National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Exemplar for Internal Achievement Standard

Agribusiness Level 3

This exemplar supports assessment against:

Achievement Standard 91871

Analyse how a product meets market needs through innovation in the value chain.

An annotated exemplar is an extract of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements at the grade boundaries.

New Zealand Qualifications Authority

To support internal assessment

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	Grade Boundary: Low Excellence
1.	For Excellence, the student needs to comprehensively analyse how a product meets market needs through innovation in the value chain. This involves evaluating how a product meets market needs through innovation in the value chain. This includes evaluating the impact and consequences of the innovation on the whole value chain, and the ability for the selected product to meet future needs. This student has comprehensively analysed the innovation of breeding Te Mana lambs (1). The ability of the product to meet market needs has been evaluated (2). Impacts (3) and consequences (4) of the innovation on the whole value chain have been evaluated. The student has also identified ALB's traceability process and growth strategy (5) as the means by which the breeding innovation will enable the business to meet future market needs. For a more secure Excellence, the student could use appropriate business language for curriculum level 8. While the student has referred to premium pricing and the unique selling point of the Te Mana brand (6), there should be further use of accurate business terms. For example, 'increase their income' (7) could be replaced with 'increase their sales, leading to higher profit', and '…higher economic return from income and profit…' could be broken into 'sales of lambs' and 'dividends'.

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Student 1: Low Excellence

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An example of a NZ business that has succeeded in adding value to their product through innovation of the value chain is A Lamb Business (ALB) which is a NZ owned co-operative that was started in 2006 by a group of farmers who were determined to find a breed of sheep that were suited to the high country and would thrive in that environment. ALB has used genetic testing and scientific developments to find a mix of Romney, Texel, Finn and Perendale sheep that have a particularly high level of omega 3. This breed is called Te Mana which has got intramuscular fat rather than fat that is distributed on the outside of the cut of meat. This means that the cuts of lamb can stay tender when cooked which is appealing to many chefs and has many health benefits for the consumers because of the high omega 3. (1)

The value chain for ALB starts with selected farmers who all share the same views on how they farm and are interested in breeding a sheep that is different to the market sheep. Farmers of the Te Mana lambs are the most important step in the value chain of ALB as without the farmers there would be no product to sell. Because ALB is also a co-op business meaning that the farmers have shares in the business, without these shareholders there will be no ALB business. There are 50 farmers who currently produce Te Mana lambs for the business. These farmers have worked with geneticists and scientists to come up with this breed and discover that by feeding the lambs on chicory for 30 days before they leave the property the amount of omega 3 is increased. (1)

After these 30 days on chicory the lamb is sent to the freezing works to be killed. ALB have formed a partnership with Alliance freezing works meaning that Alliance has agreed to cull their stock separately, package and sell separately from all the other breeds of sheep that go to the processing plants. (4) This is the second step in the value chain. Together they have come up with an electronic ear tag that is able to determine where the animal came from and that it is part of the ALB breed. This allows Alliance to keep the breed of sheep separate from normal stock. When the animal enters the freezing works it is culled, the rump and lamb racks are cut and sold on to restaurants. None of the animal goes to waste so the cuts that are not ideal are sold to pet food companies.

The third step in the value chain is the product going from Alliance freezing works to the customers which are restaurants or, to a much lower extent, pet food companies. ALB are very selective about where they sell their meat to, as they want to keep it as an upmarket product. There are only around 60 restaurants around the world that sell Te Mana lamb to consumers. The meat is very desirable for these chefs because of the high omega 3 content and the intramuscular fat. High omega 3 means that the lamb is healthier for consumers than other standard lamb cuts. The intramuscular fat is ideal for the chefs because when it is cooked the fat that is marbled through the meat rather than sitting around the outside of the meat. This enables the meat to stay tender throughout the cooking process and the juices stay in the meat so the chefs can consistently cook the meat perfectly. These attributes mean that the chef can prepare the product and sell it to diners for a premium price than what any normal range of meat would sell for. (2) ALB do not supply Te Mana lamb to the supermarkets as this will cheapen the brand. The idea is to keep Te Mana lamb as a premium product and charge a premium price (6) for it. At this stage in the value chain the animal carcass creates 35% more value than what any normal carcass would make.

The final step is when the meat reaches the consumers. Consumers can only buy the meat from 60 restaurants around the world. Because ALB have come up with a way through genetics to improve the eating experience, increase health benefits, flavour, consistency etc consumers are willing to pay a higher price for the cuts of meat compared with what they would for other cuts. High omega 3 in an animal is appealing to meat eaters as omega 3 provides many health benefits. Te Mana lambs have just about as much omega 3 in them as salmon which is well known for being high in this same fatty acid. (2) Te Mana lamb also contains more polyunsaturated fats (good fats) than other lamb cuts which have more saturated fats. The fat in these cuts are intramuscular instead of being around the outside of the cut of meat which helps to make the eating experience better as the meat is kept succulent instead of drying out easily. PH levels in lambs is very important as it determines the taste of the lamb. Te Mana lamb have a low pH which means the taste of their meat is more favourable for eating.

ALB's focus on increasing the omega 3 content in its meat is an example of the company being innovative in order to add more value to their product. This innovation came about because ALB ran a progeny test through a whole flock of rams and traced back to one ram that produced offspring who have a high omega 3 content and intramuscular fat. ALB realised that these were desirable traits for a lamb, so they kept his male offspring to breed from. (1) The rams were sent to the 50 farms that supply to ALB. These farmers crossed the high omega 3 rams with Finn, Romney, Texel, Perendale ewes to start with. The more they have bred the higher the amount of omega 3 will be in the lamb because by now both parents will have omega in their systems. While ALB was testing, they found that if they finished the lambs off on chicory it boosts the omega 3 content even more. Many other farmers and companies are using genetic programs to acquire a certain breed or characteristics, but no one can have this exact same breed as what ALB has as they own this breed. This means that no one can compete against them with the exact same product. (7) For ALB to increase their income even more they could cross their high omega with a high offspring rate. This would mean that they could produce more offspring that are high omega from less ewes.

