frucor, Fusion, Southern Spars, the Gallagher Group, Tru-Test Group and the BCS Group).

One firm which stands out in terms of its sales and distribution teams is F&P Healthcare. The company is currently represented in over 120 countries worldwide, including staff in 33 markets, 20 of which have direct sales teams. These sales teams account for 80 percent of the company's sales, illustrating that a vertical integration strategy is adopted for higher value and growth markets. However, in the remaining countries, independent distributors are used.

Many companies have used independent distributors, which may be through partnerships (for example the BCS Group), to distribute and sell their products in smaller markets and where there are no scale or cost benefits for owning or establishing a distribution or sales office/company. Other companies from the survey which have specifically stated the use of independent distributors include Fusion, the Gallagher Group, Tru-Test Group, Westland and Temperzone.

[4] CMD taskforce: The structure and Ownership of New Zealand Companies and its Impact on Capital Market Development

2.3.5 New Zealand remains an important location for manufacturing

Results of the survey show that a majority of participants have either single or multiple manufacturing sites in New Zealand. However, some of these high growth companies have either outsourced or offshored some of their manufacturing processes, in particular those elements of the manufacturing process with high labour content.

Three companies indicated that they only have one manufacturing site located in New Zealand: SKOPE, ABE'S Bagel Bakery and 3i Innovation. Both ABE's Bagel Bakery and 3i Innovation have their sole manufacturing in Auckland while SKOPE's manufacturing plant is in Christchurch and is said to be the "largest design and innovation centre of its kind in Australasia."

Several companies interviewed have multiple manufacturing sites in New Zealand: the Tru-Test Group, Westland, Frucor, the Gallagher group, Watties and Delmaine. Typically, these companies with multiple manufacturing facilities use each site for different purposes.

This is evident with a company such as Frucor which has a manufacturing hub in South Auckland, along with a small water operation in Kaiapoi, Christchurch, and a fresh juice processing and bottling plant at Bayview, Napier.

Another company which utilises multiple manufacturing facilities in New Zealand is the Gallagher Group. A large proportion of animal product and security manufacturing is in Hamilton and generally involves placing components onto circuit boards, moulding and assembly. In addition to this facility, its plant in Marton manufactures fuel pumps and its third location builds gate hardware including the fabricating, welding and galvanising of gate hardware.

Some of the participating companies also manufacture overseas, either themselves or under contract from third parties, for a variety of reasons including costs and proximity to key markets or customers:

- F&P Healthcare manufactures in Tijuana, Mexico to be closer to their largest export market, the United States
- The BCS group have two large scale assembly plants in Melbourne, Australia and Kuala Lampur, Malaysia. BCS also had a large project at a Mexican airport and stated it was not practical to manufacture in the Australasia region
- The Tru-Test Group has manufacturing locations in Texas, USA and Porto Alegre, Brazil manufacturing market specific accessories
- Temperzone has a manufacturing plant in Sydney, Australia
- Frucor has a manufacturing plant in Argentina, and
- Endace assembles their network recording systems under sub-contract with NEI in Boston, United States.

Other catalysts for the shift include the high New Zealand labour costs, logistic costs and diversification of risks associated with single site manufacturing such as environmental disasters. For example, the Tru-Test Group undertakes local market manufacturing to profitably serve product segments in North and South America that were previously inaccessible due to logistics costs.

A few companies have outsourced some or all of their production such as SKOPE and Endace. SKOPE currently has manufacturing relationships with two Italian companies (Irinox and MISA), one Chinese company (Haier) and one South Korean company

(Busung). SKOPE purchases their finished products and rebrands them under SKOPE. Endace has completely outsourced their manufacturing under subcontract with NEI in Boston, United States and with GPC in Christchurch, New Zealand. Endace stated that it has always used partners who are able to meet their needs and typically have the ability to handle more capacity compared to the capacity which Endace can bring to them.

Fusion was the only participant which didn't manufacture in New Zealand. The company has always manufactured in Asia due to the costs involved with the consumer electronic market. However, their products are designed, engineered and tooled in New Zealand.

2.3.6 The division between services and manufacturing disappearing

In today's global context, production is only one aspect of manufacturing as manufacturers now engage in research, design and the provision of services. Thus, manufacturing can be viewed as the group of activities needed to develop, produce and deliver goods and services to consumers.

This disappearing boundary between manufacturing and services is regarded as a catalyst for market success. There is now a much greater focus on market success through knowledge: the competitive advantage is in knowing—what to make and how to make it.

New Zealand firms are competing successfully through the creation of new business offerings which links products and services together in a variety of way to meet customer needs. A majority of the Respondents recognised the importance of services as 10 of the 15 firms stated that their services are a source of competitive advantage.

For example, both the Gallagher Group and SKOPE indicated that the boundary between services and manufacturing is blurred when asked which manufacturing sub-sector they fall under. The Gallagher Group considered themselves as a global marketer of their innovative products and that manufacturing is only a subset of the total firm functions. SKOPE believes that they are crossing thresholds from being a traditional manufacturer to a company focusing more on IT generation and a larger services aspect. They are accomplishing this by offering customised refrigeration solutions to their customers, thus linking products and services together. Furthermore, SKOPE has its own separate service entity known as SKOPE Services Limited which was established in 2005.

ABE's Bagel Bakery also highlighted the changing face of manufacturing when asked about its operational structure. The company considers itself not only a specialist manufacturer but a seller and marketer of bagel products.

Of all the participants, BCS Group received the greatest share of revenue from services. BCS highlighted that in the year of 2011 and 2012, 44 percent and 55 percent of revenue was due to services respectively. Close to 80 to 90 percent of these services are used by airports, who are the group's primary customers. Furthermore, the company is considered the world leader in Hold Bag Screening (HBS) security systems and integration. Furthermore, they are the developers of a revolutionary 3D Virtual Airport simulation and emulation software package which is used for the development and testing of client Baggage handling systems (BHS) systems. Their achievements have indicated that they are the best in the world in the airport systems niche and currently have a 75 percent market share in the Oceania region.

Developing sophisticated and radical technology which is used in products like those developed by BCS is a catalyst for shaping product-service packages. Temperzone has recognised this and is considering moving into this area due to the sophistication of future products.

Developing new business offerings which link services and products expands the technical, managerial and marketing capabilities of manufacturing firms. In turn this results in distinctive know-how and intelligence which drives their innovation and competitiveness. This is evident from firms such as the BCS Group and the Gallagher Group. Their use of unique and identifiable knowledge to devise product-service packages allows the two firms to maintain their position as global leaders.

These firms have broadened their marketing capabilities through establishing sales and distribution offices domestically and internationally. Several high growth manufacturing firms are also outsourcing through collaboration with independent distributors to capture distant and smaller markets where there is no scale to own distribution companies. Companies which use collaboraton include the BCS Group, F&P Healthcare, Fusion, the Gallagher Group, the Tru-Test Group, Westland and Temperzone.

The blurring of boundaries between manufacturing and services is also explored further in the next section by comparing the features of a manufacturing firm with an innovative services firm.

2.3.7 Similarities between high successful manufacturing firms and an innovative services firm

Xero, one of the major players in the strongly competitive accounting software market, is viewed as a real New Zealand success story. The company which is dubbed the 'Apple of accounting' by Credit Suisse[5] has seen its shares surge by 425 percent since the start of 2013 and has experienced a growth of 101 percent in its turnover during the 2012-13 financial year. In addition to the company's strong financial performance, founder Rod Drury was crowned Ernst and Young'sNew Zealand Entrepreneur of the Year for 2013.

The company's characteristics have been pivotal to the company's success. Many of these features are, in fact, comparable to those of successful manufacturing firms that we have studied as part of this report.

Table 2.3 lists the common features of the respondents and determines whether they are common to Xero.

[5] Sydney Morning Herald: Sharemarket darling Xero dubbed 'Apple of accounting'

Table 2.3: Key features of manufacturing firms and their relevance to Xero

Key characteristics in high growth manufacturing firms	Are these common with Xero? (✓/✗)	Description/Comments on Xero
Predominantly manufacture final goods	✓	Xero produces an online accounting software, a final good
Largely export-oriented	✓	62 percent of the company's revenue is contributed to overseas sales
Australasian region is the core export market	✓	40 percent of Xero's revenue is from sales to Australia, its largest market
Global presence	✓	Xero is a cloud-based service and therefore accessible globally. In addition, the firm has offices in Australia, the United Kingdom and the United Stated in addition to its 4 offices in New Zealand.
Privately owned	✗	Xero is listed on the NZX and the ASX
Domestic ownership	✓	The company is still New Zealand owned as New Zealand based shareholders represent 72 percent of shareholders
Vertical integrated firm	✓	The company distributes its software via cloud services and has sales and marketing teams located in their key export and domestic markets.
Still develop or produce in New Zealand	✓	The company continues to develop its products in New Zealand
Provision of services	✓	Support services are provided by Xero and are located at their head-quarters in Wellington. The company believes its customer support is an important source of competitive advantage
Innovation is key to its competitive advantage	✓	Innovation is the key to the company's success and competitive advantage according to Xero
Established in New Zealand	✓	Xero has been in New Zealand ever since its establishment in 2007
Provides training and skill enhancing programs to their workforce	✓	Product design and development, technical and advanced computer skills training programs are provided to staff members

3 What makes New Zealand manufacturing competitive

Competitiveness is defined by the productivity with which a nation utilizes its human, capital and natural resources. This section looks at the competitiveness of the New Zealand manufacturing sector:

- Section 4.1 presents the traditional view of cost competitiveness
- Section 4.2 analyses the importance of the drivers of competitiveness listed in the Global Manufacturing Competitiveness Index report to New Zealand's high growth manufacturing firms, and
- Section 4.3 investigates the impact of the firm architecture on competitiveness.

3.1 Traditional view of cost as a driver of competitiveness

Much of the material to date focuses on the relatively low wages in New Zealand. We believe this is unhelpful as:

- It is unlikely that the sector is well served by being promoted as relying on relatively low wages (certainly not to young people looking to choose a career in the sector), and
- Low wages are not a sustainable competitive advantage. There will always be locations with lower wages which are catching up to New Zealand in terms of skill and other business environment factors. Thus, if New Zealand needs to attract skills from overseas it will, over time, need to pay internationally comparable incomes.

The impact of low wages is highlighted by China's experience of low labour costs. According to a 2013 Deloitte Touche Tohmatsu (Deloitte) study of the drivers of manufacturing competitiveness, senior Chinese manufacturing executives believed that the cost of labour and materials is the most important driver for competitiveness.

However, as China continues to evolve and move up the product complexity ladder—and in turn grow their economies and become involved in the production of more complex products—they have become less competitive on the labour advantage as the emergence of a strong middle class has caused its low labour costs to rise.

This has resulted in China losing ground to nearby low labour cost countries such as Vietnam and Indonesia. It has also forced the country itself to shift production to lower cost countries for more commoditised products as it is unable to sustain a competitive advantage.

Thus, we will look at other factors discussed by the Deloitte study and look into the impact of a country's architecture in Section 4.2 and Section 4.3.

3.2 Broader perspective on competitiveness

This section analyses the drivers of competitiveness which were listed in the Global Manufacturing Competitiveness Index report with respect to the New Zealand manufacturing sector. This is achieved:

- In section 4.2.1, by summarising the objectives of the Deloitte report and their findings. In particular, we focus on the ranking of global drivers of

manufacturing competitiveness by senior manufacturing executives around the world, and

- In section 4.2.2, by comparing the global rankings to the rankings of the same drivers by senior manufacturing executives of successful New Zealand manufacturing firms.

3.2.1 The global importance of talent-driven innovation

To understand how manufacturing CEOs and other manufacturing executives view the manufacturing sector's competitiveness on a global front, Deloitte's Manufacturing Industry Group and the U.S Council on Competitiveness (UCC) developed a multi-year Global Manufacturing Competitiveness Index. The initiative which began in 2010 is based on the responses of more than 550 senior manufacturing executives on an extensive survey which focuses on the current business environment and global competitiveness in the manufacturing sector.

As part of the study, executives were asked to rank key government and market forces which drive manufacturing competitiveness. The following table summarises the 2013 rankings of these key drivers that impact a country's manufacturing competitiveness.

Table 3.1: Global drivers of manufacturing competitiveness index ranking (2013)

Overall Rank (1-10)	Overall index score	Main Drivers	Most important sub-component
1	10.00	Talent-driven innovation	▪ Quality and availability of researchers, scientists, and engineers ▪ Quality and availability of skilled labour
2	8.42	Economic, trade, financial and tax system	▪ Tax rate burden and system complexity ▪ Clarity and stability of regulatory, tax and economic policies
3	8.07	Cost and availability of labour and materials	▪ Cost competitiveness of materials ▪ Availability of raw materials
4	7.76	Supplier network	▪ Cost competitiveness of local suppliers ▪ Ability of supply base to innovate in products and processes
5	7.60	Legal and regulatory system	▪ Stability and clarity in legal and regulatory policies ▪ Labour laws and regulations
6	6.47	Physical infrastructure	▪ Quality and efficiency of electricity grid, IT and telecommunications network ▪ Quality and efficiency of roads, airports, ports, and railroad networks
7	6.25	Energy cost and policies	▪ Cost competitiveness of energy ▪ On-going investments to improve and modernize energy infrastructure
8	3.99	Local market attractiveness	▪ Size and access of the local market ▪ Intensity of local competition
9	2.48	Healthcare system	▪ Cost of quality healthcare for employee and society

			▪ Regulatory policies (e.g. pollution, food safety, etc.) that are enforced to protect public health
10	1.00	Government investments in manufacturing and innovation	▪ Government investments in R&D: science, technology, engineering and manufacturing ▪ Private and public sector collaboration for long-term investments in R&D: science, technology, engineering and manufacturing

Source: Deloitte LLP and the U.S. Council on Competitiveness: 2013 Global Manufacturing Competitiveness Index

The results show that leaders consider broad drivers of competitiveness. Specifically, whilst cost of labour is important (ranked third), it is less important than talent-driven innovation (ranked first) and the economic, trade, financial and tax system (ranked second).

Talent-driven innovation relates to the quality and availability of skilled labour and their ability to drive innovation. Such members of the workforce include researchers, scientists and engineers. Executives from developed economies, such as Germany, the United States, and Japan, viewed talent-driven innovation as the most important driver of competitiveness. In contrast, executives from developing economies such as India, China and Brazil, held the view that the cost of labour and materials are more important drivers of competitiveness compared to talent-driven innovation.

These differing views are unsurprising—for example, those markets that currently have a cost advantage (such as China and India) ranked it as their most important driver. In section 4.2.2 we will compare these rankings with those shared by New Zealand executives from companies covered in our case studies.

The economic, trade, financial and tax systems were considered the second most important driver for a country's manufacturing competitiveness. In particular, executives highlighted that tax rate burdens and system complexity, as well as the clarity and stability of policies, as significant hurdles to overcome for less competitive countries. Furthermore, the percentage of executives that reported a country as extremely competitive with respect to the local economic, trade, financial and tax systems was higher in developed economies and lower in developing economies.

A comparison of the ratings for key competitive drivers by CEOs from the countries named above is shown in Table 3.2 below. Scores are given from one to ten with one being the least competitive factor and ten being the most competitive factor.

Table 3.2: Country level ratings for key drivers of competitiveness, 2013

Selected Country/Manufacturing Competitiveness Drivers	Germany	U.S.	Japan	China	Brazil	India
Talent-driven innovation	9.47	8.94	8.14	5.89	4.28	5.82
Economic, trade, financial and tax system	7.12	6.83	6.19	5.87	4.84	4.01
Cost and availability of labour and materials	3.29	3.97	2.59	10.00	6.70	9.41
Supplier network	8.96	8.64	8.03	8.25	4.95	4.82
Legal and regulatory system	9.06	8.46	7.93	3.09	3.80	2.75
Physical infrastructure	9.82	9.15	9.07	6.47	4.23	1.78
Energy cost and policies	4.81	6.03	4.21	7.16	5.88	5.31
Local market attractiveness	7.26	7.60	5.72	8.16	6.28	5.90
Healthcare system	9.28	7.07	8.56	2.18	3.33	1.00
Government investments in manufacturing and innovation	7.57	6.34	6.80	8.42	4.93	5.09

Source: Deloitte LLP and the U.S. Council on Competitiveness: 2013 Global Manufacturing Competitiveness Index

3.2.2 New Zealand manufacturing executives reinforce views on innovation

The Deloitte study highlights that talent-driven innovation was ranked the most important driver of manufacturing competitiveness in both 2010 and 2013. When asked to force rank[6] these exact drivers, with the exception of the healthcare system, a majority of the New Zealand senior executives who undertook our survey also ranked talent-driven innovation as the most important driver for manufacturing competitiveness. This supports our case for rejecting the traditional view of low wages as the key driver of manufacturing sector competitiveness.

Half of the participants ranked talent-driven innovation as their most important driver for manufacturing competitiveness[7]. Only three firms ranked the cost of labour and material as the most important driver of competitiveness. Other factors which were seen as important to competitiveness included:

- Local market attractiveness— two companies ranking this as their number one driver, and
- Physical infrastructure, the supplier network and the economic, trade, financial and tax system—three different firms ranked these factors, as their most important driver.

Factors which did not receive a single number one ranking included energy cost and policies, the legal and regulatory system and government investments in manufacturing and innovation. Additionally, most firms ranked energy cost and policies as the least

[6] The ranking was from 1 to 9, with one being the most important and 9 being the least important.

[7] One firm which did not force rank these factors as they manufacture in Asia.

important factor, the legal and regulatory system as the eighth most important factor and government investments in manufacturing and innovation as the sixth most important factor.

Table 3.3 summarises the results of these rankings and shows the three most important drivers of competitiveness and how many firms ranked them as their top three. For example, talent-driven innovation received the top ranking of 1 by seven firms, but was also ranked as the second most important factor by a further two firms. Similarly, costs only received the top ranking by three firms, but it also featured as the second and third most important rating.

Table 3.3: Ranking of drivers of manufacturing competitiveness

Driver	Ranked no. 1	Ranked no. 2	Ranked no. 3
Talent-driven innovation	7	2	0
Cost and availability of labour and materials	3	4	3
Physical infrastructure	1	3	2
Local market attractiveness	1	2	2
Economic, trade, financial and tax system	1	0	1
Supplier network	1	0	4
Energy cost & policies	0	1	0
Legal and regulatory system	0	0	2
Government investments in manufacturing and innovation	0	2	0

Fuelling innovation by improving the skills of its workforce

The importance placed on talent-driven innovation by these successful New Zealand manufacturing firms is evident in their efforts to train staff through several training and skills development programs, the amount invested in R&D and the initiatives to innovate.

Nearly all firms indicated that they provide various training and skill enhancing programs for their staff, whether this was done internally or through the use of an external provider.

These high growth firms stated that they provided one or more of the following programs—technical skills, product design and development, basic or advanced computer skills, team and problem solving skills, quality, lean manufacturing and basic numeracy and literacy skills.

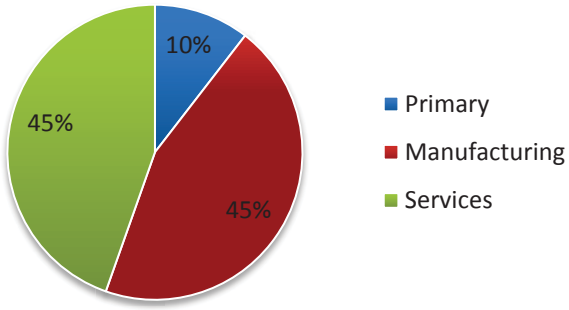
Apart from these broad skills categories, firms also offered sector and product specific training and skills programs for their staff members. These are highlighted in Figure 3.1 below.

Figure 3.1: Examples of training and skills development programs offered

Fuelling innovation by investing in R&D

Manufacturing businesses spent the most on R&D compared to the primary and service industries in New Zealand in 2012. Approximately $1.2 billion was spent on R&D by New Zealand businesses in 2012 with $536 million of the total contributed by manufacturing firms. This was followed by the service industry which spent a total of $532 million and the primary sector which contributed to 10 percent ($125 million) of total expenditure. The contribution by each industry is reflected below in Figure 3.2.

