Food – A matter of trust

The outlook for food manufacturing

- Food manufacturing is an important industry in New Zealand. It's a big contributor to manufacturing output, employs a lot of people and is a major exporter.
- This bulletin details some of the dynamics at play in the industry, highlighting key challenges and opportunities facing industry participants.
- These dynamics are likely to result in some big changes to the food manufacturing landscape in New Zealand.
- The biggest opportunities to be pursued by industry participants include producing food for the rapidly expanding middle class in emerging markets in Asia, increasing market share in developed countries and addressing consumer demands for greater transparency.
- Challenges to be faced include the emergence of alternative foods, and how to respond to structural changes in the food supply chain, both of which are likely to result in more food being produced closer to the world's largest population centres.

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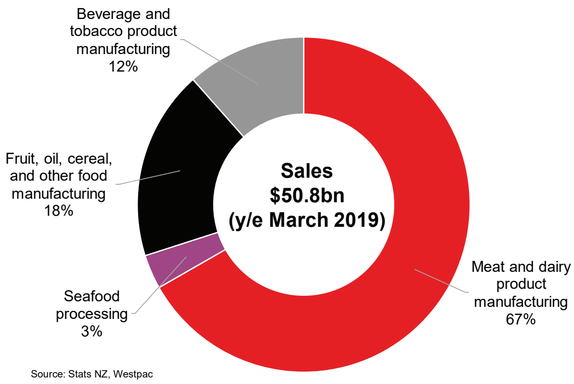
The numbers

Food manufacturers are involved in the processing of raw material ingredients produced by the agricultural sector into food that is fit for human consumption. They are involved in all stages of beneficiation, from simple processing which turns agricultural product into something that can be eventually eaten, to more complex processing, which transforms food through a sequence of processes into a final product ready for consumption. These final products typically include added ingredients, from salt, sugar, and fats to additives, preservatives and/or artificial colouring.

Food manufacturing is a big deal in New Zealand. The sector accounts for about a third of manufacturing turnover, makes up just under 4% of this country's GDP, and provides employment for about 86,000 people.

In 2018, local food manufacturers made just over $44bn in sales. Add to this $6bn in sales recorded by beverage producers and you have a sector that is more than four times bigger than the second placed transport equipment, machinery and other equipment manufacturing industry.

Figure 1: Food manufacturing sales



Source: Stats NZ, Westpac

About three-quarters or $34bn of sales were generated from exports. That's not surprising considering that New Zealand's food production system produces enough food to feed more than 20 million people - over four times the country's population.

The performance of exports has been good, with volumes growing by an average 4% per annum since the turn of the century. In part this reflects the nature of New Zealand's pasture based agricultural system, which is able produce high quality food at relatively low cost thanks to a temperate climate, high rainfall, a plentiful supply of water and fertile land.

Because of these advantages, New Zealand has historically exported foods requiring a limited degree of processing. Dairy products, such as milk powder, cheese and butter, dominate in this regard, while meat products, mostly lamb and beef, have also made their mark. Horticultural products, such as apples and kiwifruit, are a key growth area.

By comparison, exports of heavily processed foods are relatively small – depending on how they are defined, they account for about $600m per year.

New Zealand's food manufacturing industry is home to about 3,100 firms, the vast majority of which are small operations. Only about 200 firms operating in this industry employ more than 50 people.

Most small firms focus on meeting domestic requirements, either by selling directly into the local market, or by supplying ingredients to large domestic food manufacturers that have the necessary scale to compete abroad.

Unfortunately though, the local market offers limited opportunity for growth. Manufacturing food sales domestically have grown by an average 1.7% since the turn of the century, just slightly more than average population growth, but significantly slower than the economy overall.

Small manufacturers are also active in the export market, although for the most part they are largely confined to the margins, operating either as bit players supplying ingredients to global supply chains or as niche market providers, focusing on areas like snack foods, processed meats and seafood.

Opportunities and challenges

The biggest opportunities to be pursued by industry participants include producing food for a rapidly growing middle class in emerging markets, especially in Asia, expanding the footprint of New Zealand made foods in developed markets and addressing consumer demands for greater transparency.

