WASTE TO WANT

Overcoming patterns of failure in small food producers
through innovative enterprise frameworks.

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Submitted in partial fulfilment of requirements for the degree of
Master of Design Enterprise, Otago Polytechnic.

Acknowledgements

While it is my name attached to this document, it is not without considerable inputs from many groups and individuals.

The nature of these collaborations range from receiving unsolicited phone calls from myself, to long meetings giving free advice, and while I would like to thank all of those involved, it simply would not be possible. There are, however, some whose inputs have been so valuable it would be remiss of me not to take this opportunity to thank them. The first of these is Fleur Sullivan, who by generously giving me the use of her kitchens, allowed the projects to be realised and gave me the ability to fund this project. My supervisors Nick Laird and Andrew Wallace whose sometimes not so gentle encouragement was required to maintain motivation. My partner Katherine who allowed me the indulgence of quiet and time while all around us was chaos and whose support and patience never faltered. Both the Food Design and wider Design departments at the Otago Polytechnic. And finally, all the customers who have purchased the products that I have outlined in this document.

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1. Introduction

This project report is the culmination of the third and final phase of the Master of Design Enterprise (MDE), an 18-month postgraduate degree offered by the Otago Polytechnic School of Design. The degree is offered in three phases each of which is negotiated to meet the aims of the project.

This section introduces the project within the context of the MDE. It also describes the design thinking methodology employed throughout.

1.1 Phase 1: MDE 401/2/3 Integrated Report

This phase explores traditional food production platforms and processes within New Zealand and identifies possible areas and opportunities for innovation. The broad context of seafood harvesting and processing was explored specifically looking to identify needs and opportunities for both the consumers and producers.

The insights gained from this investigation using design thinking lead to the development of two significant concepts. Firstly, a new food production schematic was proposed, and secondly, a cost effective marketing toolbox was developed that could be easily accessed and used by small-scale producers.

The two concepts have since been validated with the development of the *Boat Shed Smoke House* brand that is successfully operating in the Otago area and has been following a constant growth curve since its launch.

This phase of the MDE involved an analysis of a market context, engagement with a primary producer with the aim of adding value to the primary product. The toolbox developed during this phase showed how small producers can create tension within regional market segments by using innovation as leverage, an area traditionally the preserve of large industry players.

1.2 Phase 2: Industry-led collaboration MDE/404

For this phase of the MDE I negotiated a six-month collaboration with *Foodstuffs South Island* and *Foodstuffs Own Brands Ltd,* which is *Foodstuffs* sister company

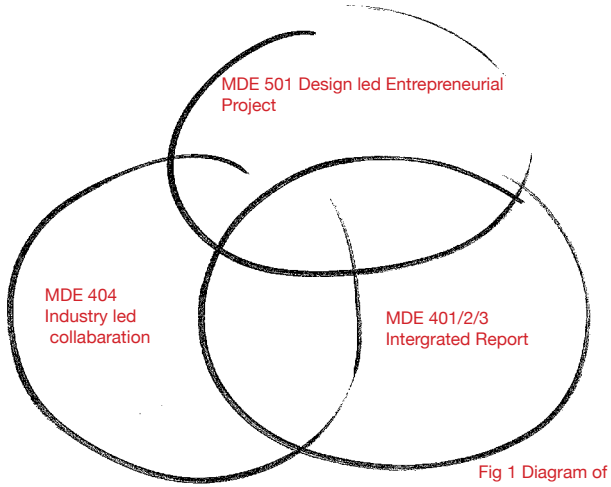


Figure 1: Diagram of three-phase MDE programme

responsible for the development, production and distribution of its own brand FMCG products for the *Foodstuffs* network.

The research involved interviewing the FOBL executive team looking to understand their decision making rationale, interviewing the design and development team and finally the end-consumer. The prime focus of this investigation was to uncover any barriers to development between any of these stakeholders.

The second research pathway was to consider an underperforming product selling under the *Pams* brand and to reposition it using the information gathered from primary interviews. At the conclusion of the placement, research findings were presented to the Foodstuffs executive team.

The value of the research lay in the exploration of the tension that occurs when a large market player looks to move into existing market sectors by utilising levers other than price point and the trade-off that occurs between innovation and market share. This was of interest to *Foodstuffs* as they were looking to expand the *Pams* range into other market segments.

Foodstuffs generously allowed me to observe and compare the evolved production model I had created in the first phase, which I was utilising for the *Boatshed Smokehouse*, and the production model, which *Foodstuffs* worked from. From this I was able to explore issues connected to scalability for small food producers and possible solutions to these.

1.3 Phase 3: Design-led entrepreneurial project MDE 501

This report describes the overall design process and entrepreneurial outputs of the third and final phase of the MDE.

The project comprises three components. First is the development and release of a fast-moving consumer good (FMCG) with suitable scalability for national and international distribution. Second is the use of a selective innovation framework for the rapid proto-typing of FMCG food products. Last is the development of a toolbox to help enable SME food producers to navigate the challenges of developing and distributing innovative and value-added food products.

For this to occur, innovation and creativity require a clear framework for viable and feasible development. To facilitate clarity in design thinking Vijay Kumar's model of design innovation was used as a general methodology, customised at relevant stages according to the demands of the project.

This 501 report is the fusing of the knowledge gained in the 401/2/3 report where research was conducted on a local level at the Otago Farmers Market, and the 404 report where research was conducted on a national level for *Foodstuffs*. In creating this fusion the 501 report seeks to examine three questions: 1) "If farmers markets are such good incubators how do you expand past the local level onto a national level?"; 2) "Is it possible to solve the failure rates in SME start up food businesses with design thinking?"; 3) "If the notion of sustainability can create leverage on a regional level, why not on a national level?"

The answers to these questions are intertwined, and while there may not be explicit answers individually to each of them, a larger holistic picture may occur.