Figure 3.2: Business expenditure on research and development in NZ, 2012



Source: Statistics NZ: Research and Development in New Zealand: 2012

The amount spent on R&D by Respondents, as a percentage of turnover, also indicated the importance of innovation to these firms. The percentage spent by Respondents ranged from 1 per cent to 30 per cent in 2012.

Some New Zealand firms such as the Gallagher group, the Tru-Test Group, Temperzone, Fusion, Southern Spars, Endace, F&P Healthcare and SKOPE spent a minimum of 4 percent of the company's turnover on R&D. All these firms predominately manufacture either electronic and electrical products or machinery equipment indicating that these manufacturers are more R&D intensive sub-sectors.

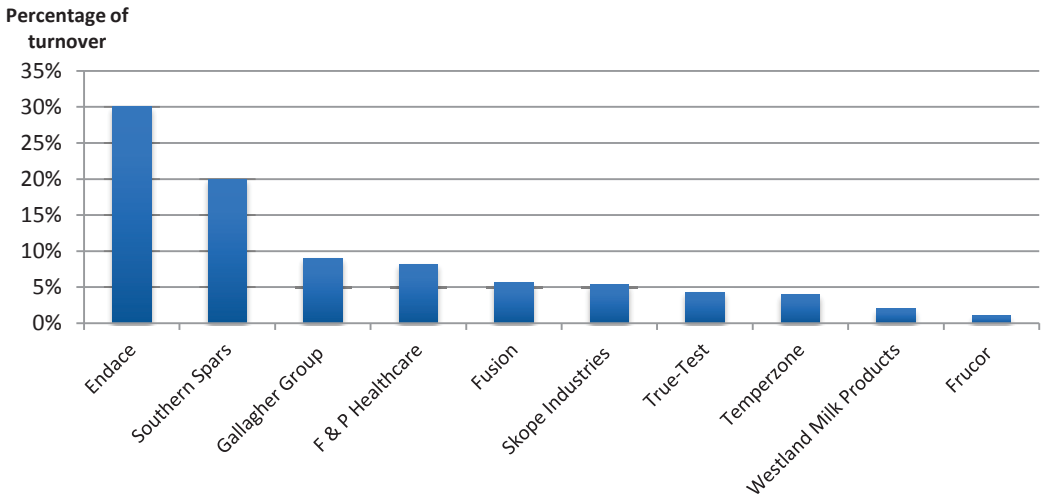
In particular, firms in industries which face several changes in regulations, standards and requirements tend to spend a greater portion of their turnover in R&D. Examples of this were SKOPE and Temperzone which face several regulatory changes and thus need to develop products such as refrigerating products to meet the minimum energy performance standard compliances.

Additionally, F&P Healthcare face several regulatory clearances for medical products around the world. These pose as barriers for F&P Healthcare to enter new markets or to stay in a current market. Furthermore, these regulations are getting stricter on a global scale according to the company, and thus require a significant amount of investment in R&D.

Those firms that spent less than 4 percent on R&D were those firms in the food sector such as Westland and Frucor which spent 2 percent and 1 percent, respectively. For example, Westland stated that the company spends more effort on development, rather than research, such as the development of new products and improving current products and their functionality to meet customer needs.

The percentage of turnover spent on R&D in 2012 by those who responded is shown below.

Figure 3.3: Percentage of turnover spent on R&D, 2012



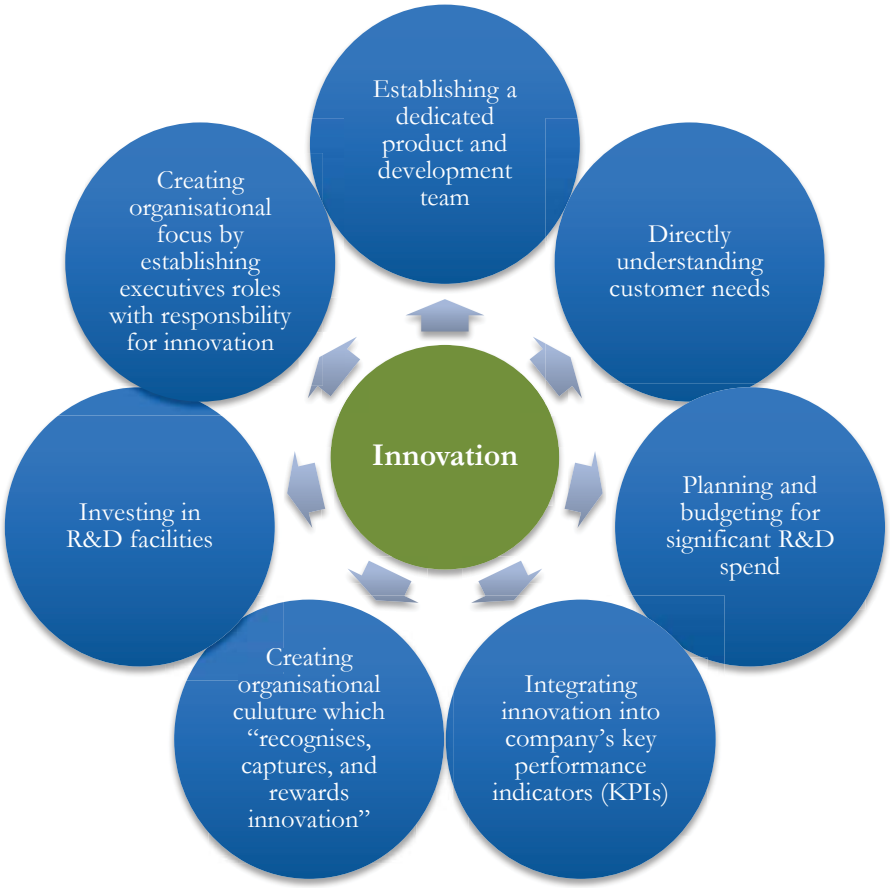
Several company specific strategies were adopted to fuel innovation

Innovation is often misunderstood as being synonymous with R&D, or other advanced technology concepts. In fact, the most powerful innovation can arise through a range of avenues such as new strategic approaches, a clear understanding of customers and their peculiar and changing demands, and implementation of these strategies through new ways of working.

The majority of Respondents highlighted the importance of innovation by stating it is critical in giving them a competitive advantage.

When the companies surveyed were asked how they innovate, responses included the creation of a business culture which promotes innovation, establishing a product and development and so on. Figure 3.4 lists these responses below.

Figure 3.4: Methods to stimulate innovation



The end result of this focus on innovation was the development of several new products over the past 3 years. Some of the products which were developed by the surveyed firms are summarised in Figure 3.5 below.

Figure 3.5: Recent products by participating companies, 2010-2012

Kids Bites by ABE'S

I-Series by Gallagher

Wattie's Creations Cooking Sauces

WESTPRO NUTRITION by Westland Milk Products

3 new high-performance car stereo units by Fusion

H2Go zero by Frucor

VF ICE Storage cabinet by SKOPE

Simplus full face mask by F&P Healthcare

BAGgate™ Automated Bag Drop Solution by BCS

Tru-Test Group's SRS EID stick reader

10GbE Enterprise Adapters by Endace (Emulex)

Southern Spars' rugged Soto 30 One Design

3.3 The importance of a firm's architecture on competitiveness

We believe that it is also helpful to understand the competitiveness of the New Zealand manufacturing sector using the concept of "architecture." The concept was coined by John Kay (1993) as part of his analysis of the three sources of distinctive enterprise capabilities: reputation, innovation, and architecture.

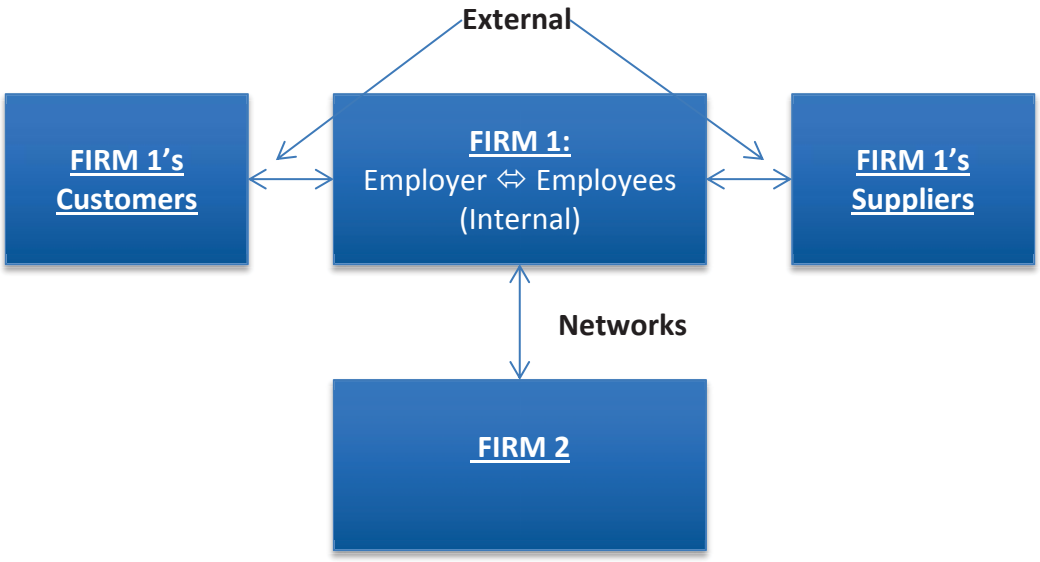
Architecture refers to a network of relational contracts within, or around, the firm. These relationships define the firm. Firms may establish relationships in the following three ways—establish these relationships with and amongst employees (internal architecture), with their suppliers or customers (external architecture) or among a group of firms engaged in related activities (networks).

Hence, architecture concerns organizational effectiveness in the search for value and focuses on individuals achieving organisational goals by:

- Creating and storing organizational knowledge and routines
- Promoting effective cooperation between members
- Achieving an open and easy flow of information between members, and
- Adapting rapidly and flexibly to changing circumstances.

This concept is visually represented in Figure 3.6 below.

Figure 3.6: John Kay's concept of architecture



3.3.1 The benefits of New Zealand's small domestic market

The benefits of a small market were highlighted by John Kay using the region of Lumenzzane in Italy as an example. Despite being a small region in Italy, most of its output is exported and the region is one of the richest in Italy. The region's success is based on the architecture of its firms which is defined by its small market. Lumezzane is a market leader in a range of sophisticated metal-manufacturing products including valves, taps, and the customised machine tools used in their production. Its structure of relationships within the region has given Lumezzane its competitive advantage as the small firms of the Lumezzane valley often specialise in a single component of the final product, which gives each access to the knowledge, abilities, and resources of the whole.

The architecture of New Zealand firms is also defined by the small size of the domestic market. Thus it allows firms to develop strong organisational knowledge; that is, knowledge of the market that allows companies to respond flexibly to changing

circumstances and enables easy exchange of information. In turn this creates firms that have a natural advantage in small niches as observed within the manufacturing sector.

We observe that the New Zealand manufacturing firms covered in the survey occupy niches in the international market that are not always well served by larger companies. Major international companies, which are sophisticated and are able to provide high quality offerings, are too big for these niches. Furthermore, small companies from other countries which are less sophisticated than their New Zealand competitors are unable to serve these niches as well.

Companies which have demonstrated their natural advantages in small niches within the international market include, for example, the Gallagher group, F&P Healthcare, BCS Group and 3i Innovation. Table 3.4 shows the efforts that allowed them to carve out specific niches.

Table 3.4: Successful New Zealand firms in niche international markets

Animal Management Products

- Founder Bill Gallagher developed the first electric fence in 1938
- Full production of the electric fence began in the late 1940s
- The 1940s was the period during which the mains-powered fence unit (or 'energizer') was developed and exports of energizers began in the early 70s
- Expanded their product portfolio in 1996 with the introduction of Ruddweigh Weigh Systems
- Today Gallagher is known in over 100 countries worldwide and is the largest competitor in the animal management niche
- Portfolio now includes a comprehensive range of weigh systems, NLIS Readers, stock handling equipment and animal management software, to assist the farmer from the ground level in developing their business profitability and performance.

Healthcare devices

- Involvement in healthcare started in the late 1960s
- A prototype respiratory humidifier, developed in New Zealand for use with patients being ventilated in hospital intensive care situations, was taken to the production stage by F&P Healthcare
- Entered the respiratory care market in 1971 with the first commercial unit being sold
- They now offer a broad range of products and systems for use in respiratory and acute care and in the treatment of obstructive sleep apnoea (OSA)
- Products and systems are sold in over 120 countries worldwide
- Approximately 99% of sales revenue is derived from outside New Zealand.

Materials handling and plant automation equipment

- Entered the BHS market in 1993 with its Airport Systems team
- Began to manufacture general transport conveyor systems and sortation systems for logistic firms in 2009
- Also began to manufacture software systems for self-check-in baggage units
- BCS are world leaders in HBS security systems and integration as well as developers of the revolutionary 3D Virtual Airport simulation and emulation software package that is used for the development and testing of client BHS systems
- Has a 75% market share in the Oceania region.

In-road LED Solutions

- The idea behind the in-road LED lighting technology which 3i Innovation uses originated many years ago from Professor John Boys and his team at Auckland University
- It was in 1996 when its first application was put into the Wellington Terrace tunnel
- 3i Innovation currently has over 80,000 3i road markers in use in 800 locations in 16 countries
- Europe's No. 1 supplier of in-road lights to the European tunnel market
- Won the Best use of Design in International Business at the 2013 New Zealand International Business awards

The advantage of being established in New Zealand

A majority of the high growth manufacturing firms which participated in the survey indicated their extensive knowledge of the sector. This strong organisational knowledge

stems from the fact that all these firms were established in New Zealand, and gives them a natural advantage in small niches.

Firms which took part in the survey were founded in New Zealand as early as 1934 (Watties). Their long presence in a relatively small domestic market such as New Zealand has allowed them to gain a strong understanding of the market and create a strong local brand name which companies such as Temperzone, Frucor and SKOPE have attributed to their competitive advantage.

Not only have they been established in New Zealand but almost all these firms remain domestically owned with the exception of Frucor.

Firms that were founded in New Zealand built greater ties with the New Zealand economy and its closely knit market which gave them a competitive advantage. Furthermore, it also allows companies to meet the unique local needs or tastes, achieve local and operational or logistic advantages, have strong community ties and develop a cultural identity as seen with Frucor's brand "V" which was created in 1997. This in turn gives such firms a leg up in small niches globally.

The benefits of being a private company or cooperative in New Zealand's domestic market

With the exception of F&P Healthcare and the Tru-Test Group, Respondents were privately owned or a cooperative such as Westland Milk Products. Privately owned companies benefit from avoiding onerous external reporting requirements, which in turn allows for greater flexibility of operations and rapid decision making.

Furthermore, as stated by the Gallagher Group, private ownership allows the company to take on a long term view and long term investments without having to worry about constantly disclosing information to shareholders and focusing on quarterly reviews.

As indicated, Westland Milk Products is a cooperative. Being a cooperative establishes a network of patrons, such as farmers for Westland. Cooperatives tie the patrons to the organisation by making them full partners, which in turn helps build a stable volume of business and a long-term attitude. This in turn is favourable to the efficient operation of the cooperative, with patrons sharing and contributing to a common knowledge and skill base.

Strong external networks with other domestic firms

A strong set of external networks in the domestic economy also enables New Zealand manufacturing firms to benefit from their small niche. For example, given the international strength of the New Zealand agricultural sector, it has spawned manufacturing firms that support the agricultural sector. These close ties allow firms to share knowledge and information or establish fast response times between them. This is evident amongst the firms participating in these surveys. Companies such as the Gallagher Group and the Tru-Test Group have taken advantage of the agricultural sector in New Zealand by developing products for this sector: including electrical fencing and other animal management equipment such as weighing systems, stainless steel milk holding tanks, dairy farm refrigeration and dairy automation. Given the strength of the New Zealand agricultural sector globally, these niche products have become world leaders.

4 How can Government policies be improved

In the previous section we showed that the successful New Zealand manufacturing firms surveyed seek to improve their competitiveness in a number of ways, but do not consider

Government policies to be a key driver of competitiveness. For example, of the 15 firms surveyed, none of the firms ranked it as the number one driver of competitiveness, and only two firms considered it the second most important factor.

These survey results are possibly a reflection of the good business environment in New Zealand generally. For example, the country was ranked:

- 1st for legal system and property rights and credit market regulation, by the Economic Freedom of the World Index (2010)
- 2nd for control of corruption in the World Banks's Worldwide Governance Indicators (2009)
- 2nd in the Global Peace Index (2010), and
- 25th in the overall Global Competitiveness Index (2011-12).

Given this, in this section we examine why intervention may be needed at all and what form of intervention is being sought by New Zealand manufacturers—especially since most firms that participated in our survey attached a relatively low importance to relying on policy intervention to improve competitiveness.

We consider how the existing enabling environment can be improved in a pro-competitive manner, rather than calling for traditional protectionist policies. That is, how manufacturing firms from New Zealand—a country with a small domestic economy and geographically distant from international markets—can be supported by a new-generation "industrial policy" that could genuinely advance New Zealand manufacturing.

4.1 Why there is still role for the Government

Policy experts have long been divided over Government intervention. Many economists argue that there is nothing special about manufacturing; they note that non-manufacturing businesses are highly innovative and manufacturing employment is unlikely to return to previous levels. This is the debate that one has if one seeks special support for manufacturing. A more useful view is to consider the nature of partnership between the Government and the manufacturing sector that would promote the greatest economic returns for New Zealand. The simple fact is that through a range of tax, education and other policies, the Government is effectively in partnership with all economic sectors: the Government focuses on public good aspects of the overall economic performance, while the private sector focuses on the private goods.

In other words, the question is not whether the Government should intervene in manufacturing, but rather, given the range of interventions the Government inevitably undertakes across all sectors, how these interventions should be tailored for the manufacturing sector.

These views on why government intervention is needed for manufacturing have recently been studied in the United States. A new paper by the Brookings Institution lays out the case for pro-active public policy for manufacturing. Its four key points are summarised below and apply in the New Zealand context.

Box 5.1: Why Public Policy is Needed to Strengthen Manufacturing

First, it argues that manufacturing "provides high-wage jobs, especially for workers who would otherwise earn the lowest wages." To show that, the study controls workers' personal characteristics, like their level of education, to compare similar workers in different industries. The researchers find that wages tend to be higher for manufacturing workers than for non-manufacturing workers, perhaps because manufacturers are willing to pay to retain higher-skilled employees. It is a point the administration echoes when it says that manufacturing will be an important source of middle-class jobs.

Second, the paper argues that manufacturing is important for innovation. Manufacturers tend to plough significant funds into research and development, much more so than other businesses in the private sector. Though manufacturing makes up about 11 percent of economic output, the paper says, manufacturing businesses account for 68 percent of the research and development spending by domestic business.

But why not keep research, development and innovation onshore while offshoring the hard work of putting garments or cars or rockets together? The paper cites studies showing that the "co-location" of research and production are important for improving business practices and generating innovation. It also argues that that manufacturers' innovation and research can spill over to other workers and firms.

"The interdependence between production and innovation is apparent in many industries, and policy makers ignore this fact at the peril of eroding America's competitive edge in both current and future industries and in services as well as manufacturing," the study says.

Finally, the paper argues that manufacturing can help reduce the country's trade deficit, and that smart manufacturing can promote environmental sustainability.

Source: Why Does Manufacturing Matter? Which Manufacturing Matters? Brookings Institution, February 2012

4.2 What type of intervention are New Zealand manufacturers seeking

As part of our case study survey, we asked New Zealand manufacturers to provide their views on the top three issues that they would raise with the Government. Four common themes emerged from the survey, calling for policy intervention to:

- Increase R&D grants
- Address skills shortage
- Improve business relations in key export markets, and
- Improve key macro-economic parameters, such as the exchange rate and the corporate tax rate.

Several companies stated that they would like to see an increase in R&D grants issued by the government as they have not received any grants or have received a minute amount in the past.

> *"Fund R&D around late stage development costs – tooling"*
>
> *"Focus R and D incentives on products that contribute to NZ including growth"*

Respondents believe government support in term of grants, and an increase in innovation subsidies, will stimulate innovation and in turn contribute to improving the country's growth. Again, it is worth emphasising that the Government already funds knowledge and innovation—the question is where such funding is directed.