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ALB's innovation through a breeding program has added greater value to the product as it has created a breed of lamb that has a point of difference compared with any other breed meaning they are then able to charge more for their product. Many consumers these days are very health conscious and very ethically minded. Te Mana lamb has many health benefits such as high omega 3, low pH and polyunsaturated fats in the cuts of meat. This appeals to many consumers who want meat that has less of a negative impact on their health. These people are more open to paying a higher price for their meat cuts. As there is no other lamb like Te Mana ALB can charge a higher price per kilogram. 2

It is important to ALB that their farms minimise their impact on the environment. For example, many of their farmers are using environmental plans or using strategies such as planting natives, fencing waterways etc. This allows ALB to ethically maintain the image of clean green farming. This is appealing to the consumers because there is a lot of negativity about farming having such a detrimental effect on the environment. This adds value to ALB meat as restaurants learn the story about the farming practices behind Te Mana meat and are willing to pay more for the product because of the point of difference. ALB farms also pride themselves on being ethical towards their stock. The farmers like the ewes and lambs to live stress free lives. One practice is to separate ewes from their lambs just before they go onto the truck, so they do not have the extra stress for days beforehand. Having low stress stock also helps improve the taste of the meat so it is a win-win situation by keeping their stock stress free. Ethical farming is also helping to meet the market's future needs as people are starting to only want to buy products from companies who can prove that they have treated their animals in a humane way. The traceability process ALB uses provides customers with a background story about where that exact piece of meat has come from and gives an insight into the farms' environmental and animal-care practices. Traceability meets market needs as customers of high-end products such as Te Mana lamb have come to expect the ability to learn all about the meat they are buying. 5

Another way that ALB has met market needs is by using a natural breeding program to obtain their high omega 3 lambs rather than a genetically engineered program. This is a unique selling point for ALB because again, this is a more ethical way to breed the lambs. People will see it as a more natural way. This breeding innovation has an impact on the whole value chain not just one specific part. With the breeding program that ALB runs it impacts the first stage of the value chain hugely. Farmers must work with geneticists and scientists to ensure that their stock is still carrying the high omega 3 gene which can have an impact on them as it can mean that there is more work involved than just having any regular breed. A positive impact that this innovation has on the farmers is because ALB is a co-operative business the money goes back to the shareholders (farmers) and because ALB can charge 35% more per carcass than regular lamb the farmers benefit financially. 6 4 3

The consequence of this is that the farmers are getting a higher economic return from income and profit than farmers of other market breeding lambs. This enables them to put money back into the farm to grow their businesses. Another way that this is influencing farmers is the business is continuing to expand meaning that they will need to employ more farmers. This has a positive social effect as it is providing jobs for people. 7

The next step in the value chain is Alliance freezing works. The breeding innovation affects the freezing works because they need to keep the Te Mana lambs separate from the regular lambs. *[Further detail of freezing works processes has been omitted from this exemplar.]* The consequence for the freezing works is the need to invest money into the separation system. But this would have been economically worth it as they are getting all the Te Mana lambs to cull which is bringing in a large income. 4

The next step in the value chain is the distribution. Te Mana lamb value chain is different to the usual chain for market lambs as the business can skip a step and supply straight to top end markets. ALB eliminates the step of going to the supermarkets and foodstuffs for distribution and will just go straight to restaurants where it is sold to consumers. The distribution stage of the chain has been affected by the innovation because without the selling point of having high omega 3 they would not be able to get into these high-end markets. By skipping the distribution step through supermarkets and foodstuffs, ALB can charge a higher price for the lamb as Te Mana is seen as an exclusive product. 3

ALB has realized that the demand from their products is high, so they have started to increase the amount of stock that they are producing. They started in 2006 with only one high omega 3 ram, now they have 250,000 breeding ewes. Realising that the unique makeup of the Te Mana breed is desirable to consumers and farmers, ALB is currently seeking more farmers to expand the company. This allows the product to meet future needs as more meat will be produced and will be able to be supplied to new restaurants who want Te Mana on their menus. This is meeting the market's future needs because the market for meat is always going up and down and when the price for lamb drops ALB will still be able to make a reasonable income from what they are selling. Also, because they are charging more per carcass, they can invest some of that money into other ways to meet future needs. For example, they could invest some of the extra earnings into environmental protection. They may be able to purchase more land, maybe dairy land. This will have a positive effect on the environment because sheep farming is less intensive on the land then dairying so by converting to sheep it will benefit the land. 5

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	Grade Boundary: High Merit
2.	For Merit, the student needs to analyse, in depth, how a product meets market needs through innovation in the value chain. This involves giving a thorough explanation of how a product meets market needs through innovation in the value chain. This includes examining how the innovation adds greater value to the selected product. This student has explained in detail Zespri's development of the sungold and red-fleshed kiwifruit varieties, strategies to reduce carbon emissions, and converting kiwifruit to flour (1). The student has also explained how these innovations have met, or will meet, market needs (2). The contribution of the innovations to the value of kiwifruit have been explained in depth (3). To reach Excellence, the student would need to discuss how at least one of the innovations impacts on all relevant stages of the value chain. For example, in discussing the development of red-fleshed kiwifruit, the student could identify the consequences for Zespri of incurring additional costs for research and development, and marketing and sales.

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Student 2: High Merit

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[Introduction to Zespri omitted from this exemplar]

Zespri's supply chain starts with research and development. Zespri have partnered with Plant and Food Research and have support from the MBIE in developing new strains of kiwifruit, increasing the qualities of the kiwifruit. This adds value to the kiwifruit because better quality kiwifruit can be sold for more in the market, and consumers will be more likely to purchase the kiwifruit if there are nutritional benefits. The Zespri supply chain then goes on to the orchard. Many of the innovations that occur here involve the kiwifruit vines and more laboratory testing. On the orchard, many growers will improve their crop through thinning, trunk girdling and stringing of their kiwifruit vines. The thinning of kiwifruit vines involves removing kiwifruit from the vines which have too many kiwifruit growing on them. This helps to improve the quality and size of the kiwifruit left growing on the vine. Trunk girdling is a process that has been seen to improve the taste of kiwifruit. It works by helping redirect the essential plant sugars into the growing fruit, rather than the roots where it normally goes without being girdled. The stringing of kiwifruit vines/canes helps to encourage the growth of new canes where the fruit can have more sun and better growth conditions resulting in a better fruit.

Some other processes the orchard goes through to help the value chain is testing of the fruit before harvest. When orchardists think their kiwifruit are ready to harvest, they will have a professional come to their orchard and collect samples. These samples are then taken to a laboratory and analysed. The lab analyses the size, quality and taste of the kiwifruit as well as conducting dry matter tests which help give an indication of how good the kiwifruit will be when they are ripe and getting sold. Another point in the harvest that is important for the value of kiwifruit is the selection of kiwifruit on the vines. When the pickers are collecting the kiwifruit, if any of the kiwifruit aren't at a very good size, they will leave them to keep growing and will harvest them later. This adds value because it means that only the kiwifruit that are a decent size will make it to shops.