Demand for food is increasing as the world's population expands. Nowhere is this more evident than in fast growing emerging markets in Asia, where a rising middle class is consuming increasing quantities of high protein foods, particularly meat and dairy.

This is good news for New Zealand's food manufacturers, who are better placed than most to exploit a ramp up in demand for high protein food. It's already a world leading exporter of premium quality dairy and meat, has a significant amount of fertile land, and unlike many of its peers, seems to have plenty of water. It also has well-developed agri-tech and food-tech facilities, including innovation hubs and other support networks.

Other opportunities include using technologies, such as block chain, artificial intelligence (AI) and robotics, to improve operational and supply chain efficiencies, as well as minimise risk.

Technologies are not only reshaping work organisation methods, they are also facilitating the real time monitoring of food production from the farm to when it leaves the factory. This helps to improve food safety, reduce wastage and limit opportunities for food fraud and other criminal activity.

Technology is also making food production more transparent. The ability to provide "farm to fork" traceability not only addresses a key consumer demand for more information about their food, it also helps to reaffirm quality and creates a point of difference.

In addition to these opportunities, food manufacturers also face a number of challenges.

New foods are slowly moving into the mainstream, broadening our definition of what food is. Although still at the margin, the availability of alternative proteins is a growing threat to New Zealand's food manufacturers that historically have been able to trade off their position as producers of premium quality meat and dairy.

However, should these alternative foods become commonplace, local manufacturers may well find themselves swimming against the tide. For now though, China's insatiable appetite for traditional protein based foods is likely to provide some breathing space.

Digital technologies are also helping to change supply chains. Increasingly they are being reconfigured and in the future it is likely that more production will take place closer to major population centres. Close proximity offers the potential of better access to consumers, improved responsiveness to changing market dynamics, operational efficiency gains, and streamlined logistics

The transition from traditional supply chains towards integrated business platforms located close to big population centres is likely to put New Zealand's geographically distant food manufacturers at a competitive disadvantage in key export markets. Local food manufacturers are likely to respond to this challenge by moving up the value chain, focussing more on processed foods that offer a point of difference.

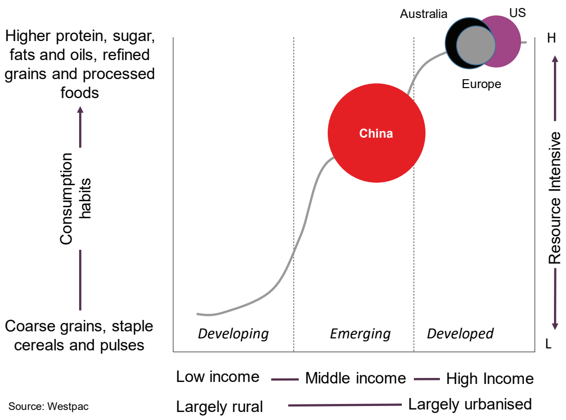
More mouths to feed

The factors that drive demand for food are complex and inter-related.

At a macro level, it's really about how many people there are. It's a number game, and with 82m people being added to the world's population each year, the trajectory for food demand looks to be a one-way bet.

At the moment adding this amount of people to the world's population each year doesn't seem to be too much of a problem. The world comfortably produces enough food to feed the 7.6bn people that currently inhabit it, although with more than 800m people going hungry every day, clearly not everybody gets fed.

Figure 2: Changing consumption habits



Source: Westpac

By 2050 the world's population is projected to rise to almost 10bn people, with most of the increase likely to come from today's rapidly industrialising emerging market countries.

As the middle classes in these countries continue to expand, so their dietary habits will change, with more people opting for high protein foods, particularly meat and dairy.

This is good news for New Zealand's food manufacturers, who have a hard earned reputation for producing quality food.

Look, think & decide

The traditional factors that consumers consider when purchasing food are broadening out. Taste, price and convenience remain key considerations, but they are not the only ones.

Top of the list is food safety. Consumers have become increasingly distrustful of food manufacturers. And with good reason. The World Health Organisation (WHO) estimates that 600m people worldwide fall ill after eating contaminated food each year, while about 420,000 die from foodborne diseases. Corresponding estimates are far lower in developed markets, but are still large enough to cast doubt in the mind of consumers. In New Zealand, for example, there are about 200,000 cases of foodborne illnesses each year, roughly half of which are production related.