Despite New Zealand's highly educated and skilled workforce, many respondents are finding it difficult to find individuals with the right skills, in particular engineering and industry specific skills. Thus, companies are calling for the government to focus on educational priorities such as establishing an education system providing 'work ready' young people and one that develops more engineering graduates who want to live in New Zealand and deliver technical trade skills applicable to manufacturing.

> *"Focus on educational priorities that develop more engineering graduates who want to live in NZ and deliver technical trade skills applicable to manufacturing"*
>
> *"The Resource Management Act and basic education of our workforce require on-going attention"*
>
> *"More lenient work permits to alleviate skill shortage"*

Respondents also stated they would like to see the Government increase funding for education and look at The Resource Management Act which they believe requires on-going attention.

Additionally, companies asked for more lenient work permits to attract foreign workers to alleviate this skills shortage.

As this Report has shown, successful New Zealand manufacturers are predominately export orientated and would like the government to support them by expanding business relationships with overseas counterparts.

Respondents in particular would like to see the expansion of the country's Free Trade Agreement (FTA) regime with trading partners. In addition, there was a call for providing legal assistance for exporters—some respondents felt that it is the legal areas in particular countries that can really catch a company out and trying to fight certain issues can be very difficult and costly for a company.

There was a limited call for better macro-economic management. Two specific issues were raised:

- The strength of the New Zealand dollar—a few Respondents stated that the high dollar is affecting the attractiveness of New Zealand manufacturing exports and have called for the government to address this issue. They believe a lower currency would make a significant difference to exports, and
- The high corporate tax rate—a minority of respondents want the Government to adopt a more competitive corporate tax rate, especially as they believe that competitors are taking advantage of the lower corporate tax rate of Asian countries such as Singapore.

4.3 How can the government improve its policy design and response

There are a number of significant and successful initiatives already under way to benefit New Zealand's business community. This is one of the reasons why firms that we surveyed mentioned what they viewed to be effective initiatives and frameworks:

- **Business Growth Agenda**—This programme by the MBIE is designed to support "New Zealand businesses to grow, in order to create jobs and improve New Zealanders' standard of living." The Business Growth Agenda focuses on six key "ingredients" businesses need to grow: Export markets, innovation, infrastructure, skilled and safe workplaces, natural resources, and capital. Each of these ingredients covers a dedicated work programme supported by a large number of actions and initiatives. The programme has published a number of reports, including one for the high-tech manufacturing sector
- **Better by Design**—This is a specialist group within New Zealand Trade and Enterprise (NZTE) that aims to "inspire and enable New Zealand businesses to succeed through design." This group assists companies increase their international competitiveness by integrating design principles right across their business, for example by teaching design thinking and the tools of design integration to management teams through a sequence of learning activities. The programme also partners companies with experts and assists with international collaboration through study tours and CEO summits
- **Callaghan Innovation**—A Crown entity established in 2013, this research institute manages the Government's business research and development funding programme. It is a team of about 400 comprising researchers, scientists, engineers, technologists, business people, investment managers and account managers, working across the country. The institute connects businesses with research organisations, offers expertise and facilities that businesses need, operates its own research and technology laboratories and specialist equipment. It manages $140 million a year in government funding and grants to support business innovation and capability building
- **Treasury framework for improving productivity**—The Treasury framework (2008) for improving productivity in the economy was built around five key drivers: Innovation, Enterprise, Skills, Investment and Natural Resources; and
- **Other programmes**—A range of other initiatives to help businesses pay for services such as training workshops, courses and coaching to develop management capability (NZTE's Development Vouchers), and the Export Credit Office (NZECO) sells a range of New Zealand government-backed trade credit insurances and financial guarantees that mitigate credit risk, and can assist exporters or their international buyers to access credit. Additionally, NZTE has also published guides, such as "Manufacturing: Creating Value in Your Business" to help New Zealand businesses enhance their ability to create value, grow profitability and develop exports.

This Report does not evaluate each and every Government programme and initiative. Instead, the aim is to highlight the sound basis from which further refinements in policy intervention should be considered.

Despite the existence of these initiatives, firms surveyed are continuing to call for further Government action. The rest of this section provides a number of insights on how the Government could refine its policy intervention to make New Zealand manufacturing more competitive—and many of these recommendations do not require significant public outlays of funding.

Start by designing an overarching Manufacturing Policy

The various government initiatives highlighted are designed for the business community and not necessarily focused or dedicated to the manufacturing sector. Therefore, it is difficult to understand how these initiatives fit together in the specific context of manufacturing.

An overarching Manufacturing Policy can bridge this gap and ensure that the various initiatives integrate coherently, or if they don't, to identify gaps in the policy.

Perhaps one of the constraining factors in developing a national manufacturing sector policy may be the diversity of the sector. This diversity makes it challenging to develop recommendations and actions that are relevant to all the specific sub-sectors of manufacturing.

Nonetheless, in the presence of various sub-sector policies, and a range of national economic programmes—such as those focusing on design, strategy, management, and innovation—what may be missing is a common thread that can weave a coherent and overarching strategy and policy for the manufacturing sector.

Accordingly, we believe that the Government should develop a holistic Manufacturing Policy that:

- Recognises a broader interpretation of manufacturing for a modern context
- Acknowledges that, like the wider economy, the manufacturing sector is dominated by small management enterprises (SMEs)
- Recognises sub-sectors that are critical building blocks for most other sectors of manufacturing and the broader economy, and
- There are close interactions among and between manufacturing and service companies as contributors to supply chains and integrated customer solutions.

Demonstrate publicly that manufacturing is a vibrant and integral part of the economy

There is a view in the market that the manufacturing sector has no future. This pessimism can be found both in national and international debate about the sector. There is also a perception that the New Zealand Government is not communicating its support of the sector more positively.

Government messaging about the importance of the manufacturing sector has far reaching implications, such as affecting the skills or volume of the manufacturing workforce. For example, the stance of the Government can influence how career advisors guide university students on which areas of the economy to focus on. A negative outlook by the Government may indirectly influence career choices and contribute to a shortage of labour.

Clear and authoritative articulation of the value of manufacturing to the New Zealand economy is a vital step for the Government to demonstrate its commitment to the task of improving the perception of, and rebuilding, the industry.

The Government could consider immediate steps such as establishing a leaders' forum for manufacturing, and publicly championing the value of manufacturing to industry and the community.

Additionally, a low-cost approach is to specifically recognise success in the sector by rewarding businesses for undertaking targeted innovation initiatives through high profile (and value) awards for the most successful initiatives. A program to encourage businesses to adopt and invest in innovative strategies over progressively more challenging stages could reward businesses for achieving defined milestones and measurable improvements. In creating such a programme, the Government can play an important role in encouraging industry to take up the challenges of innovation, reinvention and diversification, rather than relying on Government intervention. Such awards would provide models of best practice and inspiration for others.

It is important that the message regarding the strengths of New Zealand manufacturing is conveyed both nationally and internationally. The Government can do a lot to:

- Encourage innovation and competitiveness
- Overcome negative perceptions of manufacturing, particularly amongst young people, and
- Help to address the skills shortages that are impeding New Zealand manufacturers.

Diffusion of innovation initiatives that work well

The world is becoming a more fiercely competitive place to do business every day. Like New Zealand, other countries have realised that the competitiveness is moving away from cost and quality to innovation, design and differentiation.

Businesses are looking for new ways to transform themselves to be successful in a fiercely competitive future. Our research shows that New Zealand manufacturers attach significant weight to innovation in delivering this competitive advantage.

The Government's continued and expanded support for design-led innovation will be a further visible commitment to the drive for success of the manufacturing sector. There are already 11 initiatives under "Encouraging Business Innovation", as part of the Business Growth Agenda.

One simple way to achieve more success is to expand existing programmes that have shown demonstrable success. One of these, for example, is the Better by Design programme, assisting around 150 companies since inception to become more design enabled. However, there is a perception that the programme is too exclusive and the Government can better leverage the existing platform and diffuse it more widely to a wider audience of manufacturing firms.

Additionally, whilst it is encouraging that institutions like Callaghan Innovation help businesses take ideas through to commercialisation—bridging the "valley of death" between concept and market—Canada, Germany, Japan and South Korea have made commercialisation a central goal of their innovation programmes. These countries have adopted three broad strategies: (1) providing technical support and product development for SMEs (2) fostering collaboration between manufacturers and researchers, as well as between small and large manufacturers, and (3) providing competitive grants for private-sector R&D efforts with commercial potential.

Encourage more programmes that foster collaboration with research institutions and companies internationally

There is significant evidence to show that industry collaboration networks provide mechanisms for enhancing innovation and competitiveness through knowledge sharing, benchmarking and global partnering.

The successful New Zealand manufacturers covered as part of our case studies are investing significantly in R&D. However, despite this high propensity to innovate, few manufacturers have collaboration arrangements in place.

The vast majority of manufacturing businesses source innovation from within the business or through other parts of their supply chain, but as global competitiveness in manufacturing intensifies, better use of the Government's initiatives in research and the higher education sector should be a priority.

For example, four study tours have been organised through the Better by Design programme to Silicon Valley, and other initiatives have focused on collaboration with leading international universities such as Stanford University. The professional networking opportunities realised through such collaborative events can be a catalyst for new business opportunities but also for harnessing knowledge.

The Government can play a further role in expanding the reach of collaboration initiatives for New Zealand manufacturing through local research institutions such as Callaghan Innovation, or with international companies and institutions.

Tailor export promotion to market circumstances

NZTE works closely with New Zealand manufacturers to ensure that they can access the knowledge they need about potential markets and competition for their products. However the level and type of support may need to be varied depending on market circumstances. The survey that we conducted supported the need for more FTAs but also the type of support, such as legal expertise. Experience from other countries shows that:

- According to Canada's Trade Commissioner Service officials, the Trade Commissioner Service manages the Export USA program, which helps Canadian SMEs understand the specific legal fundamentals of exporting to the United States, Canada's largest trading partner
- According to the State and Commercial Service at the US embassy in Berlin, Germany's trade fair system is key to German manufacturer's success because it helps create awareness of global trends in different sectors and showcases Germany as a place to do business
- According to Tokyo Metropolitan Industrial Technology Research Institute (TIR), Japan's Metropolitan Technical Support Network for Export Products, offers consultation and information on international producer standards to SMEs as well as testing to determine compliance with those standards
- According to officials from South Korea's Trade-Investment Promotion Agency, 99 Korean Business Centres around the world can be used by SMEs as branch offices. The Agency also manages logistics centres—operated with UPS or DHL—to facilitate firms' distribution operations overseas.

Increasing the supply of skilled workers

The current university funding system is based on funding following the students; that is, students make their education choices and the Government provides funding,

irrespective of what degree or course is being studied. However, it cannot be assumed that the education choices made by students are fully informed, especially in terms of the expected employment outcomes at the end of the programme. Both the manufacturing sector and the Government have a role to play in providing the necessary information and explaining the opportunities available in the sector.

As we noted earlier, positive Government messaging about the overall future of the manufacturing sector will assist with this. This will complement existing initiatives by MBIE to publish occupation and demand reports and the recent reports on various sectors of the economy. A good way forward for the Government then is to assess how to use the research and reports that it has published to design university programmes. The answer may lie in some incentivising selection of programmes through targeted funding and preparing students for a vocation.

In Germany, the national government has maintained a substantial commitment to a dual training system which facilitates broad consensus among stakeholders in business, labour, and education, which in turn creates a supply of workers for manufacturing. The Federal Institute for Vocational Education and Training is responsible for conducting education and labour market research, facilitating regular stakeholder coordination among public agencies and the private industry on needed skills and managing changes to the system's standards.

On a smaller scale, the United States is taking steps to provide a combination of work-based and academic learning to meet manufacturer's needs through public-private partnerships. In addition, Canada has taken steps to encourage participation in their apprenticeship programs to train workers in the skilled trades needed by manufacturers.

In addition, the New Zealand Performance Based Research Fund (PBRF), which funds university research, is driven by the volume of publications: the more published by the faculty, the more funding the research programme secures. However, this approach to research funding can contribute to both a shortage of skilled labour for the manufacturing sector and research that may have insufficient practical application to important parts of the economy and the industry. A more progressive approach would align research to business. This could be achieved by extra points being awarded for commercially oriented research when evaluating potential recipients of research funding.

Finally, the Government's current emphasis on skills and workforce development is heavily focused on the youth and this should be re-examined. This is because the philosophy that young people go to school and university and then work for life with those same skills or education is under pressure. These pressures come from a variety of sources—changing demands of the modern workplace, increased use of soft skills and technical skills, and the business cycle that leads to restructuring and redundancies. Hence, it is not just the young that need training and tertiary systems must provide greater learning and up-skilling opportunities for those already in the workforce, without having to stop work and go on long courses.

We believe that employers also have an important role to play in developing the skills of their workforce and our case studies show that this is a hallmark of successful companies. If this is complimented by Government efforts to look beyond tertiary education as a system to train the youth, then this may provide a better integrated approach.

Government procurement should not be biased against New Zealand companies

The New Zealand Government—central and local—makes up a large proportion of the economy and controls significant spend for projects. However, because of the small scale of many manufacturing firms that wish to participate in government tenders, they may be

uncompetitive if whole of life costs are not factored in or they may face barriers to entry which don't apply to multinationals. This, in turn, results in the inability to gain experience of large projects locally, which can also hamper international opportunities.

Therefore, one way to help build companies of scale is to give them a fair opportunity to participate in large tenders and in larger New Zealand projects. It makes sense for the Government's behaviour as a procurer of goods and services to be aligned with its own vision for the structure and diversity of the country's economy and the competitiveness of its manufacturing sector.

For many government purchases, long term plans can address maintenance of public services capability and avoid large and lumpy expenditure. Similarly, it can allow industry to invest in more continuous productive capacity rather than in one-off expenditure, where there may never be subsequent use and which, therefore, represents avoidable and significant waste.

Without compromising probity or public finance outcomes, the Government needs to provide leadership in its procurement practices to drive productivity, innovation and other policy objectives for industry competitiveness. The Government can do so by adopting a 'procurement' rather than 'purchasing' approach that preferences long term gains to the Government over short term cost savings. In many instances, giving a bit of thought to ensuring that tender conditions and processes do not unreasonably exclude small-scale New Zealand manufacturers would make all the difference.

Many countries required that responders to government tenders have a local industry participation plan. This will help build capability in the manufacturing sector and grow firms' capacity and experience. For example, in Australia tenderers are required to assess the whole of life cost of a tender:

> *Applying the AIP National Framework to Commonwealth Government procurement is aimed at increasing opportunities for capable and competitive Australian and New Zealand small and medium sized enterprises (SMEs), to participate in Major Commonwealth Procurement activities. AIP Plans provide a mechanism for tendering entities to familiarise themselves with SME capability and identify qualified SME suppliers. AIP Plans can lower tenderers' transaction and search costs, and reduce their risks by broadening their supply base and deepening their understanding of the market to include capable and innovative SMEs. AIP Plans can also give SMEs access to new opportunities, strategic partnerships and international supply chains.*

Such an approach can improve the competitiveness of local manufacturers and service providers and their capacity to supply, at short notice, a full line of products and services to agencies. This is because local participation plans do not prescribe that local content must be used (unless the project is deemed to be of strategic significance)[8], but rather it requires that local content must be **considered** and that in considering it, tender evaluators should look at the whole of life cost (including purchase price, quality, maintenance, spares, logistics, local support etc.).

[8] The Victorian Minister for Public Transport, Martin Pakula, and Industry and Trade Minister, Jacinta Allan, recently announced (2010) that "Government procurement contracts for Melbourne's A$4.3 billion Regional Rail Link project will require an overall 80 percent minimum local content provision, boosting local jobs." The project has been declared a 'Strategic Project' under the Victorian Industry Participation Policy. "This decision underlines our Government's commitment to protecting jobs by maximising opportunities for local companies to participate in major infrastructure projects," Ms Allan said. The project, which is jointly funded by the Australian Commonwealth and Victorian Governments, joins 3,313 other projects worth A$39.4 billion which have been declared Strategic Projects since 2001 when Industry Participation Plans were brought in. Over that period more than 32000 jobs were created and many times more were secured by requiring local content.

Some New Zealand manufacturers have experienced considerable business fixing and maintaining of an overseas supplied solution that has proved to be either poor quality or not fit for purpose where a tender was allocated on price alone. Ultimately, these local manufacturers are more interested in participating fairly in the original opportunity, rather than being involved piecemeal, especially when things go wrong with international suppliers.

There is no single more powerful action in the short term than the effective use of the Government's procurement.

Appendix A: Case Studies

CASE STUDY A.1 : 3i Innovation

- 3i Innovation Limited is the leading global provider of on-road LED lighting solutions.

Company Overview

Key Information

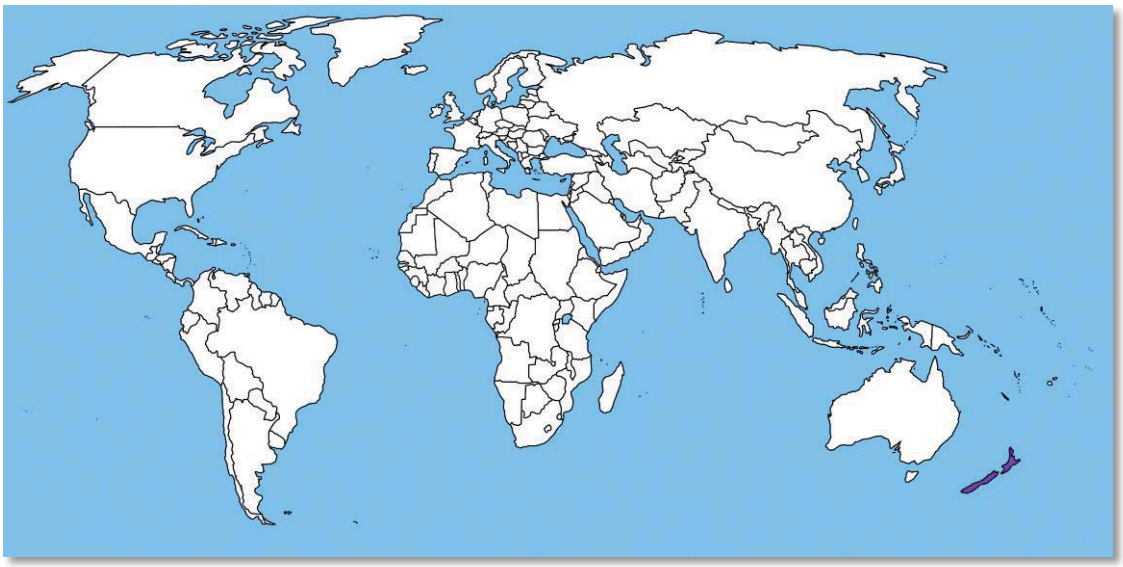
Founded	2008
Sector	Electronic and electrical products
CEO/Chairman	Charles Maud, CEO
Ownership	Private, domestic
Number of Employees	10-15
City/Region	Auckland
Website	www.3iinnovation.com
Number of locations in NZ/ Overseas	NZ: 1 (Auckland)
Organisational Structure	8. Highly vertically integrated in selected markets 9. Uses independent distributors in selected markets
Company Highlights	10. Leading manufacturer of in-road optical guidance systems 11. Europe's No. 1 supplier of in-road lights to the European tunnel market 12. 15 years of experience in the tunnel industry 13. Worldwide ownership rights over technology associated with Inductive Power Transfer and Communications over an IPT system in the transportation industry

Products Sold

Type of Product	Description
Inductively Powered On-Road Led Lighting	Products include—LED road markers, power supplies for these markers and any accessories for the markers.