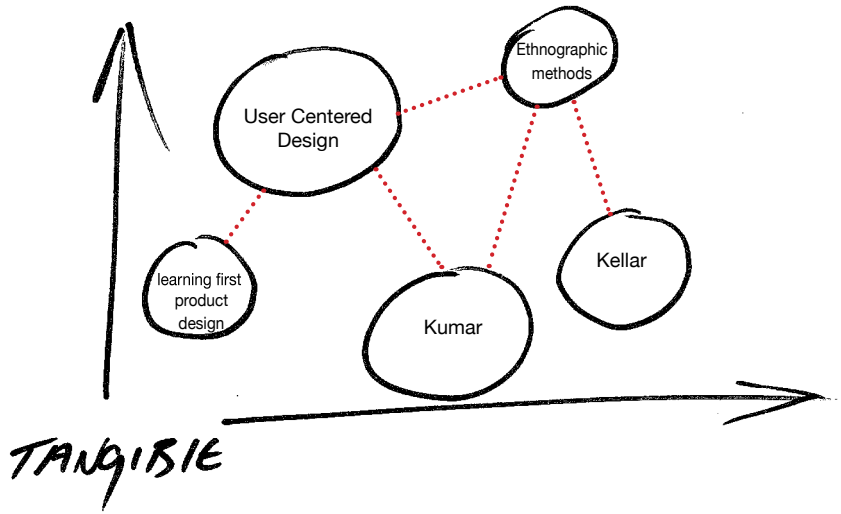


Figure 2: Diagram of methodologies employed for study

1.4 Methodology

The iterative and non-linear nature of Kumar's applied methodology mirrors my own method of product development that stems from my background as a chef. Through adopting his model the aim was to create a method of food product development that can be replicated and evolved depending on the context.

Kumar's user-centric model sets out a series of seven organising principles, or modes of thinking, orientated around gathering primary research data through fieldwork as well as organising supporting secondary research. Around each of these seven modes Kumar identifies additional and distinct perspectives that he refers to as mindsets. Each mindset is in turn linked to an array of relevant methods. This creates an organizing framework in which to gather and analyse data, generate insights and finally utilise insights to facilitate the creation of innovative products or services.

What follows are examples of how this model was utilised, showing explicit links between selected modes, mindsets and methods. The ability to match the methodology to the context is core to the success of using this model.

Mode 1

Sense intent: This requires looking at the bigger picture for example looking at movements and trends before leaping to a conclusion.

Mind-set: Seeing overviews, looking at the board context of both the physical and intangible environment to try and gain understandings.

Methods: Collecting key facts. In this method a matrix is drawn up allowing areas of relevance to be compared. This allows a more accurate framing of the solution or problem.

Table 1: Brief example of Kumar's method of tabulating these facts.

Topic	Relevancy	Data type	Facts	Source
SME in New Zealand	Moderate	Statistic	Small to medium enterprises (SME) represent 97.2% of all businesses in New Zealand	Fairfax NZ
SME in New Zealand	Moderate	Statistic	45% failure rate over 9 years for SMEs	Fairfax NZ
Failure rate food production business	High	Statistic	Food production businesses have an 80% failure rate over 10yrs	Fairfax NZ

Source: Kane, P. 2013, April 26. Defining silence again likely to greet S.M.E.s—*National Business Review*/Sun. P. (Assoc Dean, Waikato University), November 5, 2012. Where is New Zealand going wrong? Business day /Statistics New Zealand. Nzbdsbd-01-07

1. **Know context**: This mode looks at the broad environment in which work takes place. Looking at similar offerings in the marketplace and how they are performing.

   Mind-set: Knowing context history, understanding the past motivators can help predict future movements and trends. (Kumar, 2013, p. 53)

   Method: Financial profile; within this section relevant financial attributes are examined. In the case of this report this involves looking at specific market segments and the turnover within them as well as the wider economic environment.

   New Zealand has a market-based economy traditionally based on the export of primary goods. Gross domestic product was valued at $169.68 billion US dollars in 2013 (Trading Economics, n.d.). Of this, food, beverage and tobacco sales represent 30% and under a government-led initiative this figure is set to increase to 40% by 2025 (Coriolis, 2014). The volatility of the food production business outlined in the 'Sense intent mode' is in stark contrast to other areas of the economy such as farming where a strong emphasis is placed on the succession of the business and therefore is able to maintain a skilled workforce.

2. **Know people:** This requires investigating the stakeholders. This involves face-to-face interviews and the use of ethnographic techniques.

   Mind-set: The process of observing everything, including looking past the obvious to the wider environment.

   Method: Create a research participant map. This requires looking at the differing stakeholders involved and their differing attributes. The skill levels of people involved within the food production arena are vast and range from the very skilled and highly qualified through to unskilled manual labour. As with any large industry the personal attributes required to work successfully in food production vary with the roll the person is employed for. Pay rates for workers vary depending on the position they hold within the company: at the bottom end of the spectrum workers can expect minimum wage and at the top a food technologist may expect to get paid from $65,000 per year (Careersnz).

3. **Frame insights:** Here we organise the information looking for needs clusters and consumer patterns that can drive concept generation.

Innovations Around Experiences

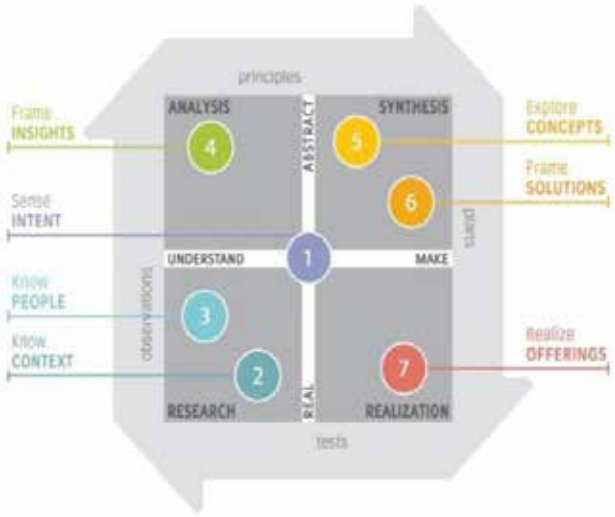
of Innovations as Systems

ate an Innovation Culture

a Disciplined Innovation Process

Design Innovation Process is Nonlinear

Design Innovation Process is Iterative



1 *Mode 1: Sense Intent*

sensing changing conditions
seeing overviews
forseeing trends
reframing problems
forming an intent