The Zespri value chain then goes through a logistics stage when the fruit are transported from the orchard to the packhouse. In this stage there are very few innovations that can occur. The main thing that is happening here is smarter loading. Maximising the amount of kiwifruit being transported at once, without overloading the truck. This reduces the cost of transporting and help reduce carbon emissions from unnecessary travelling. The next stage in the Zespri value chain is at the packhouse. There are many important stages in the packhouse that add value. These stages include the grading, packing and storage of the kiwifruit. The first stage that occurs here is grading. When the kiwifruit first arrives at the packhouse they are graded with a set of regulations set by Zespri. Zespri regularly sends auditors to packhouses to check that these regulations are being followed. Grading the kiwifruit ensures that there is similar quality fruit being packed together and ensures that there are no bad quality kiwifruit making it into the market. This helps to add value as there will only be good quality kiwifruit making it into the market and consumers can't be put off by bad kiwifruit as there shouldn't be any.

In the packing stage there are a couple of things that occur here to add value to the kiwifruit. The first thing is the eco-friendly packaging that is being used. Zespri are using packaging that can be reused and recycled. They also have a water-based sticker on the fruit that can be easily degraded with the skin when it is thrown away. There is also a lot of research being done into more eco-friendly packaging and using biological waste-based plastics. This adds value to the kiwifruit as the consumer is looking for a product that doesn't have a huge impact on the environment. By making organic packaging or recyclable and degradable packaging Zespri are appealing to the consumers, increasing their market share.

Zespri use a reliable refrigerating system that is energy efficient. This keeps the kiwifruit in a good condition while in storage without wasting energy. This adds value in the same way organic packaging does, there is a lower impact on the environment with a more energy efficient refrigerating system and therefore appeals more in the market. When the kiwifruit is being transported from packhouses to the stores where they are being sold there are some processes that occur. One of these is using a direct shipping route when exporting. This minimises the time spent traveling and reduces the impact of the ships on the environment as they are spending less time on water. Another thing that is happening in both local and exporting logistics is using smarter loading. The trucks and ships are having their storage capacities maximised without being overloaded. Both are adding value as there is a lower impact on the environment, and less carbon emissions and will therefore appeal to the market. A higher appeal pulls in more consumers and value increases.

[Marketing section omitted from this exemplar]

One innovation that has occurred within the orchard and laboratory tests stage is creating the sungold kiwifruit variety. Kiwifruit are nutritious fruits with high levels of vitamin C. They are also a good source of dietary fibre, actinidin and potassium. All these nutrients combine to make Zespri kiwifruit have a higher nutrient density than most fruits. sungold kiwifruit have all these nutrients in higher levels and more. A sungold kiwifruit has 76.2 mg more vitamin C than standard green kiwifruit. It also has higher quantities of minerals like potassium, sodium and iron and has new minerals that green kiwifruit doesn't have like magnesium. All these extras give the sungold kiwifruit variety a higher nutrient density than green kiwifruit and gives the consumer more health benefits than a standard green kiwifruit. These added nutrients help add more value to the kiwifruit because consumers are now

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more aware about what is in their foods and what is good for them. With Zespri advertising the added health benefits of the sungold kiwifruit they are going to get more consumers purchasing the sungold kiwifruit. Since this kiwifruit is the only one of its kind with all the health benefits then Zespri can set the market price for them. This adds value because Zespri will be getting more consumers purchasing their sungold variety, therefore increasing their market share. Zespri is controlling the market for this kiwifruit. This innovation meets the market's need for nutritious and wholesome food. Consumers want a food that is healthy and has nutrients that are known to help their body and make them feel good. 3 2

Zespri is currently developing a red fleshed kiwifruit. This innovation is occurring in the research and development stage. It is proposed that this red kiwifruit will be popular in the Asian markets like China where red is a symbol for good luck. This red kiwifruit is being innovated in several ways, not just colour. They are trying to improve the health benefits through boosting the vitamin C levels, as well as trying to improve on the skin texture to make it better suited for 'eating on the go' and nicer to eat with skin on. This new red kiwifruit innovation is going to add value to the kiwifruit as it is going to be meeting more market needs, especially in a Chinese/Asian market. There is potential for a huge increase in sales of Zespri red kiwifruit in these markets, adding value to sales and profits for the company. 1 2

Zespri's new partnership with MBIE means the government is investing about $6-7 million into research and development for Zespri to produce new varieties of kiwifruit with added benefits. As well as assisting in the research and development of the new red kiwifruit, this funding will help other varieties be researched. The new varieties created are increasing the product line of Zespri and are giving the customer more options to choose from. This research into new varieties is going to create many opportunities for Zespri to add value and increase the profitability of their kiwifruit. Varieties with health and eating enjoyment advantages will be more appealing to different groups of people and with the correct marketing to these people Zespri's kiwifruit will have an increased value. The people that are wanting benefits from their purchases will be more willing to spend money on a product that meets their needs, the market needs. Someone that is getting what they want from a product will be willing to spend more money for that product and therefore the value of that product is increasing. 3

Another innovation that occurs during the logistics stages (mainly exports) is finding ways of reducing carbon emissions to the environment. Carbon emissions are a big environmental issue currently and consumers are starting to become more and more aware of this. Zespri has acknowledged that they have a responsibility for reducing carbon emissions, so they have started working on ways of reducing these emissions. They are looking to add big wind sails to their ships, using ships more efficiently, and reusing organic waste as packaging. What Zespri are doing is they are starting to load and use ships more efficiently. The company is starting to use bigger ships that are more efficient and can carry more containers. Fewer ships crossing the ocean will mean there is a reduction in the carbon emissions from Zespri exports. This appeals to consumers who are wanting an environmentally sustainable product. Zespri's environmental strategies are likely to lead to consumers supporting Zespri and buying their kiwifruit. If other kiwifruit producers do not take any steps to help the environmental impact of their product then Zespri kiwifruit will appear to be a more sustainable and appealing option. Consumers don't want to buy a product that is having a negative impact on the environment. This innovation does not directly affect the value chain it more affects the consumers thoughts on how good Zespri are as a company. If they are a good company that thinks about other things than themselves like their environmental impact, then consumers will gain respect for the company and start buying from them or supporting them. 1 2

One final innovation that is currently being worked on is the process of using kiwifruit as a flour. Zespri are currently looking at using kiwifruit as a flour. This kiwifruit flour would substitute in place of regular flour and gives additional benefits like being gluten free. This innovation is still being developed but when it is developed it will provide more income for Zespri. The consumers with specific health needs like being gluten free will start purchasing the product because it is better for them and some people may even purchase it as a substitute for regular flour as it may have additional health benefits. This will impact the value chain because there will be more value going into kiwifruit. If they can be used for special food like gluten free flours, then they will be highly sought after. If lots of people want them then prices may increase, and value of kiwifruit will increase. 1 2 3