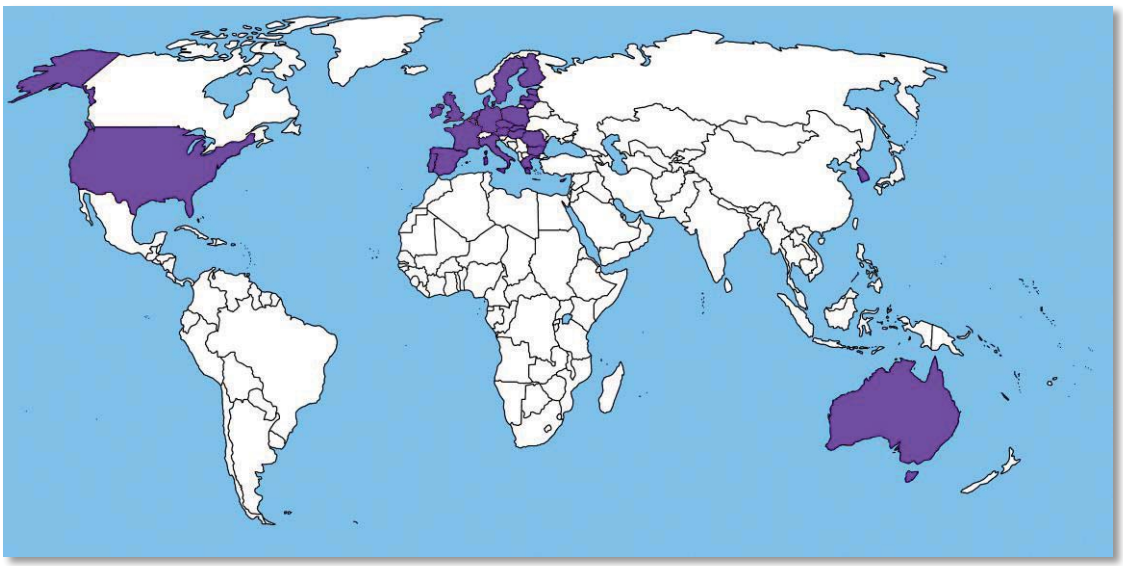
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

3i Innovation's main export destinations



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Features of 3i Innovation's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	14. Quality 15. Price	16. Innovation
Competitive Advantage	17. Extensive knowledge of the industry 18. Efficiency in production	19. Distribution network 20. The company's cost structure
Reasons for being in NZ	3i Innovation was established in NZ in 2008	
Training and Skill programs provided	3i Innovation does not provide any training and skills programs	

Detailed view of the company's competitiveness

Strategies for innovation	Inductive Power Transfer for Lighting
Challenges when scaling up production	Access to finance
Changes which they would like to see by the Government	Fund R&D around late stage development costs – tooling

Company level rankings for key drivers of competitiveness

1	Talent-driven innovation	**2**	Cost and availability of labour and materials	**3**	Supplier network
4	Government investments in manufacturing and innovation	**5**	Economic, trade, financial and tax system	**6**	Physical infrastructure
7	Local market attractiveness	**8**	Legal and regulatory system	**9**	Energy cost & policies

CASE STUDY A.2 : ABE's Bagel Bakery

Manufacturers of *"the tastiest, healthiest Bagels and Bagel crisps in the world."* Since its establishment in 1996, the company has expanded all over New Zealand and globally as products are now found in overseas markets such as Australia. In addition to their fresh bagels, products now include—Bagel crisps, Bagel bites and Kid bits.

Company Overview

Key Information

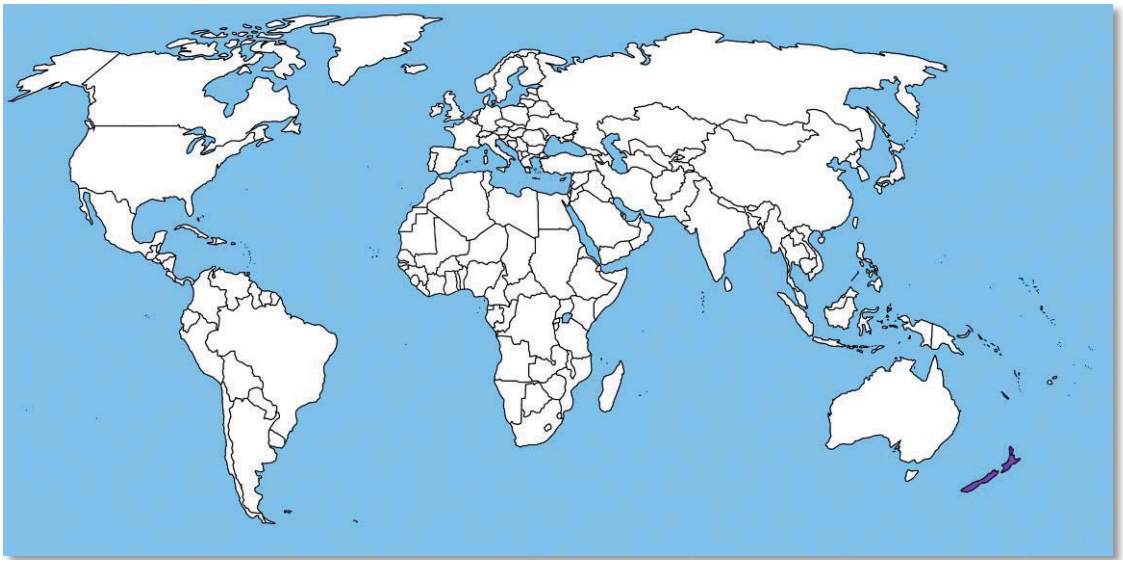
Founded	1996
Sector	Fruit, oil cereal and other foods
CEO/Chairman	Ron Curteis, General Manager
Ownership	Private, domestic
Number of Employees	45
City/Region	Auckland
Website	www.abes.co.nz
Number of locations in NZ/ Overseas	NZ: 1 (Auckland)
Organisational Structure	Vertically integrated—ABE's is a specialist manufacturer, marketer and seller of bagels and bagel crisps
Company Highlights	▪ ABE's began exporting bagel crisps to Australia in 2008 and were found in over 700 Woolworth stores nationwide ▪ Introduction of Mini Bagels in 2008 as part of their fresh bagel range ▪ November 2008 saw the introduction of Bagel Bites ▪ Launched their Bagel Bites for kids range in April 2012

Products Sold

Type of Product	Description
Fresh bagels	Steam-baked bagels in flavours including—Parmesan, sesame seed, natural/plain, cinnamon and raisin and multi grain
Bagel crisps	Flavoured slices of bagels
Bagel bites	Smaller size Bagel Crisps which are suitable for school lunch boxes, handbags etc
Kids bites	Bagel crisps suited for kids through flavours such as BBQ and Pizza.

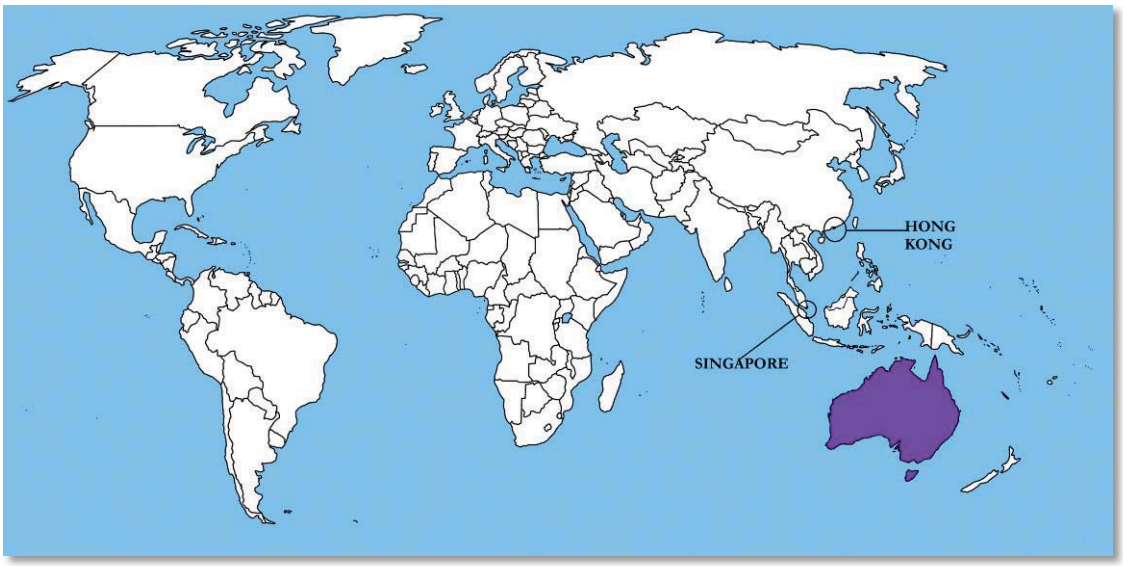
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

ABE's main export destinations



Features of ABE's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality ▪ Innovation	▪ Specialised production process
Competitive Advantage	▪ Extensive knowledge of the industry ▪ Experience	▪ Manufacturing process
Reasons for being in NZ	ABE's was established in NZ in 1996	
Training and Skill programs provided	▪ Technical skills ▪ Team and problem solving skills ▪ Product design and development	▪ Quality, lean manufacturing ▪ Basic computer skills

Detailed view of the company's competitiveness

Strategies for innovation	ABE's new Product Development and Innovation team is charged with constantly improving our offering to consumers and finding new sources of revenue in our category and beyond.
Challenges when scaling up production	▪ The availability of space ▪ Availability of good reliable bakery staff ▪ Capital costs ▪ Customer risk
Changes which they would like to see by the Government	Address the issue of the high NZ dollar to make export markets more attractive

Company level rankings for key drivers of competitiveness

1	Physical infrastructure	**2**	Talent-driven innovation	**3**	Cost and availability of labour and materials
4	Legal and regulatory system	**5**	Local market attractiveness	**6**	Supplier network
7	Economic, trade, financial and tax system	**8**	Government investments in manufacturing and innovation	**9**	Energy cost & policies

CASE STUDY A.3 : BCS Group

BCS core business operates in the aviation sector with complimentary business in the adjacent verticals of logistics and industrial. They are world leaders in Hold Bag Screening (HBS) security systems and integration and employ over 300 staff at locations in New Zealand, Australia, Malaysia, Indonesia, Philippines, Mexico, Brazil, USA, and North America.

Company Overview

Key Information

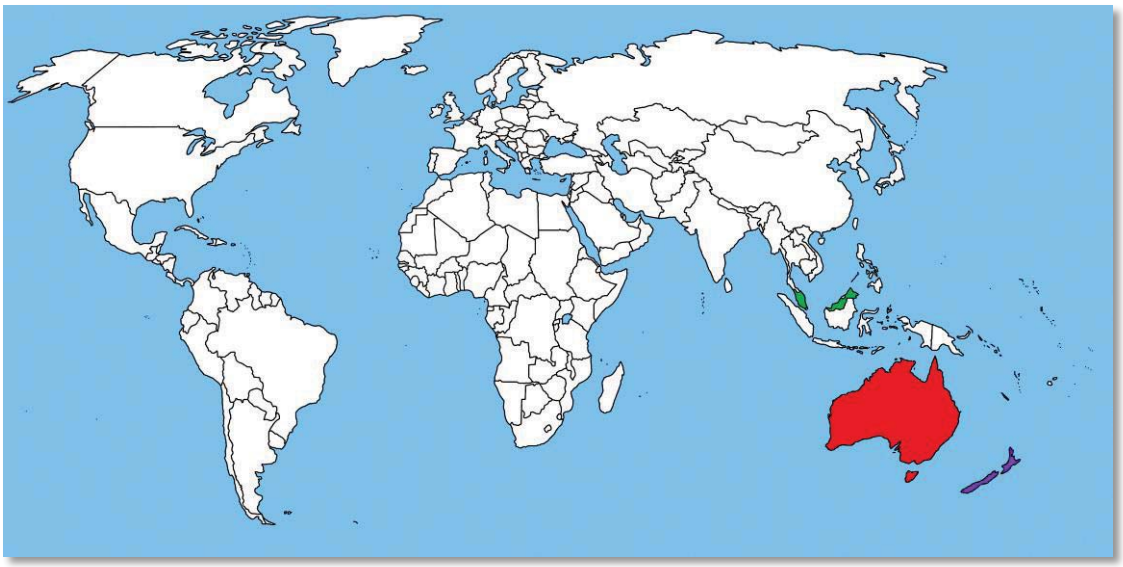
Founded	1993
Sector	Airport and Logistics & SaS
CEO/Chairman	Patrick Teo (CEO)
Ownership	Domestic
Number of Employees	324
City/Region	Auckland
Website	http://www.bcsgroup.biz/
Number of locations in NZ/ Overseas	▪ NZ: 1 (Auckland) ▪ Overseas: 4 (Hallam AUS, Kuala Lumpur MLY, Singapore and San Jose USA)
Organisational Structure	Vertically Integrated
Company Highlights	▪ Over the 20 years has climbed to a Tier 2 operator globally ▪ 75% market share in the Oceania region ▪ BCS are world leaders in Hold Bag Screening (HBS) security systems and integration ▪ Developers of their revolutionary 3D Virtual Airport simulation and emulation software package that is used for the development and testing of client BHS systems

Products Sold

Type of Product	Description
Airport systems	Baggage handling systems and the provision of operation and maintenance services
Systems for logistics firm	General transport conveyor and sortation systems
SaS (Services and Solutions)	Manufacturing of software systems to self-check-in baggage units
Operation and maintenance services	Services for the three verticals named above.

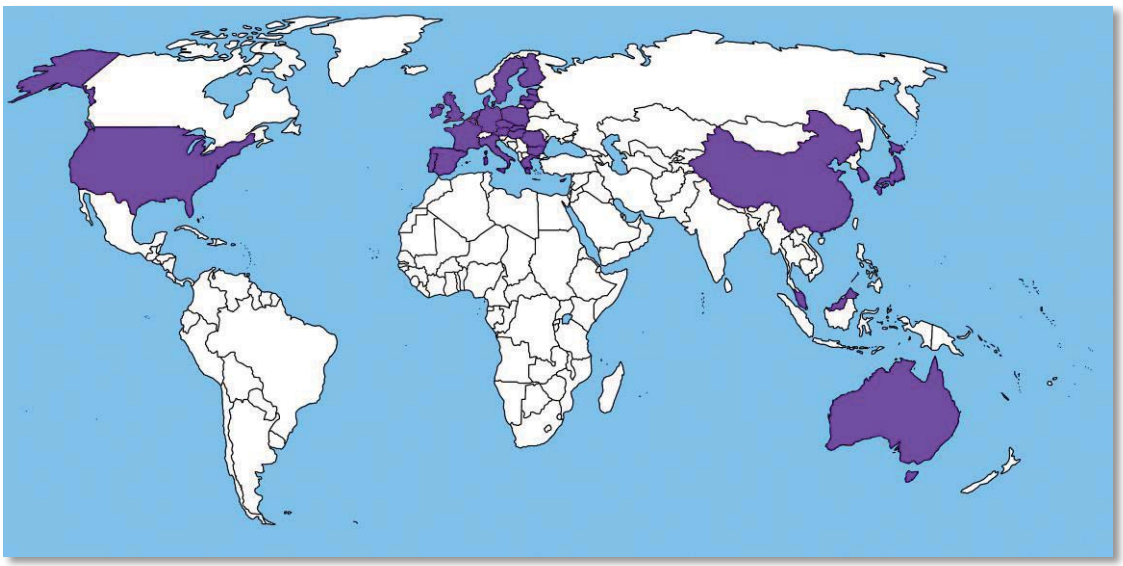
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

BCS Group's main export destinations



Features of BCS Group's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Innovation and developing "world first products" – An example of such a product includes the the Self-Check-in baggage service and Hold Bag Screening (HBS)	▪ Service ▪ Compete on every tender (Price Driven)
Competitive Advantage	▪ Extensive knowledge of the industry ▪ Globally available company	▪ Highly qualified workforce – BCS's senior staff are highly experienced having been in the industry for a very long time
Reasons for being in NZ	The company was established in NZ in 1993.	
Training and Skill programs provided	▪ Product design and development	▪ Technical skills

Detailed view of the company's competitiveness

Strategies for innovation	▪ Continuously evolving products and identifying untouched technologies and then creating their own version ▪ Attending exhibitions and seminars to monitor customer demand and trends. This is aided by their global reach
Challenges when scaling up production	▪ BCS is project driven company with a supply chain which is end to end. There are timing issues such as the trigger of a contract (when does the contract get signed, when does the supply chain get triggered). ▪ Remote manufacturing or manufacturing in a " new geography" causes issues such as lead times and quality issues
Changes which they would like to see by the Government	▪ Improve international relations with the use of FTAs ▪ Increase in R&D grants ▪ The developing of a NZ equivalent of Silicon Valley ▪ More lenient work permits to alleviate skill shortage.

Company level rankings for key drivers of competitiveness

1	Cost and availability of labour and materials	**2**	Physical infrastructure	**3**	Supplier network
4	Economic, trade, financial and tax system	**5**	Government investments in manufacturing and innovation	**6**	Talent-driven innovation
7	Energy cost & policies	**8**	Legal and regulatory system	**9**	Local market attractiveness

CASE STUDY A.4 : Delmaine Fine Foods

Delmaine Trading Company Limited was established in 1980 to take advantage of the untapped potential for high quality European food products. Beginning with olives and sundried tomatoes their range of unique foods has built up over the last 30 years to now appear in over thirty-five food categories.

Company Overview

Key Information

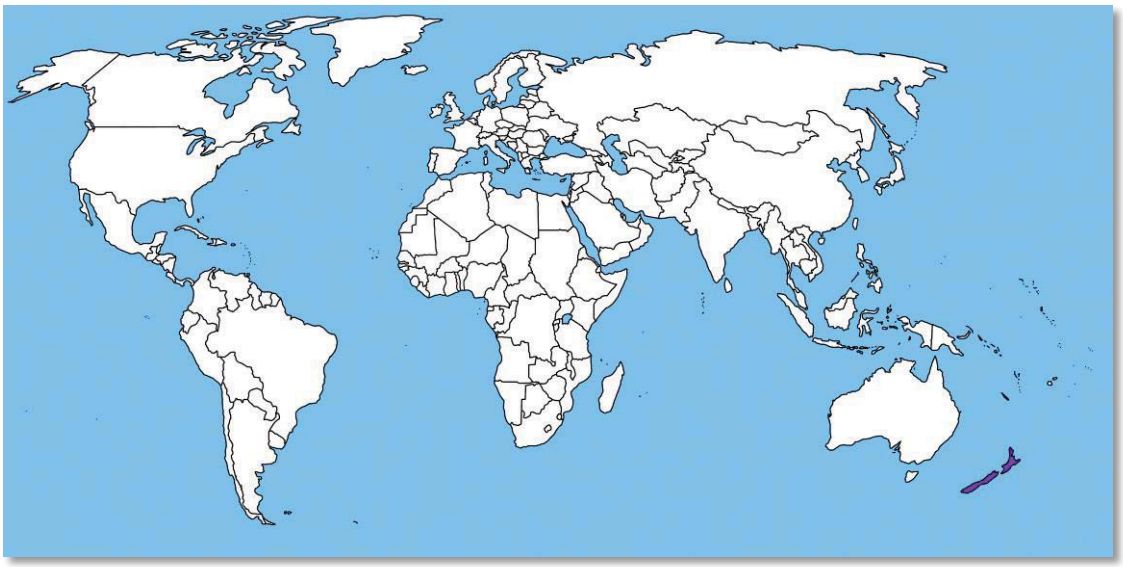
Founded	1980
Sector	Food - Fruit, oil cereal and other foods
CEO/Chairman	Rick Carlyon, Managing Director
Ownership	Domestically owned private company
Number of Employees	Approx. 220
City/Region	Mt Wellington
Website	*www.delmaine.co.nz*
Number of locations in NZ/ Overseas	NZ: 2 (Auckland)
Organisational Structure	Vertically integrated
Company Highlights	▪ One of New Zealand's leading suppliers of food products to top hotels, restaurants and cafes, as well as all major supermarket chains ▪ Their range of unique foods has built up over the last 30 years to now appear in over thirty-five food categories.

Products Sold

Type of Product	Description
Fresh Pasta and Sauces	Products include various types of pastas such as flat pasta, filled pasta, gnocchi and so on and fresh sauces
Chilled Products	This category includes products such as cheese, pesto, soups, dips and pottles
Antipasto	Olives, pickles, sundried tomatoes, artichokes and so on are items in this category
Pantry Products	Products which are found in the pantry such as canned vegetables and fruits, sauces, vinegars, dressings etc.