buzz reports
popular media scan
key facts
innovation source book
trends expert interview
keyword bibliometrics
10 types of innovation

innovation landscape
trends matrix
convergence map
from ...to innovation
initial opportunity map
keyword bibliometrics
offering activity map

intent statement
user journey map

2 *Mode 2: Know Context*

knowing context history
understanding frontiers
seeing system overviews
understanding stakeholders
using mental models

contextual research plan
popular media research
publications research
eras map
innovation evolution map
financial profile
analogous models

competitors complementors
10 types of innovation diag
industry diagnostics
SWOT analysis
subject matter experts
interest groups discussion

3 *Mode 3: Know People*

observing everything
building empathy
immersing in daily life
listening openly
looking for problems and needs

research participant map
research planning survey
user research plan
five human factors
POEMS
field visit
video ethnography

ethnographic interview
user pictures interview
cultural artifacts
image sorting
experience simulation
field activity
remote research

user observations data

4 *Mode 4: Frame Insights*

exploring systems
looking for patterns
constructing overviews
identifying opportunities
developing guiding principles

observations to inights
insights sorting
user observation queries
user response analysis
ERAF systems diagram
descriptive value web
entities position map

venn diagramming
tree/lattice diagramming
symmetric clustering matrix
assymetric clustering matrix
activity network
insights clustering matrix
semantic profile

user groups definition
compelling experiences
user journey map
summary framework
design principles generation
analysis workshop

5 *Mode 5: Explore Concepts*

challenging assumptions
standing in the future
exploring concepts at the fringes
seeking clearly added value
narrating stories about the future

principles to opportunities
opportunity mind map
value hypothesis
persona definition
ideation session
concept generating matrix
concept metaphors

role-play ideation
ideation game
puppet scenario
behavioural prototype
concept prototype
concept sketch
concept scenarios

concept sorting
concept grouping matrix
concept catalog

6 *Mode 6: Frame Solutions*

conceiving holistic solutions
conceiving options
making value judgments
envisioning scenarios
structuring solutions

morphological synthesis
concept evaluation
prescriptive value web
concept linking map
foresight scenario
solution diagramming
solution storyboard

solution enactment
solution prototype
solution evaluation
solution roadmap
solution database
synthesis workshop

7 *Mode 7: Realise Offerings*

reiterating prototypes
evaluating in reality
defining strategies
implementing in reality
communicating vision

strategy roadmap
platform plan
strategy plan workshop
pilot development / test
implementation plan
competencies plan
team formation plan