When Zespri meet certain market needs, they start to increase their market share and end up with a larger customer base. More customers that are willing to buy their products results in a larger number of sales for Zespri. More sales leads towards a bigger profit for Zespri. When Zespri create a product that has more benefits, the price of that product increases as consumers will be willing to pay more for a product that has extra benefits. This means there will be a similar number of sales at a higher price, so the profit of the product is increasing. This is increasing the value of Zespri's products. 3

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	Grade Boundary: Low Merit
3.	For Merit, the student needs to analyse, in depth, how a product meets market needs through innovation in the value chain. This involves giving a thorough explanation of how a product meets market needs through innovation in the value chain. This includes examining how the innovation adds greater value to the selected product. This student has explained in detail Silver Fern Farm's beef grading innovation (1) and how this has met market needs (2). The contribution of the innovation to the value of beef has been explained in depth (3). For a more secure Merit, the student could provide more detail in their explanations of how the beef grading innovation meets the market needs of the customers. While the student has discussed diners' demand for grass fed, free range, antibiotic-free meat (4) there is scope for a more specific link to the needs of restaurant head chefs. For example, the student could explain how the value-added packs relate to restaurants who would buy bulk supplies of the beef.

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Student 3: Low Merit

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[Model of value chain and its relationship to beef production at SFF omitted from this exemplar.]

The first stage of the value chain for beef is the farmer producing a top-quality product. Silver Fern Farms (SFF) wants beef that meets its reserve grade. Farmers can breed the right stock that will meet the reserve grade. Increasingly, meat consumers are interested in meat from animals that were naturally raised, grass fed, and free range. Farmers can earn premiums by proving the origin of their meat. This can be done through SFF'S FarmIQ system which is a farm and animal recording software that can store information about the animal which will soon be able to be traced through to every cut of meat. 4

The second stage of the value chain is the operations stage where SFF processes the beef. The more processing that happens, the more value that there is going to be. For example, when SFF sells whole carcasses overseas they are missing out on a whole lot of value because other companies then cut it up and make way more profit out of the carcass than SFF does. Therefore, SFF has invested a lot into marketing and selling their products. For example, premium graded beef can be sold in a packet for $20 which is $45 a kg, whereas if the whole carcass was minced it would be sold for less than $10 a kg. There are so many different cuts of meat that can come off a beef so SFF needs to make sure they are getting the most value out of each product. Even the offal is now sold whereas once it was treated as waste. 3

Outbound logistics is the third stage of the value chain. Packaging is important because it catches the consumer's eye. SFF are developing a QR code on the packages which can link the meat to the produce and show how the animal has been raised. Shipping the meat is also part of outbound logistics. SFF tries to fill containers with the same product. It is important chilling is kept consistent to ensure the quality of the product. SFF also needs to ensure the companies selling the meat have high standards so that SFF's reputation doesn't suffer. Marketing is very important. SFF has developed many brands such as Plate to Pasture and Beef EQ which are recognised by customers across the world.

Service is the final stage of the value chain. This is when SFF gets their name out into the community by sponsoring events or causes, donating meat and giving out scholarships. Strengthening the relationship between the producers and the consumers is also a big part of what SFF does. It has partnered with Shanghai Maling to improve relations with China and sell more into that market.

SFF has developed a beef grading system called Beef EQ, an eating quality grading system that means every piece of beef will be top quality. The EQ system rates the beef on seven different qualities which are scientifically proven to contribute to the eating quality of red meat so that the beef consistently meets the highest standards of taste, tenderness and juiciness. The first thing they test for is the ultimate pH which measures lactic acid levels and can determine colour, texture, shelf life and eating quality. Marbling is the next test that gets done … *[Details of the remaining tests omitted from this exemplar.]* All this testing is done by selected master graders who are evaluated in their testing every eight weeks. Of all the cows processed through SFF only 30% meet the master grade which shows the strictness of the criteria. This is improving though which means farmers are starting to develop their breeds. The farmers receive feedback from the Beef EQ testers. An example is shown below *[omitted from here].* 1

To develop the Beef EQ grading systems, SFF carried out over 97,000 taste tests with 13,900 food lovers throughout NZ and USA. From this they were able to see what the factors were affecting eating quality. The innovative process was carried out over a two-year period by scientists from Texas Tech 1

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University, Otago University and other experts in food research. From all the data they collected they were able to create a powerful database which compares taste preferences from consumers with data from animals. SFF is now able to grade all their beef carcasses using the EQ master grading system. If the beef fits the master grade the stamp is put on the packaging so that consumers can see the stamp as a guarantee of quality.

The Beef EQ innovation means that SFF can add more value to their beef products. This is because the high-quality beef is a selling category of its own and can be sold for 15% more than beef without the stamp. Commodity beef is sold for an average of $15 per kg, whereas premium graded beef in a value-added pack is worth $45 per kg. The Beef EQ is worth a lot in markets in China and America where SFF can target middle to upper-class consumers. If the meat was not master graded it would not have the same credibility, even though potentially it could be the same meat. These days many consumers are looking for cheap protein which generally means chicken or processed meats. SFF cannot compete with cheap meats so they add greater value to their products and target the high-end market, people who are willing to pay a premium for grass fed, free range, antibiotic-free meat that has not been genetically modified. 3 4

Using Beef EQ affects the inbound logistics stage of the value chain, farmers. Farmers get paid a premium if their cows meet the Beef EQ grade. This encourages farmers to breed and produce cows that will be worth more in the value chain. When farmers send their stock to the freezing works, they get a killing sheet back which tells them how many cows met the Beef EQ grade, and other information about their cows. From this they can adapt their management and breeding practices to produce higher quality beef that SFF will pay extra for. For example, if nine of 12 cows killed met the EQ grade this would result in an extra $783 for the farmer.

The operations part of the chain is affected by the Beef EQ master grade because the grading is reasonably time consuming and must be done by a human. Another consequence is that SFF has invested a lot of money into the grading system, however the extra value that has been created will cover the investment.

The outbound logistics stage of the chain has expanded with the introduction of Beef EQ because there is a lot more packaging and chilling that must be done extremely accurately. SFF is also looking at bringing in a system that can trace the meat from the farm right to the packet. This means the meat will have to be traced right through the processing, chilling and packaging stages.