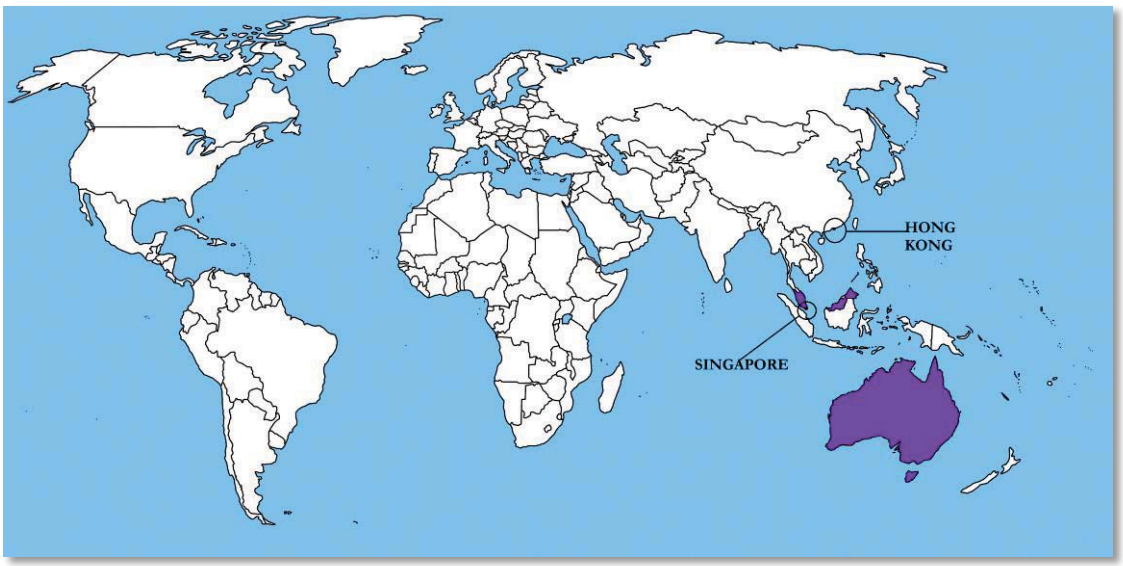
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Delmaine's main export destinations



Features of Delmaine's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality	▪ Service
Competitive Advantage	▪ Extensive knowledge of the industry	▪ Efficiency in production
Reasons for being in NZ	Delmaine was founded in NZ in 1981.	
Training and Skill programs provided	▪ Technical skills ▪ Team and problem solving skills ▪ Basic Numeracy and literacy skills	▪ Product design and development ▪ Advanced computer skills

Detailed view of the company's competitiveness

Strategies for innovation	▪ Constant New Product Development (NPD) ▪ They have a dedicated team of chefs and technologists researching and developing new products and recipes on a full time basis.
Challenges when scaling up production	▪ Entering bigger markets ▪ Access to capital
Changes which they would like to see by the Government	Reduce government intervention and government size

Company level rankings for key drivers of competitiveness

1	Economic, trade, financial and tax system	**2**	Cost and availability of labour and materials	**3**	Local market attractiveness
4	Supplier network	**5**	Talent-driven innovation	**6**	Physical infrastructure
7	Energy cost & policies	**8**	Legal and regulatory system	**9**	Government investments in manufacturing and innovation

CASE STUDY A.5 : Endace

Endace is a division of Emulex, a leader in network connectivity, monitoring and management. Emulex provides hardware and software solutions for global networks that support enterprise, cloud, government and telecommunications. Endace was bought by Emulex in 2013.

Company Overview

Key Information

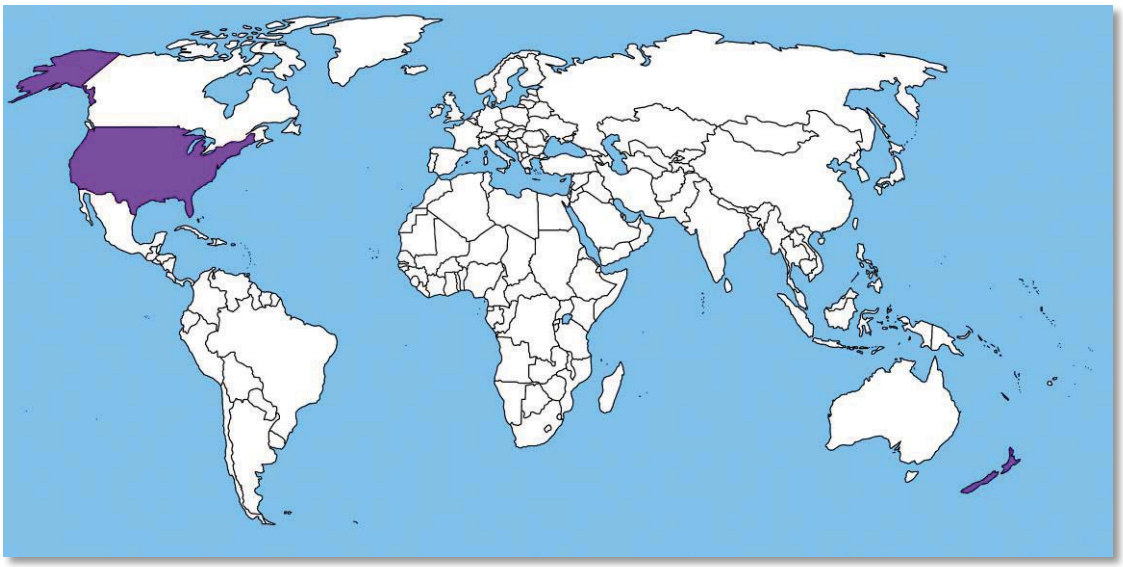
Founded	2001
Sector	▪ Technology / IT ▪ Electronic and electrical products
CEO/Chairman	Michael Riley, Senior Vice President and General Manager
Ownership	Publically Listed & foreign owned
Number of Employees	200+
City/Region	Auckland & Hamilton
Website	www.emulex.com
Number of locations in NZ/ Overseas	▪ NZ: 2 (Auckland & Hamilton) ▪ Overseas: Australia, USA, UK, Germany, Sweden, France, Canada
Organisational Structure	▪ Vertically integrated—Endace's go to market is a mixture of direct to end user and leveraging local value-added re-sellers ▪ The company does not operate as a group, franchise, distribution, conglomerate type of structure.
Company Highlights	▪ Introduced latest generation of monitoring systems which allow customers to monitor networks at speeds of 100 gig per second – this was a world first in 2011. ▪ Winner of several awards from CRN, Network Products Guide and several IT organisations and institutions over the past three years.

Products Sold

Type of Product	Description
Network connectivity and visibility solutions	Products capturing traffic off networks and recording it so people can look at it and inspect it, analyse it and do forensics on it.

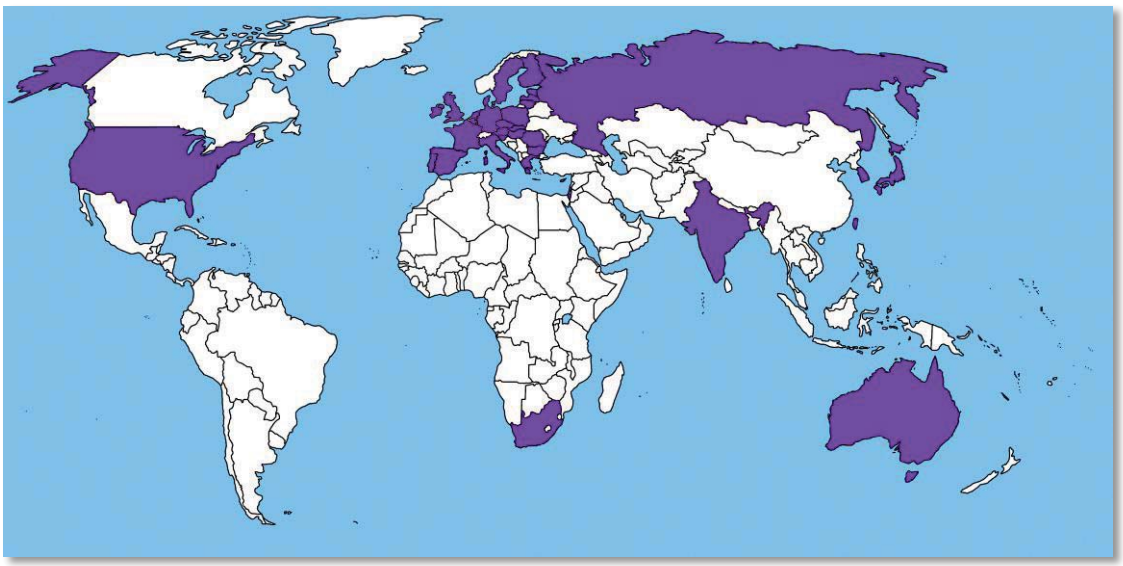
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Endace's main export destinations



Features of Endace's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality ▪ Service ▪ Innovation	▪ Most expensive in field yet products guarantee of 100% network traffic capture.
Competitive Advantage	▪ Highly qualified workforce ▪ Customer support	▪ Extensive knowledge of industry—the company has been in the field for a while and has accumulated a significant amount of knowledge & know-how during this time
Reasons for being in NZ	Endace was established in NZ in 2001	
Training and Skill programs provided	▪ Technical skills ▪ Team and problem solving skills	▪ Quality, lean manufacturing ▪ Advanced computer skills ▪ Product design and development

Detailed view of the company's competitiveness

Strategies for innovation	▪ Constantly improving innovation as networks are going faster and faster all the time, volume of traffic is ever increasing ▪ Significant proportion of turnover is used on R&D (around 30%)
Challenges when scaling up production	▪ Haven't face any challenges as manufacturing is completely outsourced. ▪ They have always used partners that are able to meet their needs, and typically have the ability to handle significantly more capacity than they have ever been able to bring to the partners.
Changes which they would like to see by the Government	▪ From an Endace standpoint they are not sure how they could benefit significantly from any changes by the Government as they have already had huge support from the Government on R&D side and have been well supported by NZTE on export side ▪ The biggest help has been contribution to R&D. Access to grants has allowed them to stay at the leading edge and take some risks more with the research side of R&D.

Company level rankings for key drivers of competitiveness

1	Talent-driven innovation	**2**	Government investments in manufacturing and innovation	**3**	Cost and availability of labour and materials
4	Economic, trade, financial and tax system	**5**	Legal and regulatory system	**6**	Supplier network
7	Energy cost & policies	**8**	Physical infrastructure	**9**	Local market attractiveness

CASE STUDY A.6 : Fisher & Paykel Healthcare

Fisher & Paykel Healthcare is a leading designer, manufacturer and marketer of products and systems for use in respiratory care, acute care, and the treatment of obstructive sleep apnea" Their products and systems are sold in over 120 countries worldwide.

Company Overview

Key Information

Founded	1971
Sector	Medical Devices
CEO/Chairman	▪ Michael Daniell, CEO ▪ Tony Carter, Chairman
Ownership	▪ Listed on the NZX and ASX ▪ 60% NZ owned ▪ 40% Foreign own
Number of Employees	2758
City/Region	Auckland
Website	http://www.fphcare.com/
Number of locations in NZ/ Overseas	Has employees in 33 countries including 27 direct sales forces
Organisational Structure	▪ 80% vertically integrated ▪ Independent distributors used in countries where they have no presence
Company Highlights	▪ Products and systems are sold in over 120 countries worldwide ▪ Products regularly winning design awards ▪ Grew profit by 20% to a record $77 million in FY2013

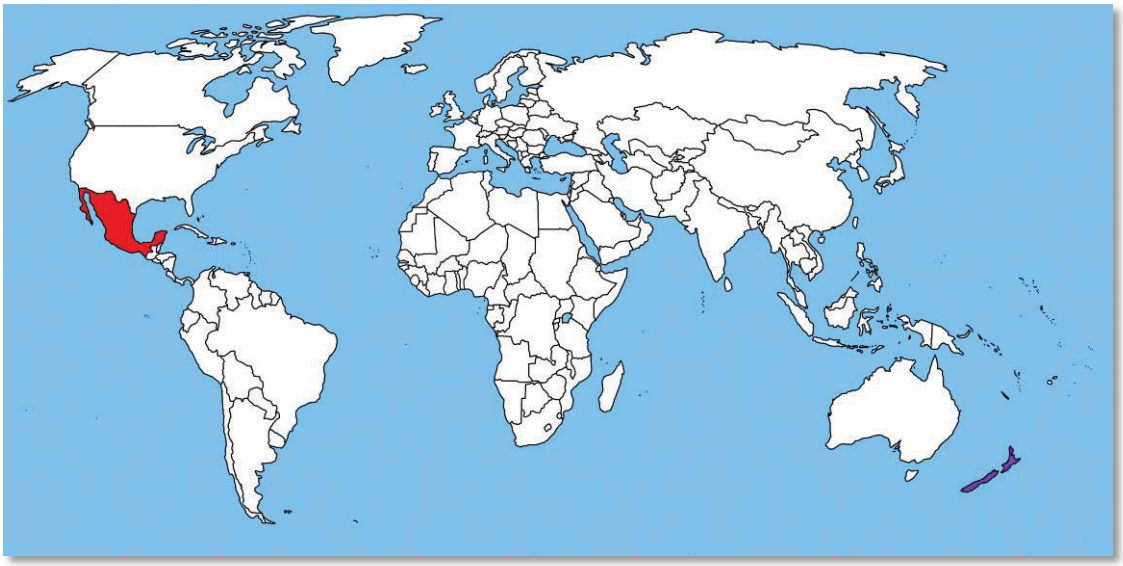
Products Sold

Type of Product	Description
Respiratory and Acute Care products	▪ For Adult and Paediatric Care—advanced humidified therapy systems that restore natural balance and assist natural defence mechanisms while increasing patient comfort and tolerance of treatment. ▪ For Infant Care—designing innovations to help protect compromised lungs and reduce risks in order to nurture life. ▪ For Clinician—a systematic approach to therapy solutions translates to efficient delivery of care and improved patient outcomes.
Sleep Apnea products	A range of Continuous Positive Airway Pressure (CPAP) devices, masks and humidifiers that deliver the best in sleep performance for an energized lifestyle.
Surgical Humidification	The F&P HumiGard™ System aims to prevent unnecessary

products	cellular damage by protecting tissue against the harmful effects of cold, dry carbon dioxide.

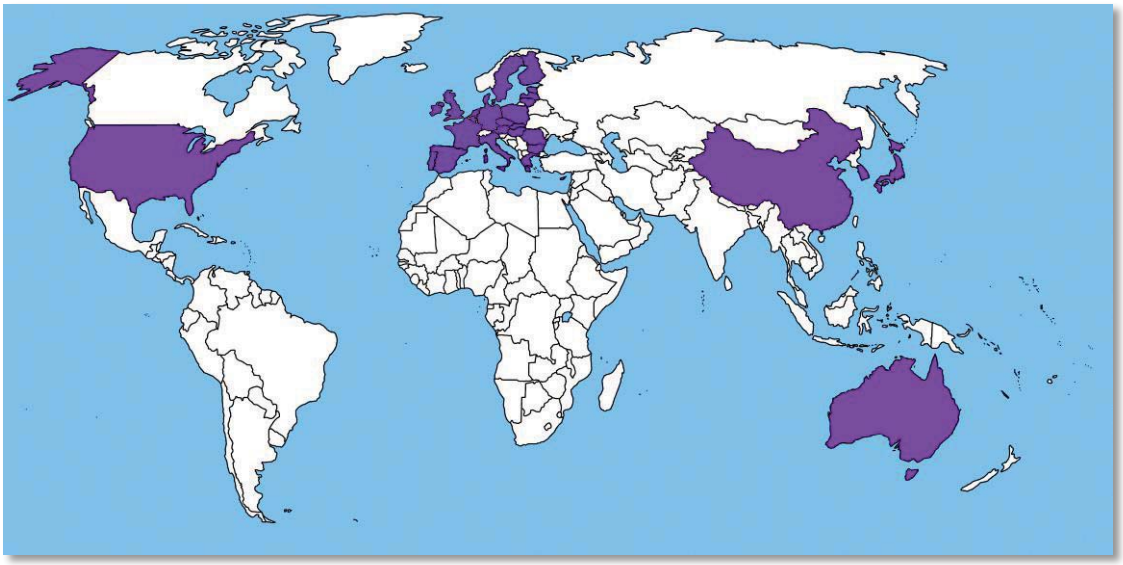
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

F&P Healthcare's main export destinations



Features of F&P Healthcare's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Innovation—improving effectiveness and efficiencies and care.	
Competitive Advantage	▪ Efficiency in production—NZ has a cost advantage in professional people (particularly in R&D) over the US, Europe and Japan.	▪ Highly qualified workforce ▪ Extensive knowledge of the industry i.e. the clinical field
Reasons for being in NZ	▪ Always here/established ▪ Suitable market for product	▪ Highly qualified workforce—employees have strong institutional knowledge
Training and Skill programs provided	▪ Technical skills ▪ Quality, lean manufacturing ▪ Basic Numeracy and literacy skills	▪ Product design and development ▪ Team and problem solving skills ▪ Sales training ▪ Clinical aspects of products

Detailed view of the company's competitiveness

Strategies for innovation	▪ Significant proportion of their workforce is in R&D ▪ Creating an environment (including physical environment) for innovation ▪ Developing strong ties with clinicians and institutions which allow them to understand their needs and challenges and then produce solutions ▪ Small acquisition of technology (strategic opportunities)
Challenges when scaling up production	▪ Shortage of skills in NZ forcing F&P Healthcare to look overseas. ▪ Mechanical engineers soaked up by the mining boom. ▪ Changing clinical practice— they come up with a better way to treating patients which may be different to current practice, it requires clinicians change what they do and prescribe. It takes 10 years to gain meaningful traction—convincing clinicians to do things differently is an issue. This is achieved via: – Gathering clinical evidence, to analyse it and get it published which takes approximately 3 years – This evidence is showed to clinicians one on one or at conferences etc. ▪ Regulatory clearances affect products so they need separate investment. These are barriers to entry and are getting stricter worldwide. Despite similarities around the world the differences make it harder. ▪ Due to the high NZ Dollar and their cost structure, research per dollar but has eroded.

Changes which they would like to see by the Government	▪ Encourage the right skills, particularly engineering and manufacturing skills. ▪ Lobby government and universities to increase funding ▪ Ensuring NZ is a place to stay and work or come and work. This can be done by: – Good infrastructure – Affordable housing ▪ Competitive corporate tax rate as competitors are taking advantage of the lower tax rate of countries such as Singapore. A competitive corporate tax rate is ideal rather than R&D grants because the benefits of the R&D grants are wiped out by the tax paid.

Company level rankings for key drivers of competitiveness

1	Talent-driven innovation	**2**	Cost and availability of labour and materials	**3**	Physical infrastructure
4	Legal and regulatory system	**5**	Supplier network	**6**	Economic, trade, financial and tax system
7	Government investments in manufacturing and innovation	**8**	Local market attractiveness	**9**	Energy cost & policies

CASE STUDY A.7 : Frucor Beverages Ltd

Frucor manufactures, markets and distributes a range of fruit juices, fruit drinks, energy drinks, waters and soft drinks, many of which are household names throughout New Zealand and Australia. Energy drink 'V' is also distributed throughout Europe and the UK.