vision statement
innovation brief

Figure 3: Generic template for Kumar's model of innovation

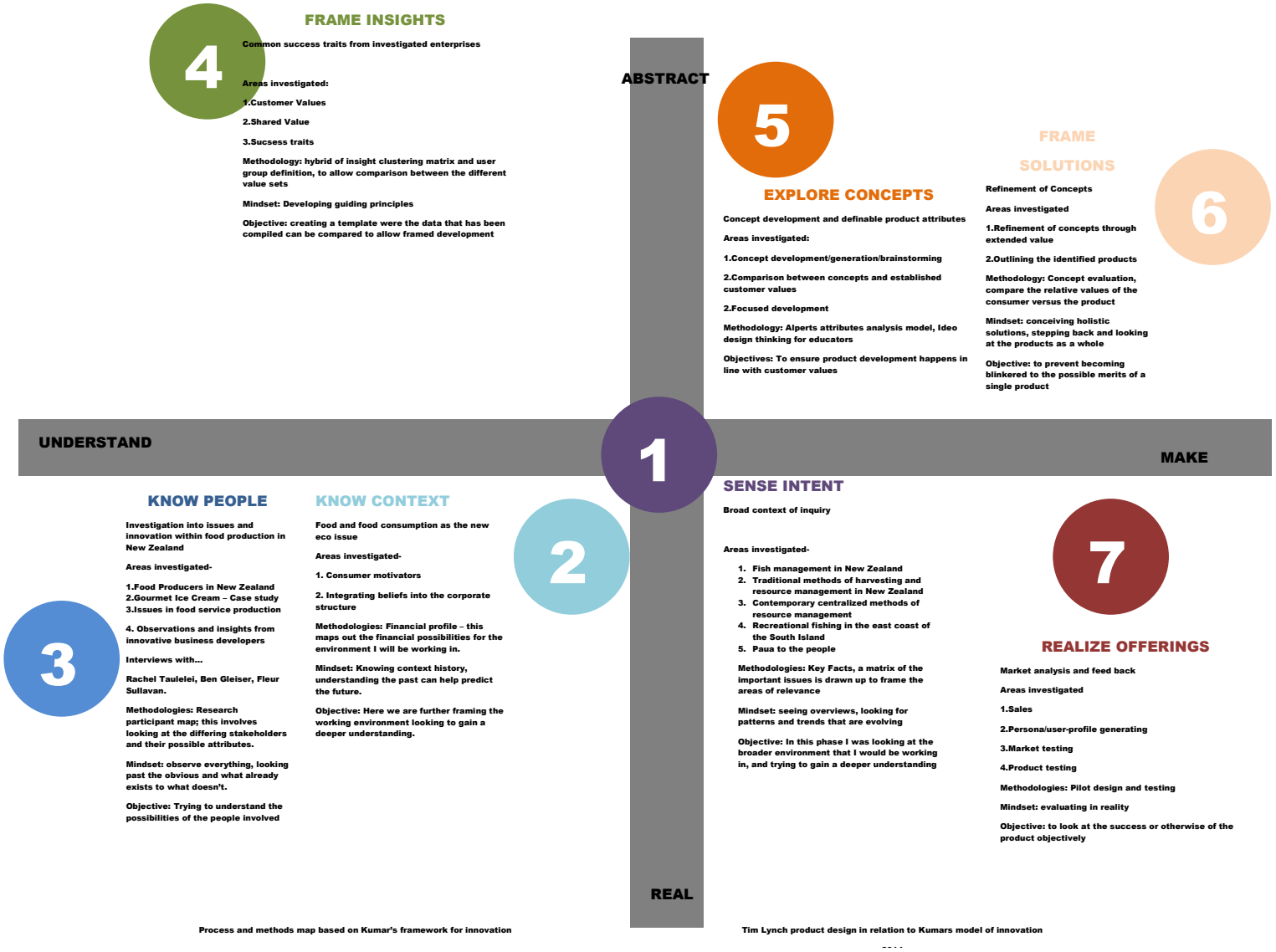


Figure 4: Template of Kumar's model for innovation relating to this project

Mind-set: Developing guiding principles: the objective is to create a series of guidelines to work within which are based on the observations gained in the previous modes and in the case of this report based on emotional drivers.

Method: Research participant map: this can involve looking at the differing stakeholders involved. Here the different groups are defined and the relationships between them examined. The purpose is to look outside the managerial tree and look for common threads or disconnects between the individuals and groups. Of particular interest are any disconnects between the developer and the end-user. These disconnects can lead to poor or misled product development as the closer the development is to the end-user the higher the chance of success.

4. **Explore concepts**: Here we use the insights framed earlier to generate concepts, which can be the start of visualising the concepts to survey their value.

5. **Mind-set:** Seeking clearly added value, which is not necessary fiscal but can be to the community, environment or the stakeholders (Kumar, 2013, p. 200)

   Methods: Value hypothesis: this is the creation of a value that the intended solution will bring about. The value may not be solely fiscal but be an intangible value with relevance to a specific group. "Clearly define what value the intended solution will create." The creation of a value hypothesis at this stage can be measured through the creation of a value matrix looking at

   a. Who are the target users?
   b. What are their unmet or underserved needs?
   c. What are the proposed new offerings?
   d. What are the benefits to the users?
   e. Why will users choose these offerings over those of the competition?

   The value hypothesis needs to be human centred and context driven to allow the core values of the product to become aligned with the consumer.

6. **Frame the solutions:** Here concepts are built that have been developed earlier and are then looked at to see which will have the most relevance to the end-user. At this stage there is a sense of what could or might be.

   Mind-set: Conceiving holistic solutions—stepping back and looking at the big picture and the value of the whole rather than the individual components.

   Method: Concept evaluation—here we can compare the relative values of the concept and how it will relate to the consumer. The tension between the user value and the commercial value of a product needs to be compared and this is done during this mode. The commercial and fiscal realities of the product need to be addressed before its realisation and these 'realities' need to be balanced against possible usage scenarios and judgments made on the concepts. A framework where these can be mapped allows visual comparisons and removes the emotional element of the decision-making. This allows for the strongest outcome as the concepts are assessed solely against the pre-determined criteria.

7. **Realise offerings:** This is where the evaluation and implementation of the prototypes takes place and the building of initiatives and tactics occurs.

   Mind-set: Evaluating in reality (Kumar, 2013, p. 288): in this component the completed product will be tested in the "real world" and we will be looking at how the product performs. This part of the project also forms the start of the rapid prototyping phase.

   Method: Pilot development and testing (Kumar, 2013, p. 305): the transforming of an idea or concept into a real experience. This is also the beginning of the iterative development cycle and the implementation of strategic planning.

There is a further method of investigation utilised in this project: learning first product design LFPD inclusive of rapid prototyping. The use of this method is once again to put the consumer at the start of the production schematic and create a user-centred product.

1.5 Additional objectives

A further rationale of this project is to form closer relationships between the stakeholders. The possible outputs that flow from these include greater value placed on the fish through better utilisation of the entire harvest. Secondly, it will allow the development of an innovative new consumer product with direct links to its environment and the source of the raw product.

1.6 Outcomes

The outcomes of the project include a new product development model and production template. This will comprise crucial guidelines for sustainable businesses wishing to enter a wider market. The adaption of Kumar's model enables businesses to respond to changing market conditions through the use of lean and agile production methodologies. These are currently in the realm of large manufacturing plants such as Toyota.

The overall plan is the development and identification of a new market segment. Within this market segment ethical consideration and end consumers are placed at the start of product development and so placed to drive the core the values of the product. In this way consumer choice is widened and product awareness enhanced. In proposing this template the hope is that it provides a solution to patterns of failure amongst food production SME.

There are several obvious applications for the outcomes of this project. These are firstly to extend scalability to include international distribution for SME food producers, secondly, to provide a toolbox that can be used by SME food producers to navigate risks associated with the industry, thirdly, to create a new consumer-centred way of producing FMCG goods for the wider market and which can be adapted for individual products, and lastly, the outcomes provide an example of how to penetrate market segments through the use of innovation.


Sense intent

2. Broad Context of Inquiry: Seafood and the seafood industry within New Zealand

The link between the land and the people has a long history in New Zealand, beginning with Polynesian immigrants and later followed by European settlers. The pattern of human immigration was and still is unique to New Zealand. The country's relative isolation together with an abundant biodiversity provided clearly defined opportunies and challenges for the harvesting and production and consumption of food.

The arrival of humans, and the predators that came with immigration continues to have startling effects on the biodiversity. It is estimated that in the 750 years since human settlement just over half of the native invertebrate fauna has become extinct (Holdaway, 2012). Without consistent and persistent monitoring and action there is no doubt this trend will continue. Contemporary market economies and an expanding population mean these resources are open for exploitation. Best practice for sustainably harvesting these resources is a contentious and ongoing debate amongst all stakeholders. This is especially true for seafood.

The complexities of this global debate, means that consumers face a progressively more difficult set of choices when purchasing food. The ethical implications of the sourcing, harvesting and production, distribution and consumption of seafood are complex.