Consumers also want to know where their food comes from, what's in it, and whether there are any health risks associated with consuming it, both near-term and long-term. This is particularly true of the younger generation. Both Millennials and Generation-Z consumers are "clean eaters" that value whole natural foods over processed and refined foods.

Consumers are also opting for food products that align to their personal and nutritional preferences. Demand for food that is personalised and/or customised is growing strongly as a result. Fatty and salty foods are increasingly on the outer, while functional and fortified foods that promote gut health, fuel brains and benefit appearances are in. No longer a niche segment, global functional foods are expected to grow by just under 10% per annum over the next couple of years.

They also want to know how their food has been produced, with broader social considerations such as fair trade, labour exploitation, animal welfare, "green" production and possible adverse environmental impacts increasingly being front of mind.

For food manufacturers the message is very clear – the basis of competition is shifting, and quickly. Increasingly consumer led, competition is no longer about just producing food and achieving cost efficiencies. It's about doing so in a way that is transparent and responsive to the increasing demands of a far more knowledgeable consumer.

Revolution or evolution

Manufacturers are responding by improving supply chains efficiencies and minimising risk. Food supply chains are notoriously complex, often involving networks of suppliers that extend over long distances and many different countries. Food manufacturers have a lot of moving parts to keep track of, from the intake of raw materials and ingredients to making sure the right amount of product gets to the right place. Because many food products have a limited shelf life, not to mention being under increasing safety and quality scrutiny, getting the logistics right is critically important.

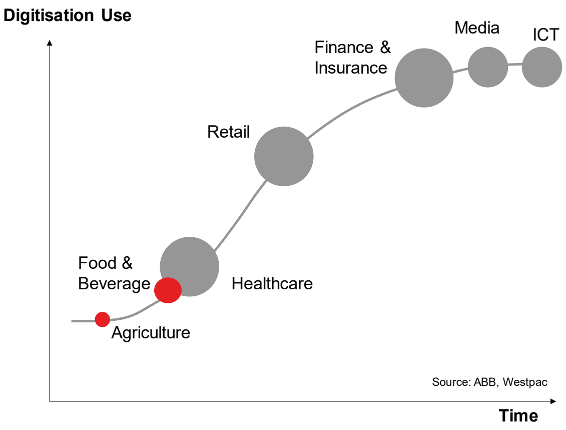
To achieve this, food manufacturers are doing two things.

Firstly, they are reshaping their supply chains, taking out links wherever possible, bringing farming and food manufacture closer to the point of consumption. Resulting integrated business platforms are slowly replacing distributed supply chains. Digitisation, where the unique characteristics of crops grown in one part of the world are digitally recorded so they can be reproduced in simulated environments, is helping underpin this trend. Consumer demand for more local ingredients is also a key driver, encouraging more urban farming. So too vertical farming, which despite being in its infancy, has now moved from science fiction into science fact.

Moving food production closer to the point of consumption is a growing threat to New Zealand's geographically distant manufacturers that rely on export markets.

Closer proximity offers a number of competitive advantages. These include having much better access to consumers in major population centres, improved responsiveness to the changing demands of consumers (and suppliers), operational efficiency gains, streamlined logistics (including inventory management) and lower transport costs.

Figure 3: Comparative use of digitisation



The obvious response is to establish a presence offshore, but this is likely to be a pipedream for most manufacturers in New Zealand who typically lack the size, scale and complexity to compete effectively in these markets. Those that are able to do so are likely to be dominant local manufacturers that already have a global presence.

The other option is to form partnerships, alliances and joint ventures with manufacturers already in situ overseas. But in a digitised world where product can be replicated, this can only work for those local manufacturers that are able to move up the value chain into processed foods where they can differentiate themselves, perhaps with a difficult to copy New Zealand twist. Under this scenario, the value proposition of local manufacturers is not the food that they are able to produce, but rather the intellectual property that they have on how to produce it.