Company Overview

Key Information

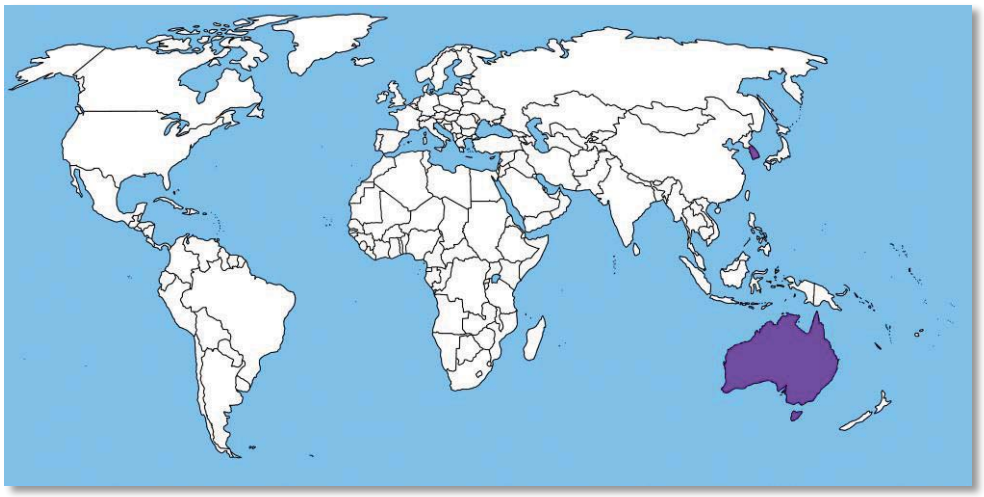
Founded	1962
Sector	Beverages
CEO/Chairman	Mark Callaghan, CEO
Ownership	Foreign - Since 2009 Frucor has been wholly owned by leading Japanese beverage and food company Suntory Beverage & Food.
Number of Employees	730
City/Region	Auckland
Website	www.frucor.co.nz
Number of locations in NZ/ Overseas	▪ NZ: 3 (South Auckland, Christchurch and Napier) ▪ Australia
Organisational Structure	Highly vertically integrated with the use independent distribution contractors.
Company Highlights	▪ Launched the well-known energy drink, V, in 1997 ▪ Forbes named Frucor in its Top 20 Companies of 2002. ▪ Frucor New Zealand acquires Arano and Simply Squeezed, leading fresh orange juice companies. ▪ Winner of several awards for its products, innovation and business environment eg NZ Best Employer.

Products Sold

Type of Product	Description
Non-alcoholic beverages	Products include: ▪ Sports Drinks— Gatorade ▪ Energy Drinks—V and Rockstar ▪ Juice and drinks—Just Juice, Simply Squeezed, Fresh Up, McCoy and Citrus Tree ▪ Soft Drinks—Appletiser, Just Juice Bubbles, Frank, Fresh Up Big Fizz, Pepsi and Pepsi Max, Mountain Dew and 7UP ▪ Milk products—Wave and Up & Go Liquid Breakfast ▪ Functional drinks—G-Force

Export Locations

Frucors's main export destinations



Features of Frucors's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Innovation ▪ Company culture.	▪ Locally created brands e.g. V which give Frucor a point of difference in relating to Kiwi youth culture
Competitive Advantage	▪ Flexibility and speed	
Reasons for being in NZ	Frucor has founded in NZ in 1962 and has remained in NZ.	
Training and Skill programs provided	▪ Technical skills ▪ Team and problem solving skills ▪ Functional skills	▪ Quality, lean manufacturing ▪ Leadership development ▪ Product design and development

Detailed view of the company's competitiveness

Strategies for innovation	▪ Strong focus on local innovation ▪ Well-resourced R&D function and strong people capability in this area ▪ Positioning future growth such as with construction of a new $4 million R&D centre next to their manufacturing facility in South Auckland.
Challenges when scaling up production	▪ Relatively small scale of NZ market means compromise in scale, flexibility, or ROI. For example, one may have a large and efficient line, but can't use it to its full capacity—this limits ROI. However using smaller more flexible equipment limits cost competitiveness. ▪ NZ companies such as Frucor need well developed and accessible export markets and/or high market share locally in order to make manufacturing investments stack up.
Changes which they would like to see by the Government	▪ Government needs to continue to focus on creating a business friendly macro environment e.g. reducing red tape, ensuring fair labour laws, providing good transport infrastructure (road, rail, ports and so on) and an education system that provides 'work ready' young people. ▪ The central government needs to take a stronger leadership (and funding) role in improving infrastructure. ▪ The Resource Management Act and basic education of the NZ workforce requires on-going attention. While short term financial incentives would help business be more competitive in the short term, New Zealand manufacturers needs the right macro environment for long term sustainability – this is the role that central government needs to focus on.

Company level rankings for key drivers of competitiveness

1	Local market attractiveness	**2**	Cost and availability of labour and materials	**3**	Economic, trade, financial and tax system
4	Energy cost & policies	**5**	Physical infrastructure	**6**	Talent-driven innovation
7	Legal and regulatory system	**8**	Supplier network	**9**	Government investments in manufacturing and innovation

CASE STUDY A.8 : Fusion Electronics

Fusion is a manufacturer of amplifiers, subwoofers, speakers, automotive audio visual systems, security systems, head units and processors for cars, marine transportation and campervans/RVs. It has now expanded globally with subsidiaries in the UK, USA and Australia, distribution in over 30 countries and strong growth in far-flung territories such as Russia and Tahiti.

Company Overview

Key Information

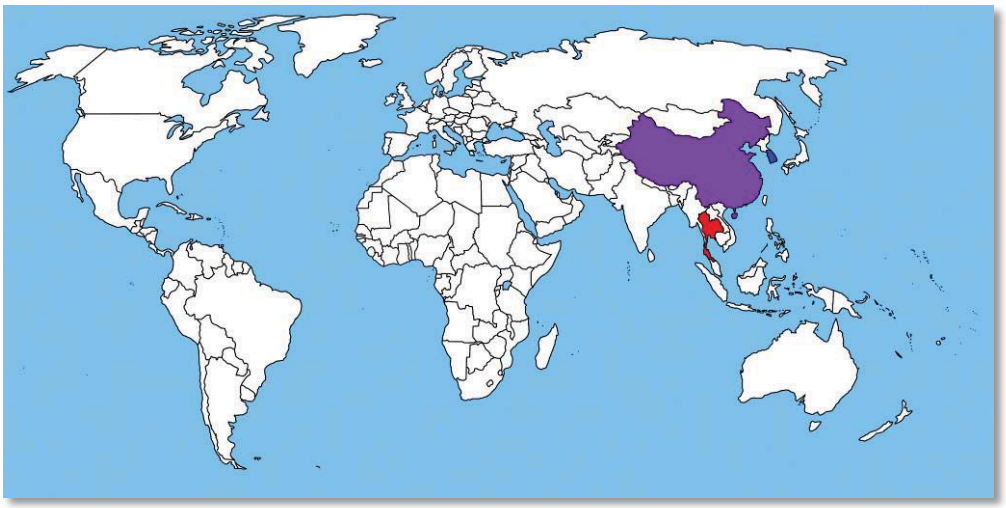
Founded	2001
Sector	Consumer Electronics
CEO/Chairman	Chris Baird, CEO
Ownership	Private company run by an outside professional management team, with no family members as part of that.
Number of Employees	53
City/Region	Auckland
Website	www.fusionelectronics.com
Number of locations in NZ/ Overseas	▪ NZ: 1 (Auckland)
Organisational Structure	Flat management with mix of fully owned subsidiaries and country (independent) distributors
Company Highlights	▪ Launch of the world's most advanced lifestyle stereo, the MS-700 series which won the NMEA Supreme Technology Award in 2012 ▪ FUSION Electronics was nominated as a finalist for the Innovative Hi-Tech Hardware Product Award 2013 ▪ FUSION was announced as the winner of the "Amplifier of the Year under $1000" award at the Sound+Image Awards in 2013

Products Sold

Type of Product	Description
Car audio	Products such as speakers, amplifiers, subwoofers, head units and active enclosures for cars
Marine entertainment products	Items include—stereo units, speakers, amplifiers, subwoofers, televisions, marine docks and remote controls for marine transportation.
Lifestyle entertainment products	Products in this category are for campervans and RVs. Range includes— amplifiers, lifestyle docks, speakers stereo units, subwoofers, televisions and remote controls

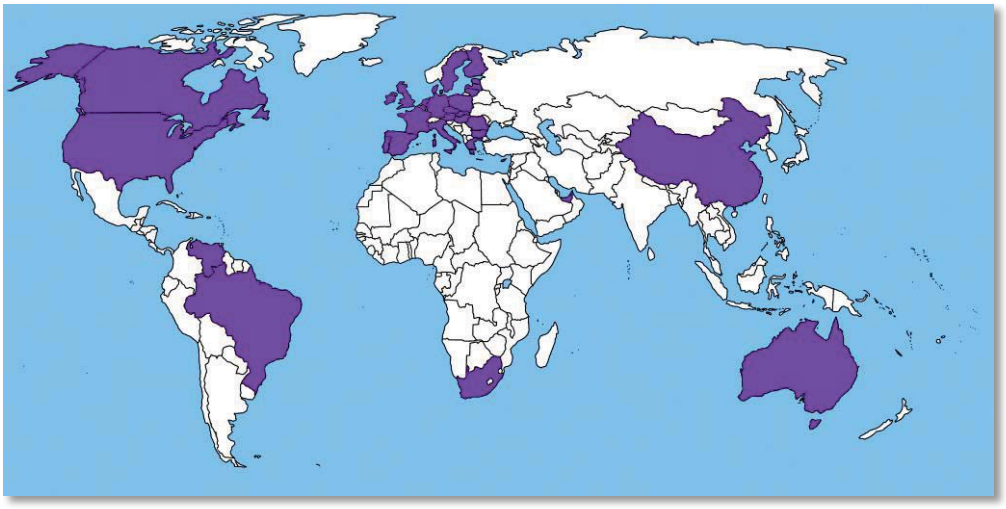
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Fusion's main export destinations



Features of Fusion's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality ▪ Service	▪ Innovation ▪ Passion
Competitive Advantage	▪ Extensive knowledge of the industry ▪ Highly qualified workforce	▪ Distribution network ▪ Customer support
Reasons for being in NZ	▪ Always here/established	▪ Highly qualified workforce
Training and Skill programs provided	▪ Technical skills ▪ Product design and development	▪ International training courses or attendance at overseas conferences

Detailed view of the company's competitiveness

Strategies for innovation	Designing and engineering products which meet the market's needs
Challenges when scaling up production	Dealing with off-shore manufacturing
Changes which they would like to see by the Government	The government should provide legal advice services for NZ companies that export overseas. Legal issues in particular countries can really catch a company out and trying to fight legal disputes on your own can be very difficult and costly. With such 'legal' support from the NZ Government behind them, it could make doing business overseas a lot easier.

CASE STUDY A.9 : Gallagher Group

Gallagher provides Electric Fence, Weighing and Electronic Identification Systems, together with a Gallagher on Farm service to ensure all products deliver exceptional performance, reliability and value for money that generations of farmers have always associated with Gallagher.

Company Overview

Key Information

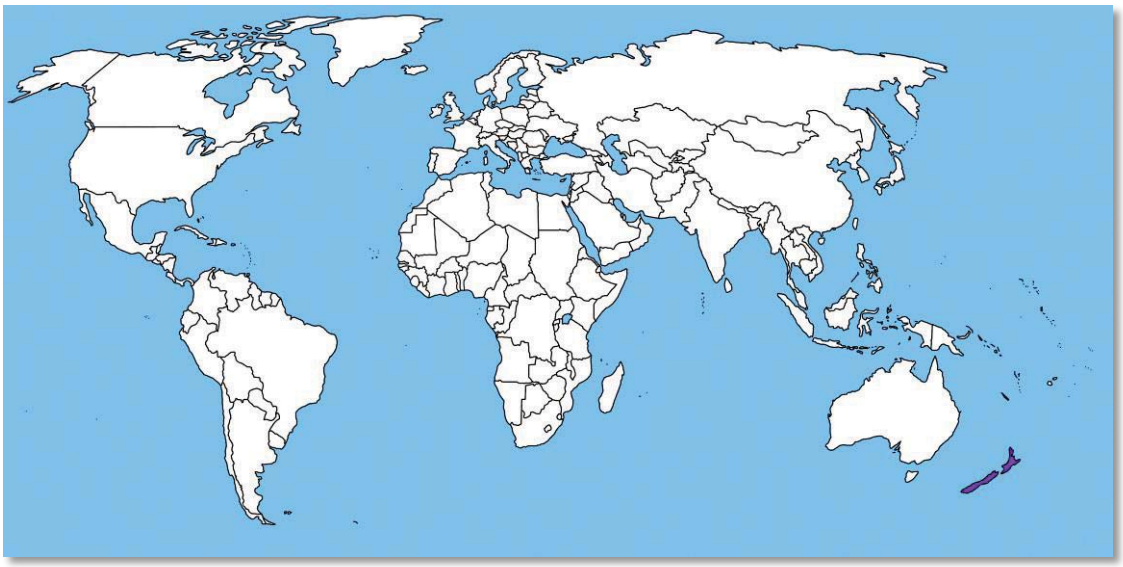
Founded	1938
Sector	Animal management equipment, security and fuel pump solutions
CEO/Chairman	Sir William Gallagher
Ownership	▪ Privately owned family business with professional outside management. ▪ Predominately domestic owned.
Number of Employees	781
City/Region	Hamilton
Website	www.gallagher.co.nz
Number of locations in NZ/ Overseas	▪ NZ: 3 (Hamilton, Pukekohe and Marton) ▪ Overseas: 6 (Australia, USA, Canada, South Africa and UK and Chile)
Organisational Structure	▪ Vertically integrated in larger markets ▪ Use of independent distributers in smaller markets
Company Highlights	▪ Created the world's first—intelligent energizer, walk over weigh system and many world first more products ▪ World's largest competitor the animal management sector

Products Sold

Type of Product	Description
Animal management products	Products typically include—electric fencing, weighing and EID systems and these products for horses/equine
Security products	Products include—access control systems, intruder alarms, perimeter security (electric fences) and other security and business risk management solutions
Fuel systems	Products include—fuel dispensers, fuel vapour recovery products which capture escaping fuel vapour and turn it into resalable fuel and products monitoring fuel vapour recovery.

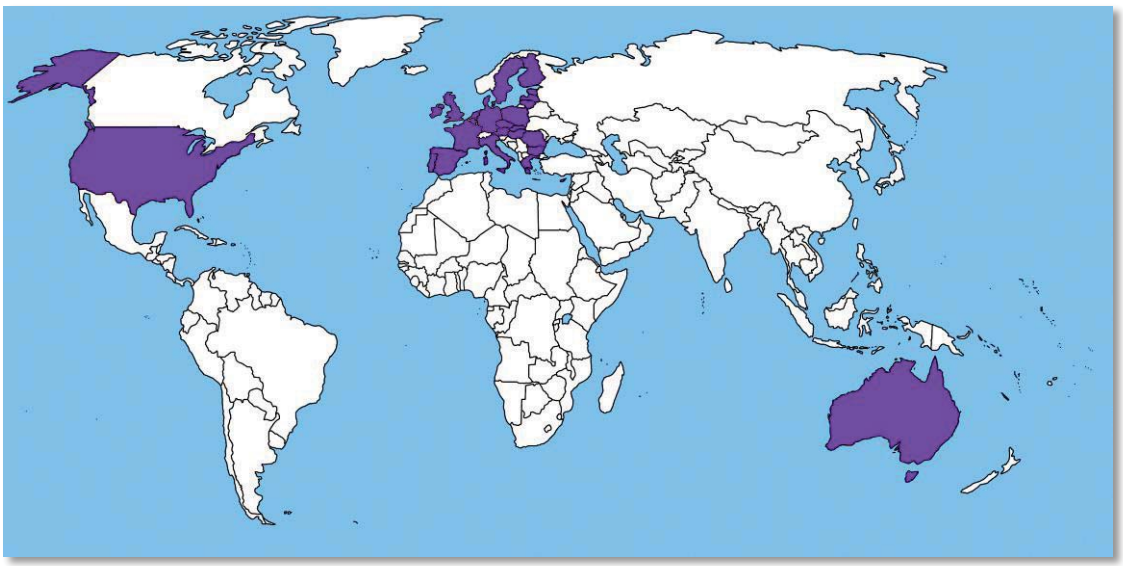
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Gallaghers's main export destinations



Features of Gallagher's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Private ownership— allows for a long term view on investments. The company also don't need to worry about shareholders needs such as quarterly reviews ▪ Great products, simple to use – Animal management product competitive advantage: reputation and time in the industry; and – offering a complete product range	▪ Security product competitive advantage: – "smallest of the big guys", found a niche with strong market verticals and thus heavily focused and can add significant value to products; and – well-known in particular markets such as the mining and education markets ▪ Strong entrepreneurial spirit ▪ Brand and reputation
Competitive Advantage	▪ Extensive knowledge of the industry	▪ Efficiency in production—time spent on lean manufacturing, internally known as the "Gallagher way system." – This involves—making smaller runs, improve flexibility, reducing costs
Reasons for being in NZ	The company was founded in NZ in 1938.	
Training and Skill programs provided	▪ Product design and development ▪ Quality, lean manufacturing via a strategic consulting company	▪ Design and thinking and R&D, product development training ▪ Basic Numeracy and literacy skills

Detailed view of the company's competitiveness

Strategies for innovation	▪ Develop products which meets customers' needs before manufacturing it ▪ Develop products where customers prepare to pay for premium over competitors to ensure success in the longer term ▪ Continuously improve and develop category leading and category creating products which "change the way people do things." ▪ Invest in R&D ▪ Participate in programs which promote innovation such as the government's "Better by design" program.
Challenges when scaling up production	▪ Issue of getting people to move from bigger cities to Hamilton ▪ Shortage of skilled R&D staff
Changes which they would like to see by the Government	▪ Improve international relations with the use of FTAs ▪ Increase in R&D grants and programs such as "Better by design"

Company level rankings for key drivers of competitiveness

1	Talent-driven innovation	**2**	Local market attractiveness	**3**	Cost and availability of labour and materials
4	Physical infrastructure	**5**	Supplier network	**6**	Government investments in manufacturing and innovation
7	Economic, trade, financial and tax system	**8**	Legal and regulatory system	**9**	Energy cost & policies

CASE STUDY A.10: Heinz Watties New Zealand

Watties is a New Zealand-based food producer of frozen and packaged fruit, vegetables, sauces, baby food, cooking sauces, dressings and pet foods. Founded in 1934 by the Sir James Wattie, the company operated in New Zealand under the name of J. Wattie Canneries Limited until the group was bought by American-based H. J. Heinz Company in 1992.

Company Overview

Key Information

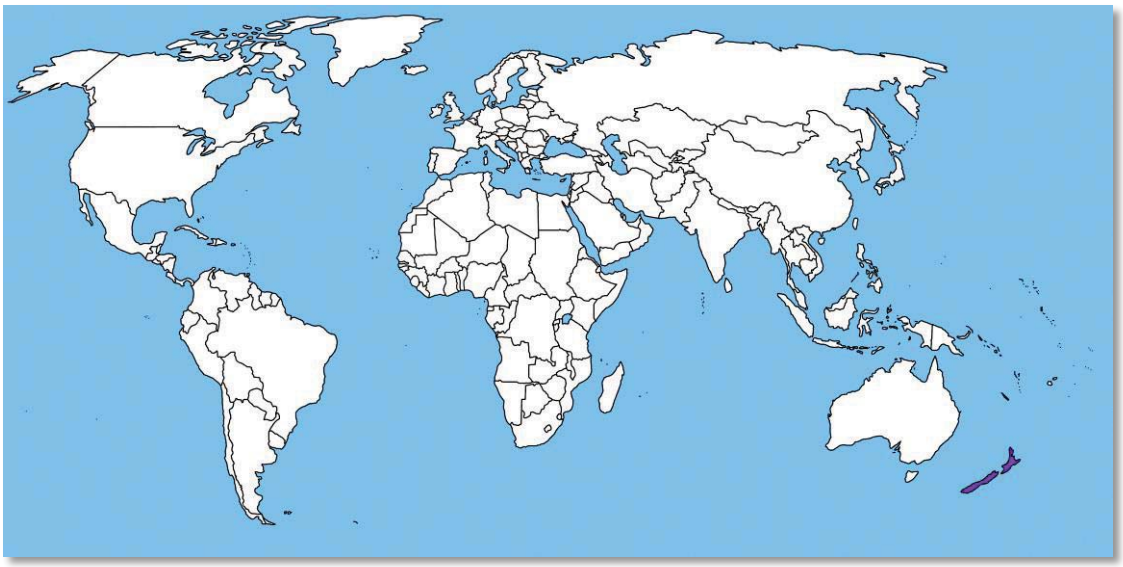
Founded	1934
Sector	Fruit, oil cereal and other foods
CEO/Chairman	Nigel Comer, CEO
Ownership	Private, foreign owned
Number of Employees	Approx. 1200
City/Region	Hastings
Website	*www.heinzwatties.co.nz*
Number of locations in NZ/ Overseas	▪ NZ: 5 (2 in Auckland, Hastings, Wellington and Christchurch) ▪ Overseas: Approx. 30
Organisational Structure	Highly vertically integrated with the use of independent distributers.
Company Highlights	Recognised as NZ's most trust brand in the 2010 Readers Digest Survey of New Zealand's most trusted brand

Products Sold

Type of Product	Description
Processed Foods	These include—foods frozen and packaged fruits and vegetables, sauces, cooking sauces and dressings and baby food.