Current processing methods for inshore harvested fish result in an average 70% yield with the remainder considered offal and treated as waste (Huthison, 2013). The asset value of New Zealand fish stocks passed $4 billion (Ministry for the Environment, 2010) in 2009 under the Quota Management System (QMS). This shows an increase in value from 1996 of 47% (Statistics New Zealand, 2010). It should also be noted that because of the nature of the QMS the harvestable biomass of the fish is fixed and cannot increase.

The drive has been to increase the asset value of fish stocks and to decrease the total allowable catch (TAC). This initiative was in reaction to the depletion of Hoki stocks between 2003 and 2006 (Figure 5). When all these factors are considered, placing a value on the remaining 30% of the fish that is currently considered waste and disposed of would make economic and ethical sense and frames the opportunities for this project.

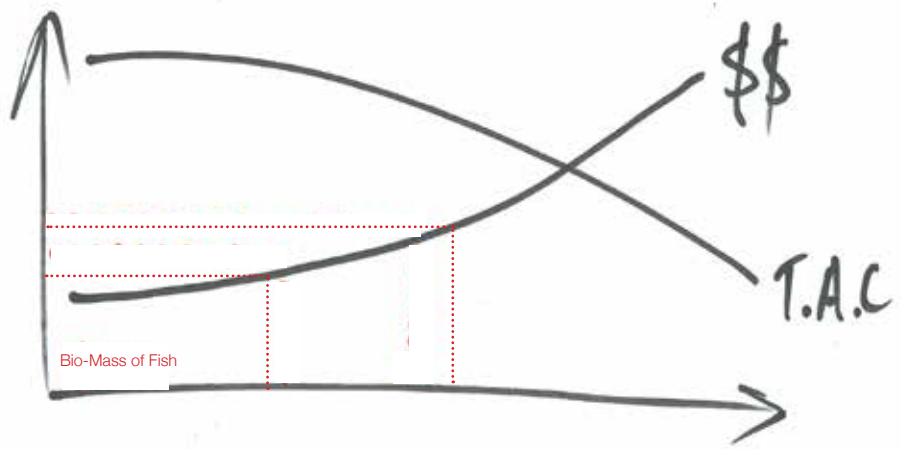


Figure 5: Diagram of decreasing fish harvest and increasing value

2.1 Main areas of investigation

Utilisation of the waste component from the harvesting of the QMS demands that three main areas need to be researched. These areas are, firstly the harvesting of inshore fish stocks around the lower South Island with particular consideration of the laws and methods that surround commercial fishing together with the ethical and associated practical arguments. Secondly the role of consumer choice in food consumption is increasingly important. This covers the growing strength of the consumer voice in food production and new and existing consumer groups. Thirdly, existing distribution networks and retail outlets

developing rapidly. This includes retail networks ranging from stand-alone retail outlets to large national outlets and distribution chains.

2.2 Fish resource management in New Zealand

Pre QMS commercial fishing in New Zealand had been dominated by the belief that the sea teemed with fish, and that stocks could not be affected by commercial harvesting, however a radical decline in fish stocks began to change that view (Walrond, 2012). In 1986 New Zealand introduced the fish quota system to help manage fish stocks. While at the time it was hailed as revolutionary thinking it is worth noting that traditional methods of resource management already existed and were followed prior to European settlement.

2.2.1 Traditional of methods resource management in New Zealand

Before European settlement the Maori had used several methods of managing the harvesting of seafood. These included the use of an annual harvesting calendar that divided the year into three seasons. Raumati the warm period, Ngahuru the main harvest period and Takurua the cold period combined to make up the sustainable harvesting calendar (Atholl, 1998) The resources were only harvested according to allocated times within this calendar. For example, seals and albatrosses would only be taken during Ngahuru . This cycle allowed the resources adequate time to recover and replenish.

There was also the concept of Rahui, which involves the prohibition of resource gathering from a particular area (Penetito, 2007). Modern examples of voluntary Rahui can be found on the east coast of the South Island around Karitane.

The close relationship that the Maori held with the environment also led to natural checks and balances occurring through mechanisms such as weather. The oral tradition recording of climate-based events helped transfer environmental knowledge intergenerationally and would, in turn, dictate harvesting times (King, 2008).

2.3 Centralized methods of resource management

The rationale behind the QMS is that the fish stocks are most productive at between 30% and 59% of the original biomass. It is thought that the reduced population results in less competition for food, and that a younger and fitter growing population is encouraged (Idaho, 2013). Of all the managed fish stock 80% are considered to be at a sustainably maintained level (Mace, 2013). That does, however, leave 20% in decline, and does not include the by-catch, which is itself not included in the quota calculations. There is further argument that the original biomass or volumes of the fish stocks could only be roughly estimated,

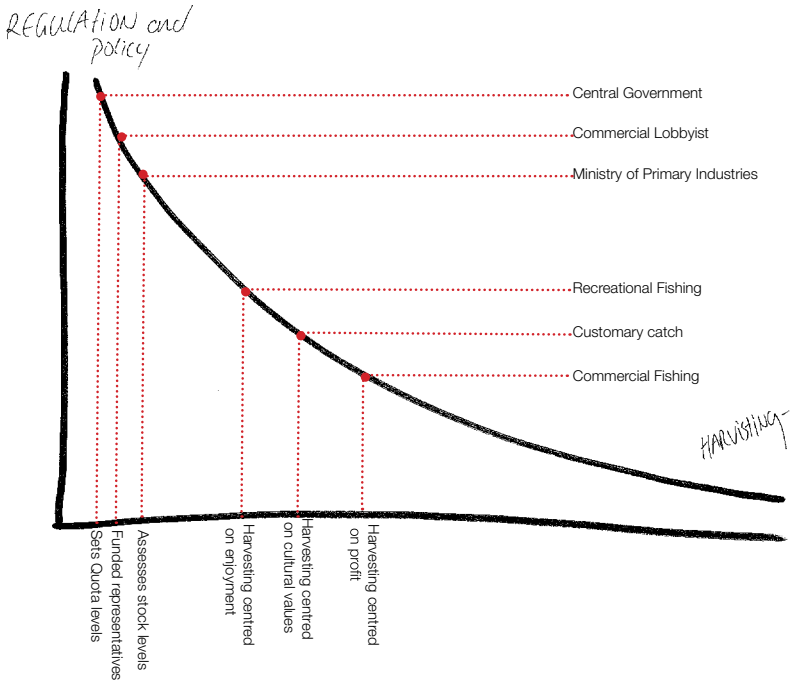


Figure 6: Stakeholder map for Q.M.S.