Marketing and selling the graded beef are becoming a lot easier for SFF. The graded beef is in its early days but eventually it will be easier to sell and market because it is recognised by consumers across the world. SFF will be able to sell the beef in bulk to large markets in China and the USA for a premium price. Another reason SFF benefits from the value-added Beef EQ is because the price doesn't fluctuate as much as wholesale beef. 3

The gap in society is widening with a huge amount of the world's population very poor and a huge amount very wealthy. The world is starting to produce cheap proteins, for example, fake meat burgers which are made from plants or even grown in test tubes from animal cells. SFF is never going to be able to compete with these cheap proteins so have decided to target the wealthy market, people who are willing to pay more for healthier meat.

Customers can spend their money with confidence when buying Beef EQ graded meat because it is guaranteed to be tasty, tender and juicy. Nowadays consumers want to be able to prepare quick and easy meals. SFF beef comes in 'value added packets' with recipes on them. Consumers are also concerned about environmental impacts of food production so the QR scanner which links the meat back to the farmer will be an innovation that will be able to showcase how farmers are caring for the environment and ethically caring for their animals. 2

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	Grade Boundary: High Achieved
4.	For Achieved, the student needs to analyse how a product meets market needs through innovation in the value chain. This involves explaining how a product meets market needs through innovation in the value chain. This includes explaining the value chain for a selected product and explaining an innovation that may occur at any stage of the value chain. The student is also required to explain how the innovation meets market needs. This student has explained in detail the value chain for kiwifruit. The development of a red-fleshed kiwifruit has been identified as an innovation for Zespri (1). The ability of the red and other varieties of kiwifruit to meet the needs of general consumers have been explained (2). A specific link has been explained between the red-fleshed variety and Chinese consumers (3). To reach Merit, the student could provide an in-depth analysis of the varietal innovation. In addition, they could go beyond the idea of new varieties increasing consumer demand, to discussing how value is added to kiwifruit and Zespri's revenue.

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Student 4: High Achieved

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Adding value is basically what a business/company does to their product to increase the final price of that product from what their costs were to grow and produce the product, to make the business revenue and to be successful in the market. Adding value is important because without adding value there is no benefit to the business in manufacturing their product because their costs will either be the same or less than what they receive for it in payment. Adding value allows the business to introduce new innovations, with new technology and new techniques, to decrease cost and increase profit. Adding value is done through the value chain, the processes involved from the kiwifruit leaving the vine to the consumer purchasing the produce.

A value chain is a set of activities that a firm performs in order to deliver a product or service to the market. For kiwifruit the chain starts with kiwifruit on the vines and then works its way through the production, processing and shipping sectors. The whole time the company is adding value to the produce through marketing/advertising before it heads to the open market.

Research and development is the first stage of the process where the grower is finding and establishing areas to plant their vines. Finding areas with right soil conditions i.e. the pH levels of the soils, soil structure and nutrient friendly soils, as well as an area with the right amount of sunshine, rainfall etc. Another factor when establishing a kiwifruit crop is that it's close enough to Zespri's processing plants to minimise time between the fruit being picked and it being boxed and sent off to the market. Another part of R&D is finding out which variety is best suited for the area the grower has chosen, also finding out which type of kiwifruit is in highest demand and getting the best return so the orchard can make a profit.

Growing kiwifruit obviously starts with planting the vines and allowing them time to mature enough to produce the right size and the right amount of kiwifruit. Growing involves farming practises such as planting, pruning, thinning, stringing, trunk girdling, spraying, fertilising, frost protection, protection from bugs and diseases, organic matter application, lime application, etc.

New Zealand has a very diverse climate that varies throughout the country, although one thing the entire country must deal with is frost. This is a problem for fruit growers because frost seriously affects the appearance and saleability of a product. So Zespri has devised different types of frost prevention methods. Frosts occur on cold, still and clear nights and last until late morning depending on the severity of the frost. As the heat is drained from the surrounding earth and the air around the plants and fruit, the surface of the fruit pulls the heat from the plant tissue and the air around it. If there is prolonged frost on and around the plant the fruit tissue begins to die off and damage may be done to the actual plant. Frost damaged fruit cannot be eaten or sold so is rendered useless to the farmer. This may also affect the plant's fruit growing potential in the following year.

There are a few different ways that Zespri suppliers use to prevent frost damage. Methods such as actually directly heating the vines or using air agitators to keep a constant air flow over the vines to disallow the frost to settle and freeze. Another method commonly used is frost pots. These use many different types of fuels to heat the entire orchard. Sprinkler frost protection setups are another type of frost prevention and are the most commonly used … *[Some detail omitted for space reasons.]* A wind machine is basically a large fan which sits at the centre of the area that is meant to be protected. The fan pushes out air which mixes the warm and cold air flows that go around the orchard together creating an overall warmer temperature preventing the frost from settling.

All these methods enable growers to protect their produce and allow them to run a productive business. The frost prevention methods are consumer driven because a consumer wants a constant supply of a good so if Zespri can't protect themselves from frosts and a whole lot of their produce is destroyed they won't be able to meet the demand and consumers will look for an alternative.

Harvesting is the busiest time for a kiwifruit grower. Machines are not used for the actual picking of the fruit; it's all done by hand so the farmer will usually employ extra help during this time for a fast and efficient harvest. The pickers drop their baskets full of kiwifruit into the tractor bins that are then put on a truck on pellets and sent to the nearest Zespri factory.

Zespri has a machine that separates kiwifruit into different size categories for each different variety. This is so the customer gets fruit that is all the same size, so they don't get discouraged by a proportionally smaller piece of fruit. They then also have people on the production line picking out bad fruit throughout the whole process until they are all boxed up and put on the truck.

[Packing, storage and transport stages omitted for space reasons.]

Zespri advertise both through online advertising and on TV as well as newspapers, billboards, sponsorship and many other forms of advertising. A large part of the marketing strategy is Zespri´s Quality policy. Zespri is

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committed to understanding their customers' needs and providing them with products that meet or exceed mutually agreed specifications. In order to meet this goal Zespri has a list of expectations they rely on their suppliers to comply with to grow the best fruit and the best business they can. This list is straight from the Zespri site and it is the requirements they ask their suppliers to follow.

- Know and comply with the Zespri product quality standards, policies, specifications and procedures.

[Five other expectations omitted from here.]

These expectations Zespri has come up with to work in with their suppliers as best they can to produce the best product they can and create a good working environment through the whole process. This a consumer driven innovation because a consumer likes to know their purchase was dealt with correctly in the weeks leading up to being put on the shelf. The consumer knows the product was produced and processed 99.9% by kiwis in a good working environment.