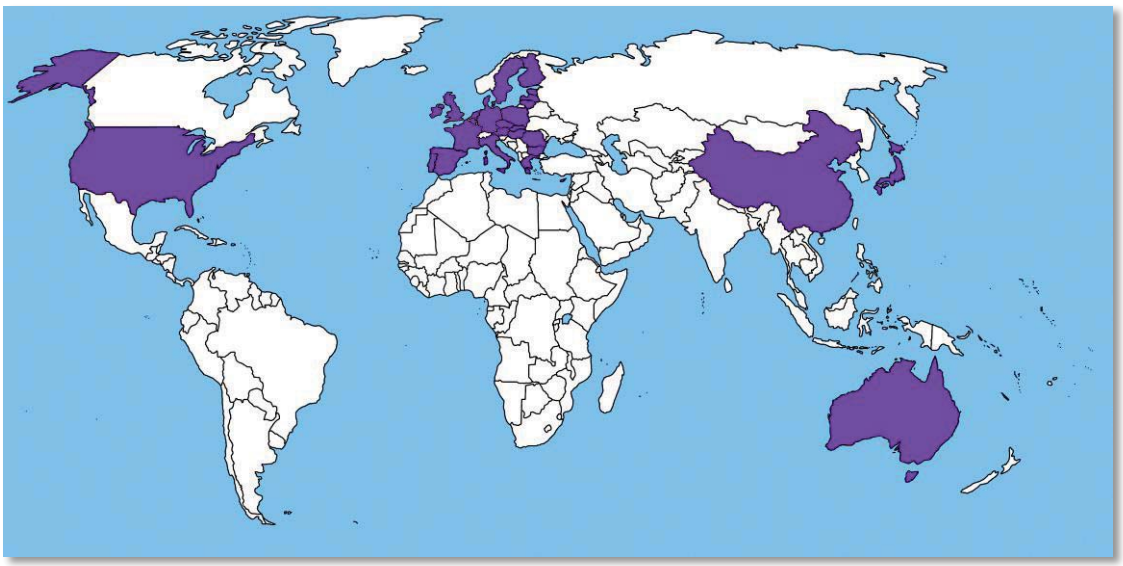
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Watties's main export destinations



Features of Watties's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Innovation ▪ Quality	▪ Service
Competitive Advantage	▪ Extensive knowledge of the industry ▪ Highly qualified workforce ▪ Efficiency in production	▪ The company's cost structure ▪ Distribution network ▪ Customer support
Reasons for being in NZ	The company was established in NZ in 1934	
Training and Skill programs provided	▪ Technical skills ▪ Product design and development ▪ Basic computer skills	▪ Team and problem solving skills ▪ Quality, lean manufacturing ▪ Advanced computer skills ▪ Basic Numeracy and literacy skills

Detailed view of the company's competitiveness

Strategies for innovation	Developing innovative food solutions for customers
Challenges when scaling up production	Difficulty of obtaining raw materials and reasonably priced equipment given their location (NZ)
Changes which they would like to see by the Government	The provision of subsidies for local manufacturers to stay competitive relative to the import market for food, especially with the New Zealand dollar being strong

Company level rankings for key drivers of competitiveness

1	Cost and availability of labour and materials	**2**	Energy cost & policies	**3**	Physical infrastructure
4	Economic, trade, financial and tax system	**5**	Supplier network	**6**	Legal and regulatory system
7	Talent-driven innovation	**8**	Local market attractiveness	**9**	Government investments in manufacturing and innovation

CASE STUDY A.11: SKOPE Industries Limited

SKOPE Industries Limited is a family owned company with a global reputation for designing and manufacturing commercial refrigeration solutions. At the age of 25, company founder Robert Stewart, purchased SKOPE (at that time Robat Industries Ltd) and grew the company from 25 employees to more than 400.

Company Overview

Key Information

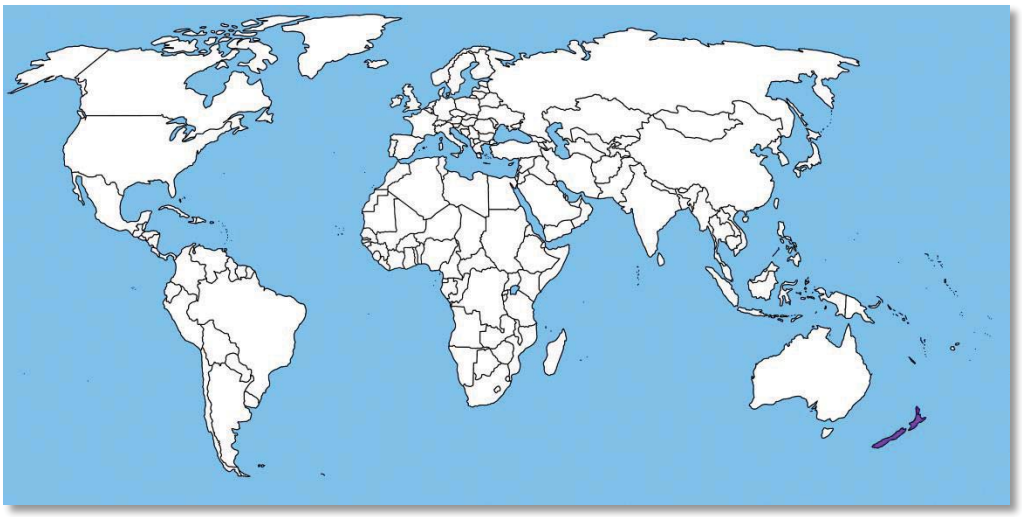
Founded	1942
Sector	Electronic and electrical products (refrigerating)
CEO/Chairman	Robert Stewart, Chairman and Guy Stewart, CEO
Ownership	▪ Private company—family members and outside professional management. ▪ Domestically owned
Number of Employees	350
City/Region	Christchurch
Website	www.skope.co.nz
Number of locations in NZ/ Overseas	▪ NZ: 2 (Christchurch and Auckland) ▪ Overseas: 1
Organisational Structure	▪ Vertically integrated to some extent, depends on the task e.g. process form (JIT, kanban) ▪ Use of contract manufacturers
Company Highlights	▪ SKOPE came runner up in the innovation category at the inaugural Coca Cola Amatil Australia Supplier of the Year Awards ▪ SKOPE's combined research, design and production plant is the largest design and innovation centre of its kind in Australasia. ▪ They have gained a global reputation for producing the best performing, highest quality commercial refrigeration and foodservice products.

Products Sold

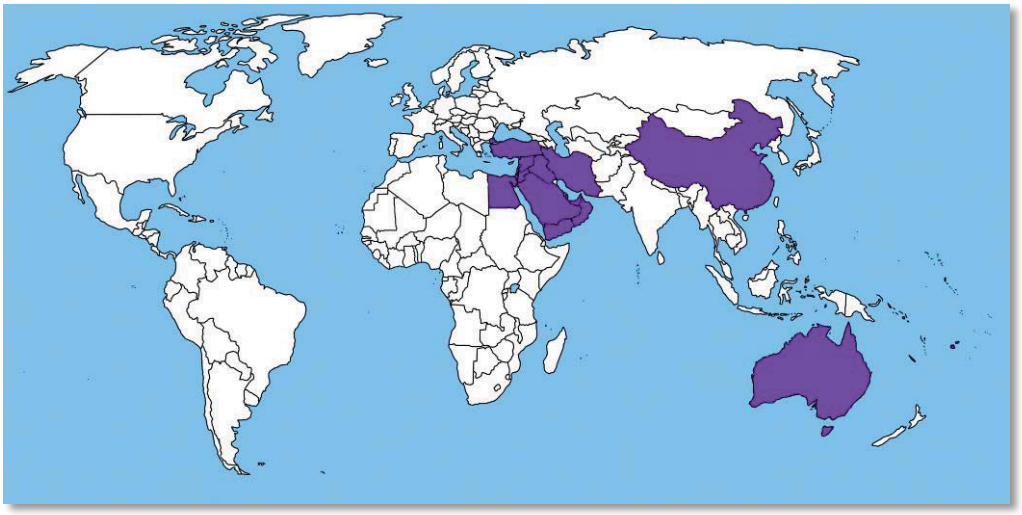
Type of Product	Description
Chillers and freezers for the food industry	Chillers and freezers for the hospitality and restaurant sectors to commercial kitchens, supermarkets and convenience stores
Chillers and freezers for display purposes	Chillers and freezers to promote the aesthetics of the customer's products, while at the same time ensuring your food and beverages are maintained at the correct temperature
Customised Solutions	Cabinets which are customised to suit a customer's commercial refrigeration and foodservice requirements.

Manufacturing Locations

NZ and Offshore Manufacturing sites



SKOPE's main export destinations



Features of SKOPE's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Innovation ▪ Quality	▪ Service
Competitive Advantage	▪ Extensive knowledge of the industry ▪ Efficiency in production ▪ Customer support	▪ Highly qualified and multicultural workforce. – The company views itself as the "UN of Christchurch"
Reasons for being in NZ	The company was founded in NZ	
Training and Skill programs provided	▪ Technical skills—process that promotes people wanting to improve their skills ▪ Product design and development	▪ Quality, lean manufacturing (run programs for 10 years) ▪ Health and safety in house training ▪ Team and problem solving skills—System used internally to help teams solve problems

Detailed view of the company's competitiveness

Strategies for innovation	▪ Introducing a new product development process to facilitate a thinking process that feeds information from the sales teams ▪ Integrating innovation into the business culture
Challenges when scaling up production	▪ When the attempt to operate at a steady rate is disrupted when corporations order huge numbers which affects production. So it is a short issue involving trying to get resources to meet this demand ▪ Long term issue of getting people to work in Christchurch especially after the natural disasters which have struck the city causing the redevelopment of the city.
Changes which they would like to see by the Government	Government assistance to be more accessible for all occasions.

Company level rankings for key drivers of competitiveness

1	Talent-driven innovation	**2**	Local market attractiveness	**3**	Legal and regulatory system
4	Economic, trade, financial and tax system	**5**	Supplier network	**6**	Physical infrastructure
7	Cost and availability of labour and materials	**8**	Government investments in manufacturing and innovation	**9**	Energy cost & policies

CASE STUDY A.12: Southern Spars

Southern Spars specialises in the design and construction of carbon fibre spars and components, rigging, and rig servicing. Southern Spars built its first carbon spar in 1990 and since then the company has pursued a passion for delivering world class cruising and racing spars, carbon rigging and service.

Company Overview

Key Information

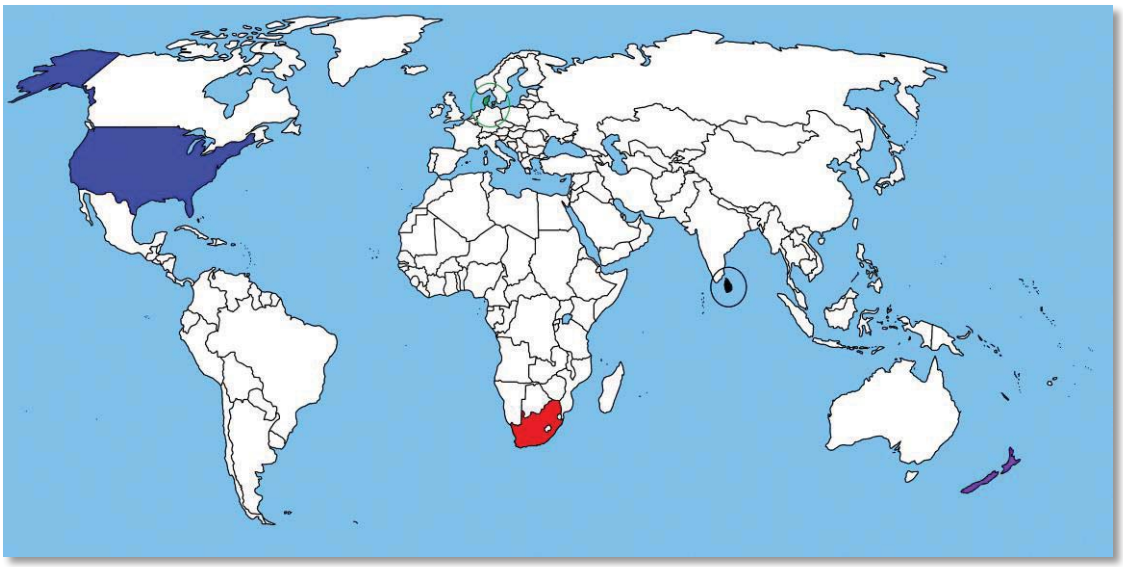
Founded	1984
Sector	Marine Products
CEO/Chairman	Richard Lott, Managing Director
Ownership	▪ Private company—family business with outside professional management ▪ Foreign owned
Number of Employees	440
City/Region	Auckland
Website	www.southernspars.com
Number of locations in NZ/ Overseas	▪ NZ: 1 (Auckland) ▪ Overseas: 4 (Cape Town RSA, Rødekro DEN, North Kingston USA and Colombo SL)
Organisational Structure	Vertically integrated
Company Highlights	▪ Southern Spars' rigged yachts dominated the annual World Superyacht Awards Since its introduction, EC6 rigging has produced a record number of firsts: – The first commercially-viable carbon sailboat rigging; – The first carbon continuous rigging product; – And most importantly, an ever-increasingly number of first place wins across the finish line.

Products Sold

Type of Product	Description
Spars	Complete spar package comprising mast(s), boom and rigging to meet customer requirements.
Riggings	Consists of Southern Spars' Composite Rigging's Element C6 (EC6) rigging riggings—system of ropes or chains employed to support a yacht's masts.

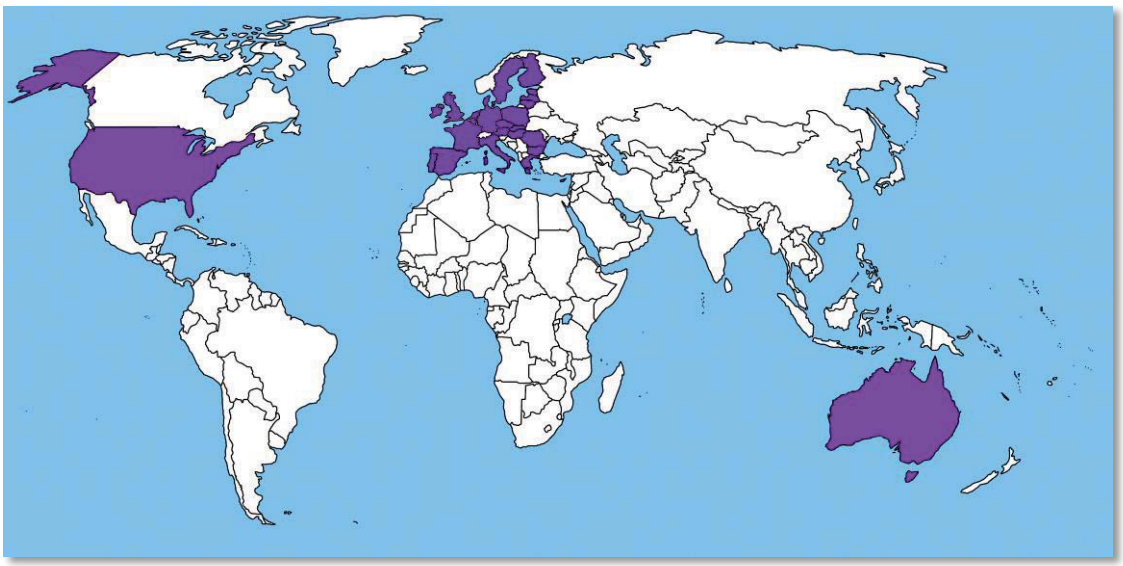
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Southern Spars' main export destinations



Features of Southern Spars' competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality	Innovation
Competitive Advantage	▪ Extensive knowledge of the industry	▪ Highly qualified workforce
Reasons for being in NZ	▪ Always here/established ▪ Technology available	▪ Highly qualified workforce
Training and Skill programs provided	▪ Technical skills ▪ Basic computer skills ▪ Apprenticeships	▪ Team and problem solving skills ▪ Industry specific training

Detailed view of the company's competitiveness

Strategies for innovation	Continuously invest in product development
Challenges when scaling up production	It is not economical to scale up production any further in NZ. This is partly due to the company having exhausted the market in NZ that can pay for the premium products. The rest of the market is price sensitive.
Changes which they would like to see by the Government	▪ Addressing the high NZ dollar ▪ Receive R&D grants

Company level rankings for key drivers of competitiveness

1	Cost and availability of labour and materials	**2**	Talent-driven innovation	**3**	Supplier network
4	Physical infrastructure	**5**	Economic, trade, financial and tax system	**6**	Local market attractiveness
7	Government investments in manufacturing and innovation	**8**	Legal and regulatory system	**9**	Energy cost & policies

CASE STUDY A.13: Temperzone Holding

Temperzone Group is a leading manufacturer, distributor and exporter of air conditioning and ventilation equipment throughout Oceania and Asia. As a Group it has an established network of sales offices, distributors and warehouses located in New Zealand, Australia, Singapore, Hong Kong, P.R. China and Indonesia

Company Overview

Key Information

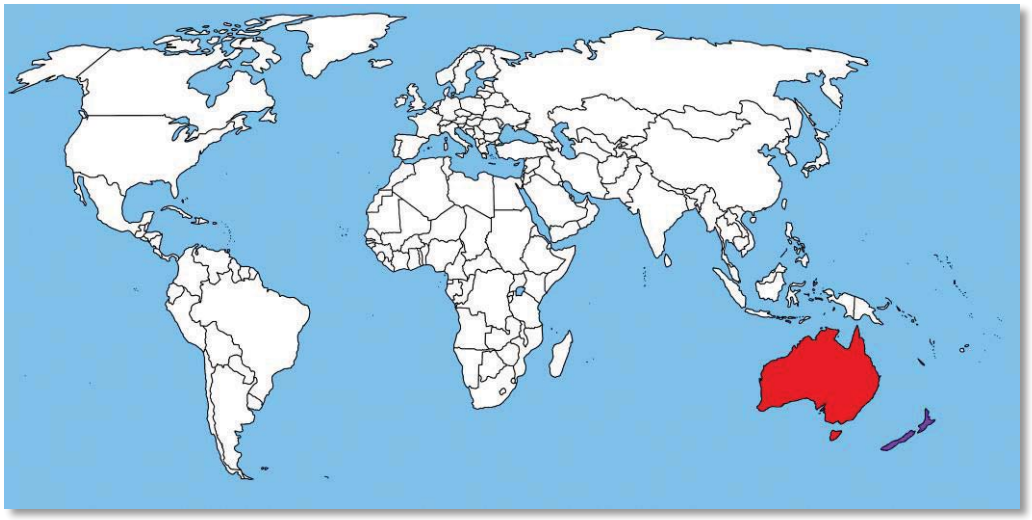
Founded	1956
Sector	Air conditioning and ventilation products
CEO/Chairman	Les Kendall, CEO
Ownership	Private domestic company with outside professional management Domestically owned
Number of Employees	Approx. 600
City/Region	Auckland
Website	www.temperzone.com
Number of locations in NZ/ Overseas	▪ NZ: 3 (Auckland, Wellington and Christchurch) ▪ Overseas: 6 (Sydney, Melbourne, Adelaide and Brisbane AUS, Singapore SNG and Shanghai, CHN)
Organisational Structure	▪ In AUS and NZ— Vertically integrated (from making heat exchangers with sales and distribution is integrated with own logistics and warehousing, in house sales due to the technicality of the products and B2B Business) ▪ Smaller markets—Independent distribution
Company Highlights	▪ Winner of the 'Excellence in Exporting' Award at the 2011 and 2012 Auckland Central Business Awards. ▪ In 2012, the company won the category for Businesses Exporting $35 million or more, and also won the overall Supreme Award covering the best exporter in all categories due to Temperzone's sustained long term export growth.