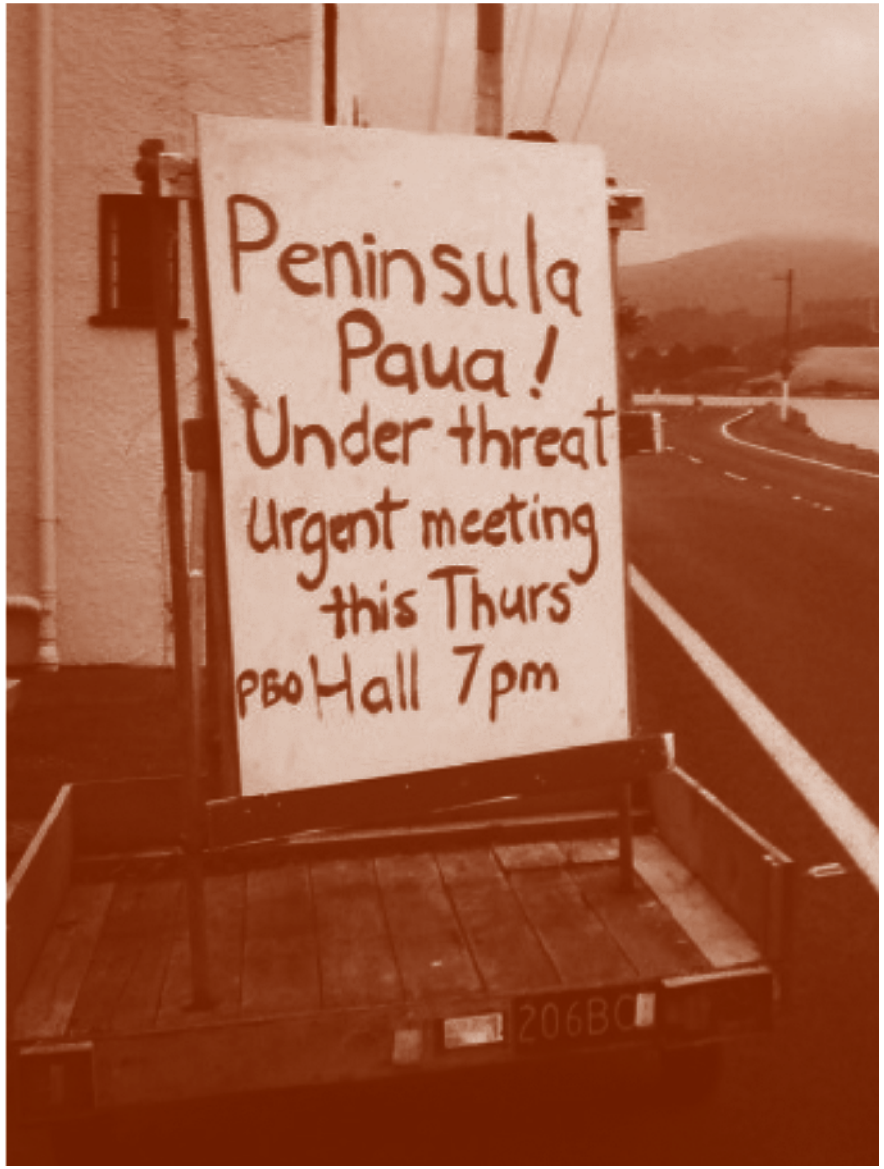


Figure 7: Protest meeting sign at Portobello, Dunedin—Southland Times *2013*

as scientific records have only been kept from the 1980s onwards (Wurmus, 2010). All factors considered it is impossible to have an accurate picture of what is happening in New Zealand fishing waters. (Figure 6).

In 2008 the combined domestic and international fish sales represented NZ$1.3 billion (industries, 2009).

It follows that though the QMS is a flawed tool it is a good starting point for controlling the harvesting of natural seafood resources. Industry lobbyists argue that aquaculture is perhaps a better and more sustainable method of harvesting. New Zealand aquaculture products include salmon, oysters, green-shell mussels (the trademarked name for farmed green-lipped mussels) and experimental lines that include kina and paua. All salmon farmed in New Zealand are king salmon. No antibiotics, vaccines, steroids or growth enhancers are required due to comparatively low-density farming methods and cool water currents. In 2011 exports of the primary salmon product were valued at NZ$65 million (New Zealand Aquaculture). In New Zealand a survey in 2007 found that 43% of New Zealand households eat seafood once or twice a week, while 45% eat seafood at least once a week (SeaFood New Zealand, 2013), and of the average New Zealand household expenditure, meat, poultry and fish purchases were valued at $23.70 (Albertson, 2013). These facts combined with 60% of New Zealanders who consider themselves to be "meat reduced" (Williams, 2013) points towards a shift in the eating habits of New Zealanders. An awareness amongst consumers of the value of the authenticity of sources and sustainability of food can be seen in the rise in popularity of farmers' markets.

2.4 Recreational fishing on the east coast of the South Island

Recreational fishing represents both an enjoyable pastime and cultural heritage for many New Zealanders. The ability to catch fish is viewed by many as a right, irrespective of cultural background. The tension between commercial and recreational harvesting of seafood can be highlighted most clearly through two examples involving paua and snapper.