Secondly, food manufacturers are working more collaboratively with others along their supply chains, increasingly adopting digital multi-party network management tools to monitor demand and supply in real time at each point in the value chain. They are using inventory management tools to more effectively manage stock levels (including automatic reordering), and are implementing traceability systems, which leverage off block chain technologies and AI sensors to track individual food products. The net result is better control over food safety, less food wastage and fewer opportunities for food fraud and other criminal activities.

Operational efficiencies

Food manufacturers are also looking at their own operations, investing in new machinery and equipment to help improve operating efficiencies and reduce unit costs of production. Simply put, early adopters of new technologies are increasing their competitiveness.

Most medium to large sized firms in New Zealand are following the global trend, investing heavily in automation and robotics to improve operational flexibility and efficiency, as well as reduce the chances of food contamination through human contact during processing.

Automation is also important from a food quality point of view, enabling more accurate and consistent food quality evaluation. The ability to collect, store, and track data of all operational events enables food manufacturers to comply with food safety and environmental regulations, in particular.

The adoption of automation and robotics differs depending on the type of food being produced. Some foods products like dairy products are well suited to wholesale automation, resulting in the complete reconfiguration of work organisation layouts. Other foods, perhaps of a more complex nature, require more human intervention, so automation is limited to specific parts of the process.

Showing off

Food manufacturers are responding directly to consumer needs for greater transparency. With today's instant access to information, if a consumer can't understand or find out where and how a product is made and what's in it, they'll be more likely not to buy it.

Some food manufacturers have begun to develop end-user apps based on the systems described above, so that consumers are able to track retailed food products from "farm to fork". Fonterra is a good example of this, with its Quick Read (QR) code based tracking system, but there are others. An increasing number have also moved to providing clean labelling, which seeks out foods with easy-to-recognise ingredients and no artificial ingredients or synthetic chemicals. The rise of clean labels is expected to continue.

Product explosion

Manufacturers, seeking to differentiate themselves from their competition, are innovating with new products. Food technology is key and manufacturers worldwide are spending lots on it, researching, designing and producing new functional foods that meet the consumer needs for healthier and more environmentally friendly options. New Zealand manufacturers are well placed to take advantage of an increase in demand for such foods, especially given their expertise in dairy, meat, seafood and arable foods.

Support networks aimed at driving innovation and new product development in New Zealand have also been established. According to MBIE, about 60% of firms reported in 2015 that they were involved innovative activities, which is more than 10% higher than the national average. Furthermore, about a quarter of all firms in the food manufacturing sector are actively involved in research and development.

They are also creating new substitute foods made with unusual ingredients that are promoted as being better for you and having less of an impact on the environment. They include alternative proteins that are often plant-based. The key advantage is that they require less natural resources to produce than common protein sources, such as meat and fish.

Some of these substitute foods are already here and have gone mainstream. Cellular milk is well into production. Meatless products, which have the taste, texture and smell of real meat, can already be found in our supermarkets, while some fast food chains are actively marketing meatless options. More will come, despite the best efforts of lobbyist groups to protect the traditional meat industry.

Over time, growth in demand for meatless products will pose a threat to New Zealand's export orientated meat industry. This is because consumers in developed markets, in particular, are increasingly substituting real meat with healthier and less environmentally damaging options, which are often price competitive.

At the moment, the threat of substitutes is small and any loss of market share is likely to be more than offset by growth in demand for real meat in key export markets like China, which is yet to make the shift towards meatless food.

However, consumers in emerging markets are likely to follow developed countries down the meatless route. When they do, New Zealand meat processors could find themselves being forced up the value chain into more differentiated processed products.

Knowing me, knowing you

Finally, food manufacturers are using the transaction data they own to better understand consumer behaviour.

Demand sensing algorithms analyse this data together with real-time internet search and browsing data to determine where and when potential consumers will buy food, and in what quantity, well before they actually do. This is particularly important given the increasingly demanding nature of consumers.

They are also starting to interact more with consumers. In an environment where end consumers want what they want, when they want it, and with speed, food manufacturers are beginning to cut out the middlemen, using the internet and social media to go directly to consumers. Examples include new community sources and prepared meal solutions that are delivered directly to the consumer. Retailers, however, are responding in kind, with innovative store layouts and providing value added services, mostly relating to product advice.

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