The majority of Zespri's sales are exports to other countries, most to Asian countries. The produce Zespri exports is the top-quality fruit, the best they have. Then there's the fruit that goes around the shops in NZ. These kiwifruits are usually smaller and possibly even the less desirable fruit produced.

The kiwifruit range is made up of different breeds or varieties of kiwifruit produced by Zespri and their suppliers. The varieties available now are green, organic, sweet green, sungold and the gold kiwifruit. Zespri green kiwifruit was first developed in NZ by Hayward Wright in the 1920s. It is an oval shaped fruit with a brown, fuzzy skin. The green or gold inside has a white core and small, black seeds surrounding the core. Zespri green kiwifruit is a sweet and sour combination of flavours. The business has devised these new breeds/varieties of kiwifruit to accommodate the different preferences of their customers.

Consumers are always looking for new foods to try and no doubt get sick of the same old Zespri kiwifruit varieties. Consumers don't always have the same idea of an ideal kiwifruit so adding to the range increases the diversity of flavours encouraging a larger market to come about. This is a form of innovation because they are trying to increase demand for their product by appealing to new consumers. Zespri has adjusted their range and invested in making new varieties to satisfy customers' needs to increase demand. Zespri is also currently testing and attempting to produce a breed with a red inside. This is occurring at the research and development stage of the value chain. The red-fleshed kiwifruit will be like nothing ever seen before. Old kiwifruit breeds are typically either dark or light green or golden toned varieties. Zespri has some very sharp business minded employees as well as some incredibly smart agricultural and regular scientists on the job to find a market to sell the red kiwifruit to and create a functional plant that will grow this new breed. The market being targeted is China because red in the Chinese culture is associated with fire and symbolizes good fortune and joy. Red is found everywhere throughout the Chinese New Year and other holidays and family occasions. So, for these reasons Zespri has decided that if they can produce a red kiwifruit, the Chinese market will associate the fruit with happiness and good fortune.

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Zespri have a competitive advantage over their competitors in the sense that they are the largest producer of kiwifruit in New Zealand and they have so many kiwifruit farms supplying and supporting them. Because Zespri has such a large presence in the world and separate markets around the globe, the main markets being targeted are Asian countries especially China. A big part of Zespri's success story is based on their willingness to adjust their product to meet the consumers' needs. They have done this by bringing out new flavoured, textured, acidity-levelled and different coloured fruits to comply with the consumers' demands or the new or old trends that require different qualities in a fruit. What consumers are looking for these days is food that will 'heal' them or make them feel healthier or look better or even just feel better about themselves. Consumers feel as though they will be healthier and live a longer life if they eat well. Zespri has pounced on this notion by promoting their new varieties as full of vitamins and important natural sugars for a healthy life.

2

China is a very wealthy country with very rich people living in it. These richer consumers in China have demanded foods like kiwifruit to be delivered to their door within days of being picked for the freshest produce possible. If Zespri can sort out some system to make this happen their profit margin will be massive.

Zespri have many other innovations, such as their packaging and transporting systems put in place. They have good advertising methods set up to get their product all through the country and into the international market.

In conclusion, Zespri is a very innovative business that is working with its markets and applying current trends and consumer wants to change their old product or create new products to make their business successful and therefore profitable. They have found the markets throughout the world demanding their product and they are targeting these markets by appealing to the customer and satisfying consumer needs.

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	Grade Boundary: Low Achieved
5.	For Achieved, the student needs to analyse how a product meets market needs through innovation in the value chain. This involves explaining how a product meets market needs through innovation in the value chain. This includes explaining the value chain for a selected product and explaining an innovation that may occur at any stage of the value chain. The student is also required to explain how the innovation meets market needs. This student has explained the value chain for kiwifruit. The development of a red-fleshed kiwifruit has been identified as an innovation for Zespri (1). The ability of the new variety to meet the needs of the Chinese market has been briefly explained (2). For a more secure Achieved, a greater focus on the innovation and how it meets market needs is required. This could include more specific explanation, e.g. placing the development of the red kiwifruit variety at the research and development stage of the value chain. The student could also discuss how the red-fleshed kiwifruit could satisfy domestic consumers' demand for a broader range of products.

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Student 5: Low Achieved

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The first export of kiwifruit from New Zealand was in 1952 by Hayward Wright who started Zespri in 1928. He used the volcanic soils of Bay of Plenty with the ideal mild climate. Hayward developed a new variety of kiwifruit and ever since, the Hayward variety has been grown and exported all over the world. In the following years, many other growers jumped on the bandwagon, with kiwifruit orchard spread across the Bay of Plenty and a few other regions., all competing against each other for markets. The official launch of Zespri Group Ltd was in April 2000. All growers at this time became shareholders in Zespri. Today, Zespri is the world's largest marketer of kiwifruit, selling kiwifruit to over 60 countries and managing 30% of the global volume.

A supply chain shows steps between different processing areas to develop the product and how information and materials flow between these links. The more detailed the supply chain the more complex and web-like the network becomes. A value chain is the process or activities by which a company adds value to an article, including production, marketing, and the provision of after-sales service. This chain is pushed by the customers' wants and needs of the product. For example, if the customer would like a sourer apple the company would take this into consideration and if there was a real demand, they would put it into development for sale purposes.

The overall reason that we want to add value is to make more revenue. Zespri have now introduced European growers from Italy and France. They are now able to grow kiwifruit for exporting by Zespri. This change happened because customers, especially restaurants with kiwifruit on the menu, need to be able to rely on Zespri to provide them with kiwifruit all year round rather than just three months of the NZ growing season.

Research and development are a key part of the value chain process. Suppliers need to establish an appropriate area to plant kiwifruit and start the long process ahead of them. They need to find the best soils for the vines and some cover from the harsh environments that the area/farm could encounter. This could be as simple as previous knowledge of the area or simply asking the locals or weather experts. This can determine how well kiwifruit plants will grow.

We then move to the orchard where the kiwifruit is grown. They are grown in pure environments with organic matter helping them through their life in the vine. This is a key point for value to be added to the product as the fruit can be affected by the weather or poor upkeep of vines.

The next stage in the supply chain is harvesting the kiwifruit. It sounds simple to pick the fruit off the plant and throw into bins, however with hundreds of square meters of orchards picking needs to be quick and efficient in order to keep the fruit pure, whole and unbruised. Growers employ foreign workers, mainly from Vanuatu, for this part. They are experienced with fruit picking and usually have the best knowledge for the upkeep of the product. Accommodation and three meals a day are provided for the foreign workers.