2.5 Paua to the people

In 2013 application was made to the newly formed 'Ministry for Primary Industries' for commercial paua harvesting to take place along 30 km of coastline where it had previously been prohibited. These areas included the Otago Peninsula where recreational harvesting had been taking place. This led to the founding on 20 March 2013 of *'Paua to the People'*. This organisation was set up to lobby the government to prevent the commercial harvesting of what they consider to be community resources (Figure 7). They argued that the current quota of 89 tonnes was too high and unsustainable. This action led to commercial interests seeking to work in the remaining recreational areas. The commercial industry is looking to harvest between 10 and 30 tonnes within the designated 30 km area.

One of the notable arguments used against commercial harvesting is the social impact, as the depleted stocks will limit the ability to share food and threaten the tradition of gathering food as a social occasion and cultural practice. The feeling within the *Paua to the People* is that there is disparity between the needs of the commercial fisheries and the wants of the recreational fisheries. Both have stock levels at the core of their arguments, but the inability to validate anecdotal information gives the recreational fishers little political leverage. Recreational harvesters think commercial stock statistics are being reinterpreted depending on the interest group that requires it.

2.6 Recreational snapper fishing

In June 2013 the Ministry of Primary Industries (MPI) announced a six-week consultation period on the reduction of the bag limit for recreational fishing. The area this will affect what is known as Snapper One (SMA1), and although the MPI biomass statistics show a 70% increase across New Zealand, reductions in the snapper catch may be enforced. The fear is the commercial catch will not be limited, and recreational fishermen are stating anecdotally that large stocks of juvenile snapper are being caught due to outdated and unselective commercial fishing methods.

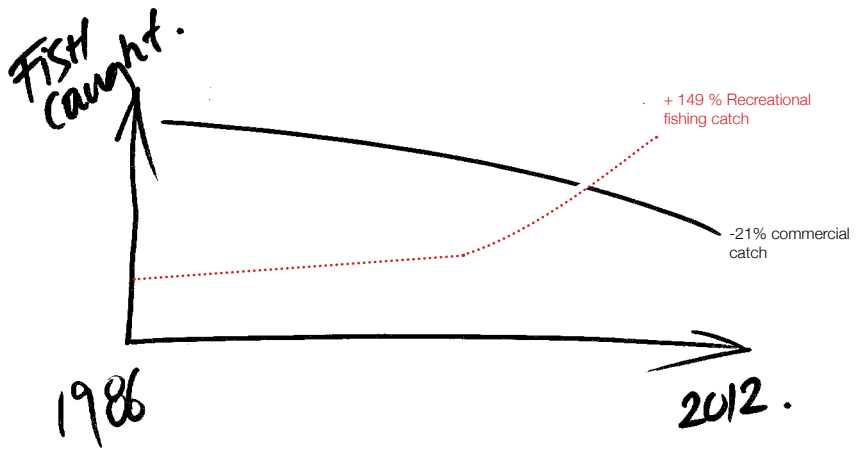


Figure 8: Visualisation of increases in recreational catch and decrease in commercial catch in S.M.A 1

During the consultation period all stakeholders are called on to make submissions. This process greatly favours the large, resourced fisheries as the recreational fishermen can only present non-scientific evidence (Figure 8).

In summary, Recreational catch is included in the QMS, however, it would seem tensions between commercial and recreational interests arise from neither being willing to budge on reducing catch limits. Recreational fishermen argue it is their social right to harvest and that economics should not be allowed to interfere with this custom. Commercial interests maintain that the increase in the numbers of recreational fishermen, and the technology available to them, is depleting the stocks. These arguments demonstrate how ingrained the sea and the harvesting of seafood are in New Zealand culture.

In order to sustainably harvest fish stocks the QMS was introduced and set limits on the quantity of fish that could be harvested and, as such, measure its

value. This has created a scenario were the only way to generate further revenue from this resource is to increase the yield from the processing of the fish. This driver together with an understanding of the identified patterns of failure within SME food producers provides a platform to create innovative solutions to New Zealand issues within the seafood industry.


Know context

3. Food consumption as an eco issue in New Zealand

In June 2013 Pope Francis denounced the culture of food waste stating that throwing away food was the same as stealing from the poor. This comment was a reaction to the findings of a United Nations study showing that 1.3 billion tonnes—about a third of global production—of food are wasted (United Nations, 2013). This is a startling waste of resources, particularly when it is considered that hunger affects 870 million people, and over 2 billion people suffer nutritional deficiency (World Hunger, 2014). It would be easy to think New Zealand is removed from these issues, but a 2002 survey by the Ministry of Health found that 17% (83,000) of children aged between 5 and 14 went to school hungry (Quigley, 2007) (Figure 9). An obvious strategy pertinent to this project would be the utilizing of waste and in some way address nutritional shortfalls.

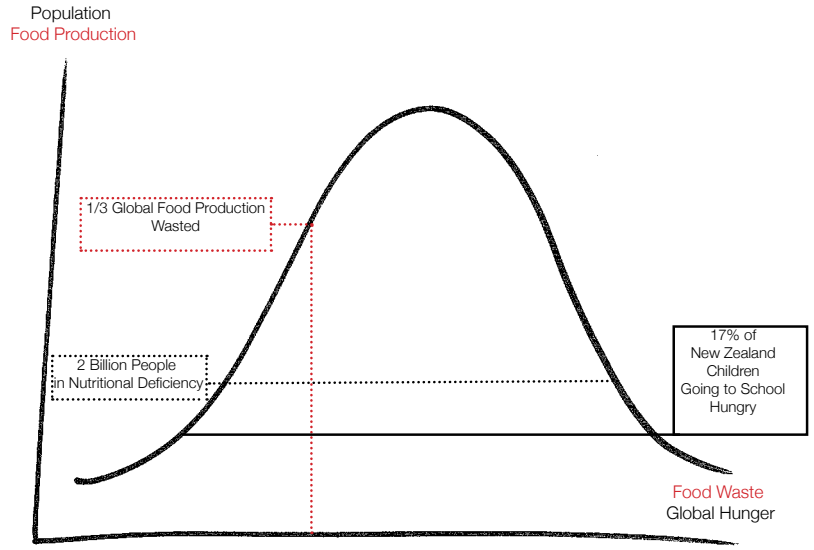


Figure 9: Representation of food waste

3.1 Consumer Motivators

The power of public opinion has forced food producers to display nutritional contents and their production methods with greater transparency. An example of this connection is this evident with free-range eggs. Of all people polled in a *Sunday Star Times* survey 53% stated that the values associated with sourcing and production, dictated decision-making about egg purchases (Ineale, 2012). This has created a groundswell within the industry that has spilled over to free-range poultry meat. In 2009 sales of free-range chicken meat increased by 220% to represent 5% of total meat sales (Thompson, 2011) this trend can also be seen with consumer choice in purchases of canned tuna. *Foodstuffs Own Brands Ltd* recently introduced a policy that all tuna sold in its outlets was FAD free (fish aggravating device) and introduced only pole-caught tuna. "This was in direct response to customer demands... it is part of our philosophy to listen to customers" (Macateer, 2013).