Products Sold

Type of Product	Description
Air conditioning systems	A wide range of air conditioning systems such as—air cooled systems, water sourced systems, chilled water systems and equipment room systems.
Air Distribution products	Products include— diffusers, grilles, ducting, outside louvres and air regulating dampers
Ventilation equipment	Equipment in this category include fans and roof extracts

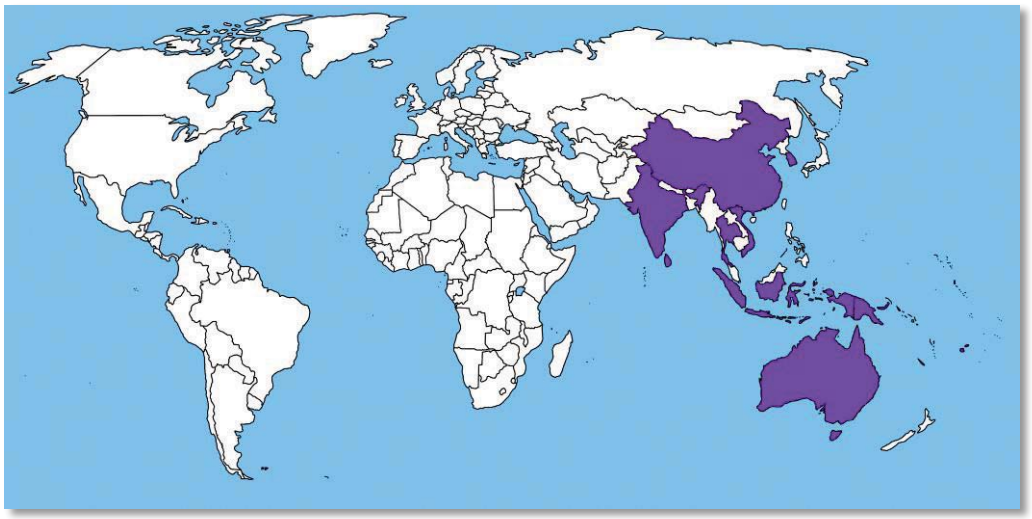
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Temperzone's main export destinations



Features of Temperzone's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality, ▪ Innovation	▪ Service and its quality
Competitive Advantage	▪ Extensive knowledge of the industry ▪ Highly qualified workforce which they continuously aim to retaining ▪ Efficiency in production ▪ The company's cost structure – This has been particularly important in a post GFC environment which has affected construction activity in NZ and AUS	▪ Distribution network ▪ Customer support ▪ Being a local Brand which aims to produce premium products ▪ regional business, ▪ The ability to adapt to changes in standards more quickly ▪ Having a flexible manufacturing plant, engineering and teams, part of adaptable short run manufacturing niche
Reasons for being in NZ	▪ Temperzone was established in NZ in 1956	▪ To maintain a close distance between R&D and production
Training and Skill programs provided	▪ Technical skills ▪ Product design and development ▪ Basic Numeracy and literacy skills *(Basic Budgeting Skills)*	▪ Quality, lean manufacturing ▪ Advanced computer skills ▪ Apprenticeships in refrigeration ▪ Assist employees who are keen to study in a particular area

Detailed view of the company's competitiveness

Strategies for innovation	▪ Strong R&D investment as "innovation is the core of the business" ▪ Rapid prototyping and commercialisation due to short life of products due to standard changes ▪ Have an engineering team consisting of mechanical engineering or those who have a background in designing ▪ 2 R&D projects which benefited from Government Grants
Challenges when scaling up production	▪ Developing automation to increase efficiency/cost-reduction ▪ NZ is a high labour cost country ▪ Generally acquired skills from NZ. Ecosystem of skills required is limited. Thus there is a skills shortage at an experienced level. ▪ Relocating expertise to NZ
Changes which they would like to see by the Government	Change tax laws, increase depreciation. Increase in innovation subsidies Well-funded standards organisation both partial (or impartial) and objective

Company level rankings for key drivers of competitiveness

1	Talent-driven innovation	**2**	Physical infrastructure	**3**	Supplier network
4	Legal and regulatory system	**5**	Economic, trade, financial and tax system	**6**	Government investments in manufacturing and innovation
7	Cost and availability of labour and materials	**8**	Energy cost & policies	**9**	Local market attractiveness

CASE STUDY A.14: Tru-Test Group

World leaders in livestock productivity solutions that offer sustainable, profitable results for producers around the world. Offerings include animal containment, weighing, electronic identification, dairy automation and on farm milk cooling

Company Overview

Key Information

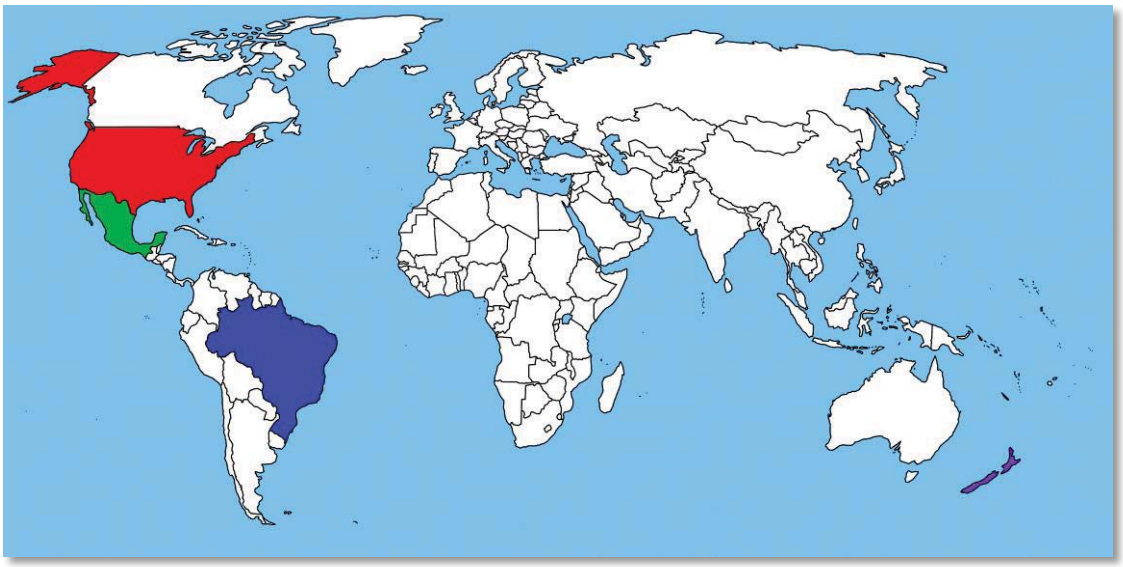
Founded	1964
Sector	Productivity products for the agriculture sector
CEO/Chairman	Greg Muir, CEO
Ownership	Public unlisted company – domestic and foreign owned
Number of Employees	460
City/Region	Auckland
Website	www.tru-test.com
Number of locations in NZ/ Overseas	▪ NZ: 4 (Auckland, Napier, Palmerston North and Hawera) ▪ Overseas: 7 (Brisbane, Melbourne and Perth AUS, Mineral Wells USA ,Tampico MEX , Porto Alegre BRA and Buenos Aires ARG)
Organisational Structure	▪ High vertically integrated ▪ Independent distributors used in markets where there is no scale to own distribution markets
Company Highlights	▪ Winner of the Judges' Supreme Award for International Business and the ANZ Best Business Operating Internationally over $50 million award in the New Zealand International Business Awards in 2013 ▪ Winner at the 2013 ExportNZ Awards - the Westpac Exporter of the Year Award in the over $25 million category and ▪ Was named the Air New Zealand Cargo Supreme Winner in 2013

Products Sold

Type of Product	Description
Weighing, Electronic Identification (EID) & Dairy Automation	Products helping farmers manage the performance of their livestock. These include— weigh scales EID readers, on-farm sensors and automation systems and online management solutions.
Milk Meters	Products which allow for accurate and precise milk samples during the milking process
Farm holding tanks and milk cooling solutions	Products for on farm quality management and storage of milk
Electric Fencing & Fence	Products which help ensure animals are contained and

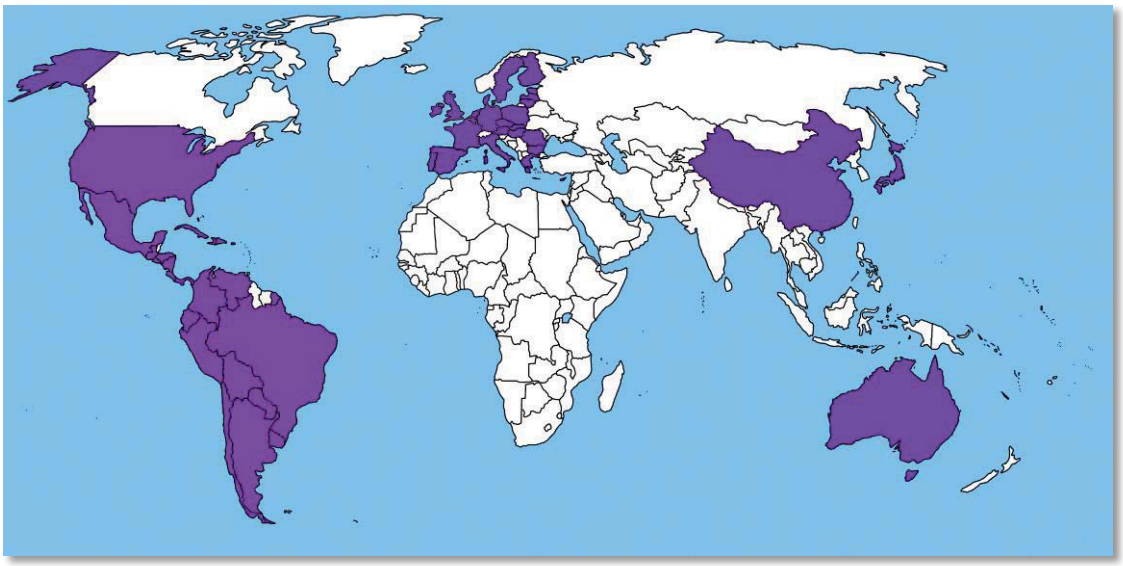
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Tu-Test Group's main export destinations



Features of Tru-Test Group's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality ▪ Innovation	▪ Service
Competitive Advantage	▪ Efficiency in production ▪ Distribution network ▪ Highly qualified workforce ▪ Lean manufacturing ▪ Engineering skills/innovation ▪ Customer support ▪ Brand portfolio	▪ Customer focus/insight – Regularly running qualitative research programs with our teams around the world to conduct quite deep and dense conversation with end users through a program called "Voice of the customer." – Permanent in market teams as well as dedicated export managers that spend time with customers in all key markets.
Reasons for being in NZ	The company was founded in NZ in 1964.	
Training and Skill programs provided	▪ Team and problem solving skills ▪ Basic Numeracy and literacy skills	▪ Technical skills ▪ Product design and development ▪ Quality, lean manufacturing

Detailed view of the company's competitiveness

Strategies for innovation	▪ Continually look to improve on existing products ▪ Work with customers to understand issues and develop products to solve them and make their life easier and their operation more profitable.
Challenges when scaling up production	▪ Quality labour force (skills shortage) ▪ Buy in to lean philosophy
Changes which they would like to see by the Government	▪ Focus R&D incentives on products that contribute to NZ including growth ▪ Continue to expand the FTA regime, ▪ Focus on educational priorities that develop more engineering graduates who want to live in NZ and deliver technical trade skills applicable to manufacturing.

Company level rankings for key drivers of competitiveness

1	Talent-driven innovation	**2**	Government investments in manufacturing and innovation	**3**	Local market attractiveness
4	Cost and availability of labour and materials	**5**	Economic, trade, financial and tax system	**6**	Supplier network
7	Physical infrastructure	**8**	Energy cost & policies	**9**	Legal and regulatory system

CASE STUDY A.15: Westland Milk Products

A world class dairy company and a global leader in the manufacture of high quality dairy products. The company has over 330 dairy farmers producing such quality dairy products to NZ and the world.

Company Overview

Key Information

Founded	1937
Sector	Meat and Dairy Products
CEO/Chairman	Rod Quin, CEO
Ownership	More than 330 dairy farmer shareholders
Number of Employees	450 usually plus another 20 to 30 during peak
City/Region	**Hokitika**
Website	*www.westland.co.nz*
Number of locations in NZ/ Overseas	NZ: 3 (Auckland, Christchurch and Hokitika) Overseas: Australia and the UK
Organisational Structure	Co-operative structure
Company Highlights	▪ New Zealand's second largest dairy co-operative ▪ New Zealand's third largest exporter of dairy products ▪ Winner of best use of R&D award in 2012 for specialist protein (used in high end sports protein products such as Detour bars) in the 2012 New Zealand International Business Awards.

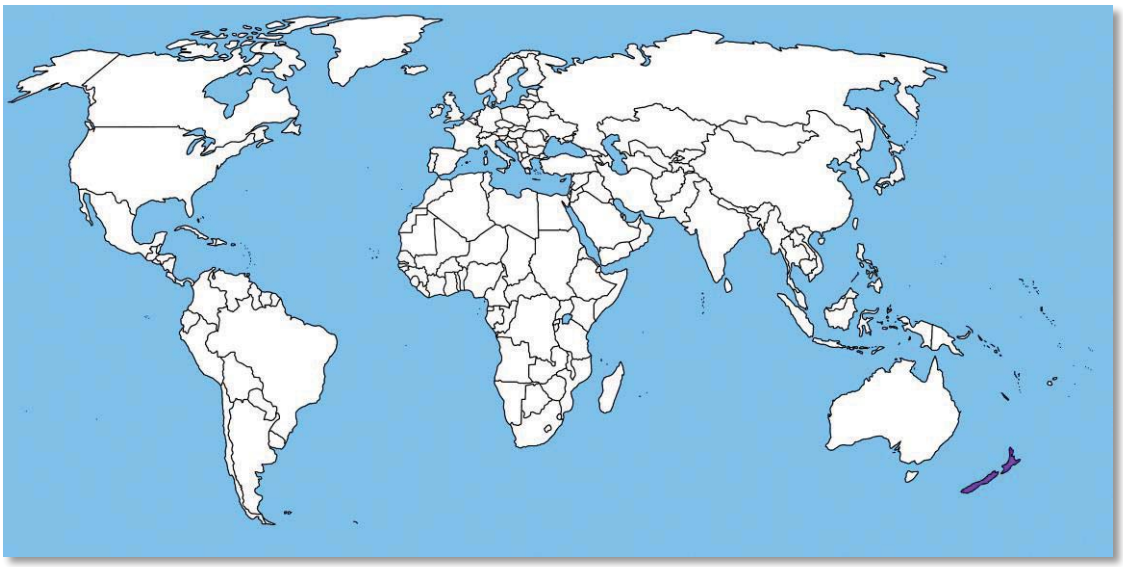
Products Sold

Type of Product	Description
Milk Powders	A wide range of premium quality, high specification milk powders under their Westpro brand
Milk Proteins	A wide range of premium quality milk protein products under the Westpro brand. Products include—casein powders, caseineates, milk protein and whey protein concentrates and protein hydrolysates
Consumer Products	Dairy products packed into retail sized formats for final consumer consumptions. Products include—retail butter, power and nutritionals and sachets
Bioactives	A number of spray and freeze dried premium bioactive products including—Colostrum and Lactoferrin
Nutritional	Products include—Infant formula base, follow-on base, growing up milk powder as well as other powders for nutritional applications
Milk Fats	High quality milk fat products including salted and unsalted

bulk butter and anhydrous milk fat.

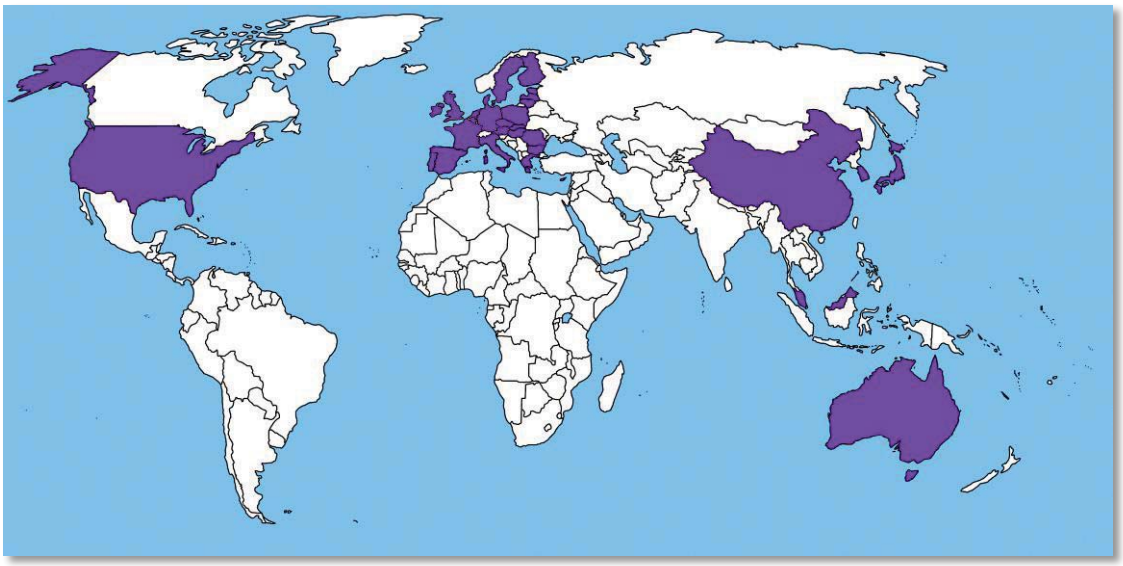
Manufacturing Locations

NZ and Offshore Manufacturing sites



Export Locations

Westland's main export destinations



Features of Westland's competitiveness

Competitiveness at a glance

What sets you apart from your competitors	▪ Quality ▪ Service ▪ Innovation ▪ Reputation based on quality	▪ Customising production so that it is more flexible and is focused on mutual value creating (speed and customisation options to keep things interesting for the customer set they deal with)
Competitive Advantage	Customer support	
Reasons for being in NZ	▪ Westland has always been in NZ since its establishment	Highly qualified workforce
Training and Skill programs provided	▪ Technical skills ▪ Product design and development ▪ Basic computer skills ▪ Team and problem solving skills ▪ Quality, lean manufacturing ▪ Advanced computer skills	▪ Basic Numeracy and literacy skills ▪ Sales and management training ▪ Individual development programs—forklift, driver training and so on) ▪ Competitive manufacturing process training at an operational level

Detailed view of the company's competitiveness

Strategies for innovation	▪ Having dedicated executive position, the General Manager for Innovation ▪ Create a culture which "recognises captures and rewards innovation." Sources for ideas include external sources such as commissioned research based on customer trends and so on, customers and other stakeholders and internal sources such as staff members ▪ Integrating innovation into company's key performance indicators (KPI) ▪ Establishment of informal and formal structures to allow for ideas for innovation ▪ Engagement with customers
Challenges when scaling up production	▪ Create more value from milk ▪ Engaging staff (own and understand the goals and strategies and recognise and celebrate milestone)
Changes which they would like to see by the Government	▪ Regulatory framework which provides product integrity ▪ Spend more time on building relationships with overseas counterparts (FTAs regulatory framework and testing regimes are similar to reduce compliance costs) ▪ Fix the following issues: – Chemical and food engineers are lacking – Farm training is limited – University programs need to talk to industries

Company level rankings for key drivers of competitiveness

1	Supplier network	**2**	Physical infrastructure	**3**	Legal and regulatory system
4	Economic, trade, financial and tax system	**5**	Cost and availability of labour and materials	**6**	Talent-driven innovation
7	Energy cost & policies	**8**	Government investments in manufacturing and innovation	**9**	Local market attractiveness

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