A sample of the fruit gets sent away to the Zespri factory for the grading process. There the fruit is tested to ensure that is it up to standard and within the right size and weight. The grower then gets their results back and this determines when they can pick their fruit and whether they need more growth or not. If farmers don't get their fruit graded and they go ahead with picking, the fruit can be packed and sent to the factory and potentially be destroyed as the goods are not up the standard for Zespri to export.

Zespri have introduced many different varieties of kiwifruit to sell. Although they just look like different colours, they all have a different taste to them, ranging from sour to sweet. Their idea for doing this is mainly for more profit. The value chain is driven by the customer, meaning that most of Zespri's products and ideas were thought of by customers. Therefore, the kiwifruit company has thought of ways to add more value and please the customer. Zespri needs to supply the consumer with more variety otherwise they would get bored of the same old kiwifruit and not demand as much. If they started with the classic Kiwifruit and loved it, then they would maybe experience more alternative kiwifruit like sungold or gold. Or if the customer wasn't a fan of the classic, they may try the organic kiwifruit then progress to the sungold organic or sweet green. There must always be an alternative to suit the consumer and their needs. This links back up with the value chain, always driven by the consumer. It's all about them and what they want.

The Vanuatu workers also help with packing in the factory too. They process and divide the numbers up into even boxes ready to be sent out. The fruit needs to be handled with care. This rules out the use of machines as they are too rough. Employees handle and box the fruit in cardboard boxes lined with a plastic bag.

The storage of the fruit is also a very cautious stage too. O_2 below 1% can cause off-flavours. CO_2 greater than 7% for longer than four weeks may cause internal flesh breakdown of the product. The fruit shouldn't be left in storage for too long as the customers rely on the freshness of the product. The fruit needs to be cooled otherwise the skin with start to deform and change their colour.

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Shipping is responsible for the greatest contribution to the total carbon output in the Zespri supply chain. This also means that shipping provides the greatest opportunity for reductions in emissions. Transporting of the fruit is a very quick process considering the distance that it needs to go. Zespri use direct routes with larger and more efficient vessels, this also helps reduce second handling of the fruit. Zespri is also targeting to use low sulphur fuel in all their ships by 2020. This shows that they are trying to not only reduce fuel cost but also their carbon footprint.

Once the kiwifruit is in the country to be sold, Zespri likes to sell not only the product but the story behind it. Quite often they have the journey of the fruit displayed so that people can see where and how this fruit is grown in New Zealand. The fruit doesn't really need to be advertised as much as other products as it is already so sought after. They're usually advertising the new and improved varieties in kiwifruit and the different flavours. This links to the traceability of the product. A lot of New Zealand produce business now use traceability. For Zespri it is the ability to be able to track the kiwifruit from an orchard to the consumer. This includes what sprays have been used, where and when it was packed. Traceability is a vital for entry into export markets. Each tray has an EAN (European Article Number) barcode which links to a system where every details of a batch of kiwifruit can be viewed. This is used to prevent fruit being shipped to markets where it doesn't meet their requirements e.g. a pest has been found on an orchard, so its fruit is banned from a country. Food safety programmes require high levels of traceability. This is like a story for the consumer, explaining where the product has come from and how it has progressed from the seed of the vine.

The kiwifruit is put on sale in different stores and supermarkets and used in restaurants around the world. With all the advertising of the pure New Zealand product people are after our products. Zespri is a fast-growing company and is always looking into new markets and where they can expand into new markets. A new market for Zespri is in North America. Zespri looked at where the majority of kiwifruit were exported to and saw there was potential to export to North America. 'Returns there are set to nearly double from last season in the next two years to hit more than $100 million in 2018-19, with new variety sungold accounting for nearly three-quarters of revenue.' *[Source cited.]* Global revenue for Zespri is $1.9b. This is again driven by the customer and there is a demand for the fruit in this country, with Zespri managing 30% of the world kiwifruit distribution they would be the only company suitable for the task. Zespri's wish is to increase their revenue to $4.5b by 2025 and with innovations like these it won't be hard for them to achieve. The main reason that there is such a demand for Kiwifruit in North America is mainly because it has never been there before. People always enjoy trying new products and especially if it has such a strong impact and presence in the rest of the world.

Zespri is constantly trying to research and improve their product for the consumers. A way for them to do this is develop a new variety of kiwifruit to keep people interested and get them trying new and hopefully better products. Zespri has just renewed their partnership with Ministry of Business, Innovation and Employment to develop new kiwifruit and breeding technology. MBIE will contribute $6.7m to Zespri's $15.7m over the next seven years. They hope to develop at least one new variety by 2030 and increase their revenue to $200m by 2045. '*Zespri General Manager for Innovation Carol Ward says the partnership builds on an incredible track record of value creation with MBIE and Plant & Food Research. This includes the development of the s6ungold cultivar which in 2016/17 alone returned an export value of $686 million.' [Source cited.]* Not only is this more value for Zespri and its customers but also growers will notice the increase in profit while producing these products.

Zespri and MBIE have been in partnership for two decades now and have developed several new kiwifruit varieties over the time. One they are developing is the red kiwifruit. The colour of the fruit represents good luck and wards off evil in China. Zespri is predicting that the new variety will be popular there because of the link between red and good fortune and because of the convenience of the new kiwifruit which will be cut and prepared, ready to eat and go on the go. It is a tradition in China to send fruit as a gift to friends and family, so a red fruit could sell very well as gifts. In Asia the number of middle-classed citizens is increasing meaning that people are more likely to pay more for a product such as red kiwifruit. Zespri has over 100,000 red kiwifruit seedlings growing. This is one of the largest investments in New Zealand's primary industry. A variety that Zespri is also pushing now is a sweeter green kiwifruit that is convenient and ready to go for the customer. The business hopes to commercialise this soon.

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In conclusion I have explained the value chain for Zespri, how this is driven by consumers and most importantly how it applies to Zespri. By investigating Zespri's innovations I have discovered that they are making the most out of their company and add value at every point possible. It's great to see such progress being made by a small country far away from the rest of the world. Zespri have some great innovations planned and are well on track for their $4.5b target revenue by 2025.

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	Grade Boundary: High Not Achieved
6.	For Achieved, the student needs to analyse how a product meets market needs through innovation in the value chain. This involves explaining how a product meets market needs through innovation in the value chain. This includes explaining the value chain for a selected product and explain an innovation that may occur at any stage of the value chain. The student is also required to explain how the innovation meets market needs. This student has explained the value chain for producing Crispy potato chips, and has stated that producing gluten-free chips is an innovation for the business (1). The student has explained that the product meets the needs of people who are allergic to gluten or have celiac disease (2), but that the product is also suitable for consumers without special dietary needs. To reach Achieved, the student would need to recognise that since potatoes, sunflower oil and canola oil are naturally gluten-free and that gluten contaminants are absent from the Crispy factory, the product is not innovative. A more accurate understanding of innovation would reflect curriculum level eight expectations of student understanding.

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Student 6: High Not Achieved

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Crispy Chips *[brand and personal names changed for anonymity]* potato chips are a local product that are grown in the Canterbury region and processed in a factory where they are sliced, cooked and packaged. Crispy produce one product, plain salted potato chips (or crisps). The chips are distributed all around New Zealand and to Australia and Singapore.

[Description of the stages of the value chain for Crispy chips omitted from this exemplar.]

Potatoes are grown on a family owned farm which is managed by John ABC who controls the day to day running of the farm. Those potatoes are then transported to a factory which is overseen by John's daughter, Hine who is the general manager of Crispy potato chips. The factory was previously owned by XXXXXXXX. The ABC family was a supplier but when the factory was shut down, the ABCs took a risk and bought the factory setting up the Crispy brand. The farm owned by the ABC family is a 1150ha property located in the South Island. It has perfect soil for growing potatoes as it is free draining, with very few stones and is well irrigated. Through many trials of potato varieties John has narrowed it down to around five or six cultivars. These varieties produce the best colour, flavour and crunch that Crispy potato chips are known for.

The calendar of operations that the ABCs follow is well thought out to ensure the land is prepared to a high standard to produce great potatoes. In June-July the topsoil is worked which improves soil structure and aeration. This allows for the tubers once they are planted to grow as loose soils offer the least resistance for enlargement. From July to September soil testing is carried out to find out which nutrients are present and pH levels. This allows correct fertiliser or lime application is needed. In September the paddock is ploughed and ridged to prepare for planting in the same month. Late September through to October the plants start to emerge from the soil and are sprayed every 7 to 10 days to prevent the infestation of Psyllid. From November to February the crops are kept a close eye on to monitor moisture levels to irrigate when needed which allows the potatoes maximum growth. December is when the crops are very closely watched from pests prior to harvest. The early potato harvest occurs in January and the main potatoes are lifted from March to June to ensure markets can be filled all year round. From harvest the potatoes are transported to the Crispy factory where they are stored in a shed with a controlled environment which prevents the tubers from sprouting, this would make them unfit to be used for human consumption. They are then sent to a washing plant which removes dirt and stones that are in with the potatoes. An auger is used to transfer the potatoes to be peeled, they pass by a labourer who removes any imperfections and cuts larger potatoes in half. They are then sliced evenly, to ensure this standard is met the slices are checked and any that don't are removed. The sliced potatoes are then fed into the fryer containing a refined sunflower and canola oil mix. The potatoes are constantly turned to ensure even cooking for six minutes. A rotating drum transfers them to a conveyer belt which dries them and passes the chips past a colour sorter which removes any chips that are not fit for sale. After this the chips are checked again by an employee who removes any further chips that the machine missed. The next step is adding the flavour, then the chips are packaged at approximately 150 grams. From here the packaged chips are boxed and distributed New Zealand wide and for export.

Crispy Chips have created a great name for themselves through their innovation of making their chips gluten-free. Many chip brands that are sold in New Zealand contain gluten, so I consider that the Crispy brand has been very clever in creating and selling a gluten-free range of potato chips. According to Fresh Food News, in New Zealand over 226,000 people claim to follow a gluten-free lifestyle *[source cited]*. It is currently, one of the fastest growing food trends in New Zealand.

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Crispy Chips produces potato chips that are suitable for a range of people that have dietary requirements. As the chips are the only product made in the factory, it is a gluten-free area so the ABCs can say with honesty that the ingredients used in their chips do not contain gluten. Most of Crispy's competitors sell chips that contain gluten because they add flavouring agents to their chips. These agents may contain wheat, rye, barley, and other grains. The fact that Crispy chips are gluten-free is an innovation for the business. The innovation occurs at the production and processing stages of the value chain. 1

The use of gluten-free ingredients in the production process adds value to the product as it allows for the Crispy brand to reach a wider market by making the chips available to more people who are allergic to gluten or have celiac disease. It also provides a point of difference when being compared to other chip brands. It is a great advantage when competing with other companies as the brand reaches a wider range of people meeting many customers' different needs. For example, people who do not follow a gluten-free diet may still buy and enjoy the Crispy product. 2

Gluten-free products can cost more than those with traces of gluten. The price of Crispy chips is very similar of those that contain gluten. The salt flavoured chips and the thin cut salted XXXXXXXX chips both cost $1.99 which is cheaper than the sea salt YYYYYYYYYYY brand which cost $2.79 *[source cited]*. Therefore, they have a very similar price compared with other brands. Crispy Chips are the only one out of the three that are gluten-free.

Being gluten-free can be a tough challenge when trying to find foods that they can eat. Crispy sells its gluten-free and delicious chips to a wide range of consumers at a price that is affordable, even though gluten-free products usually cost more than those that contain gluten. The cost of being gluten-free would have been the most expensive when the business was researching and trialling which processes were best and cheapest to produce. However, the cost for going gluten-free decreased as the ingredients got refined.

In contrast to the disadvantage of costs to produce gluten-free chips an advantage of being gluten-free is reaching a greater market. By being gluten-free it allows the products produced to be expanded to reach a market that allows for people with gluten intolerance to be able to consume products that they otherwise would not be able to. It is seen as an advantage it reaches a wider range of people compared with other companies offering no gluten-free products. As it is a point of difference it will allow a Crispy Chips to make a higher profit as they can reach more people.

The media portrays many different ideas on which foods are best to ensure a long healthy life. Many people are going gluten-free not through dietary need but by choice instead. If this keeps continuing the market will demand products that meet these needs. Potato chips are not a necessary food group for everyday consumption, but Crispy Chips makes snacking easier for those with allergies. This can influence the way people perceive gluten-free products if their diet is restricted by choice. Live Science *[source cited]* said that many "If people who only eat foods that are inherently gluten-free, like fruits, vegetables, gluten-free whole grains, lean protein, healthy fats, they will have a healthy diet … [but when] gluten-containing products are replaced with highly processed gluten-free foods you may in fact gain weight." But since chips are a snack food and are not a major food group required for healthy living, whether they are gluten-free or not is not a dietary implication as anyone can consume the chips.

In conclusion, the gluten-free innovation that the Crispy Chip company decided to take a risk on benefits the consumer and producers as it offers a product that can reach a wider market. Being gluten-free is one of the main innovations that causes an increase in not only the range of products available for those who are gluten-free but the profitability of the Crispy company as it provides a point of difference compared with other companies.

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