3.2 Integrating beliefs into the corporate structure

An example of the consumption of food to align personal beliefs is vegetarianism. Beginning within a fringe element of consumers in the 1960s it is now truly ingrained within mainstream markets (Potts, 2007). Further, entire market segments have been created to satisfy the 60% of the population who consider themselves to be meat-reduced (Atholl, 2013).

In New Zealand the most well known of these suppliers to the vegetarian market segment is *Sanitarium*. *Sanitarium* is a vegetarian charity owned and operated by the Seventh Day Adventist Church (Sanitarium). *Sanitarium* also owns *Life Heath Foods* that in turn owns *Naked Organics, Bean Supreme* and *Lisa's*; all of these companies operate on strictly vegetarian principles. *Sanitarium* is a registered charity and as such does not pay any income tax (Adams, 2012); instead it redirects the funds to set up other business such as *Life Heath Foods*. These businesses work independently of *Sanitarium*. The success of these brands

can be measured in market share: the *Sanitarium* brand has a 35% market share in breakfast cereals (Adams, 2012), and *Life Health Foods* maintains a 40% market share (Williams, 2013) within the vegetarian segment. Maslow, whose hierarchy of needs explains this type of consumption through the term meta-motivation, which refers to the motivations of a person who has fulfilled the basic physiological requirements of existence and is seeking a higher sense of purpose (Figure 10). This new form of conspicuous consumption is creating opportunities for producers to generate consumer brand loyalty to their products by allowing the products to display and engage on a deeper, more emotional level. The ability to create an intimate connection creates further fiscal value to the product.

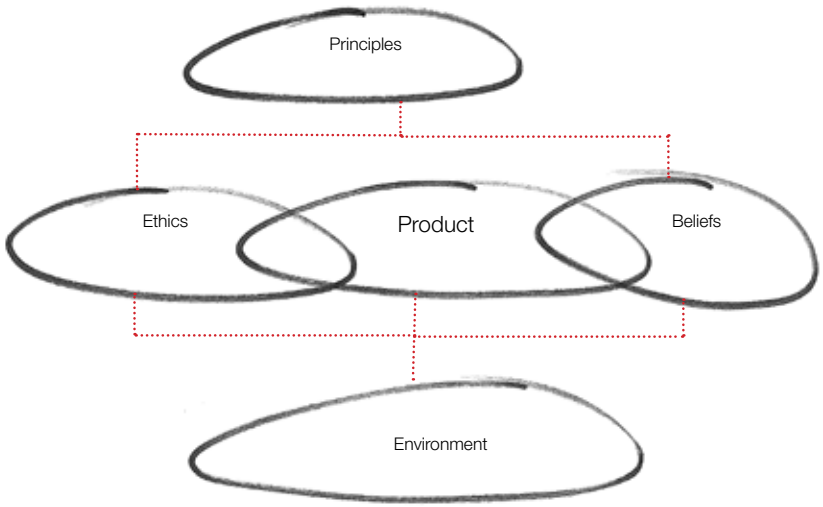


Figure 10: Integration of beliefs into the corporate system.


Know people

4. Issues with food production in New Zealand

The main issues in New Zealand are shown most clearly in the patterns of failure that plague SME food producers. This section examines the most characteristic failures in terms of overall statistics and through an indicative example, *The Gourmet Ice Cream Co*, a Dunedin- based SME, which is no longer trading.

4.1 Food Producers in New Zealand

It is possibly part of the New Zealand 'D I Y' ethic that product development for food producers is done in-house with limited resources (Collins, 2013). The risk in this scenario is that the producer becomes removed or separated from the consumer during the development stage. If consumers are not involved at the outset of product development, then product development relates only to the operational aspects of the product and is relevant to the producer only.

The ability to gain market share depends on a blend of consumer empathy, and the operational ability to rapidly get the product to market. If the understanding of the consumer is limited, product development may become one dimensional and ineffectual. This development trap is commonplace within food manufacturing in New Zealand and is adding to the failure rates among start-up food producers. The ability for the producer to understand the consumer and stay relevant to a changing market place is critical to the success of the enterprise.

4.2 Gourmet Ice Cream Co.

The following is an example of a small food manufacture that I was able to observe and evaluate over the course of its business life cycle.

The Gourmet Ice Cream Co was set up 1995 by husband and wife Mark and Rae Scorgie. The ice cream recipes had been developed as dinner party specialties, and after much convincing from family and friends and a change in employment they founded the company. The business entered the adult indulgence market as a prestige dessert product (Figure 11). Development was undertaken in-house and in secrecy through fear of losing their competitive advantage.

The first success for the company came in the form of collaboration with *Speight's Brewery*, which resulted in the *Speight's Old Dark Ice Cream*. The path to market was straightforward and as an innovative product they enjoyed first-person advantage and moderate success. However, the market segment they were operating in quickly became competitive and sales began to lag.

At this stage rather than looking to gain a deeper understanding of consumers and their perception of the products. The producer began to reduce costs in order to offer the product at a reduced price point. This had the overall effect of reducing the perceived value of the product, shifting its strategic positioning and forcing the company to compete with operational efficiencies in a changed

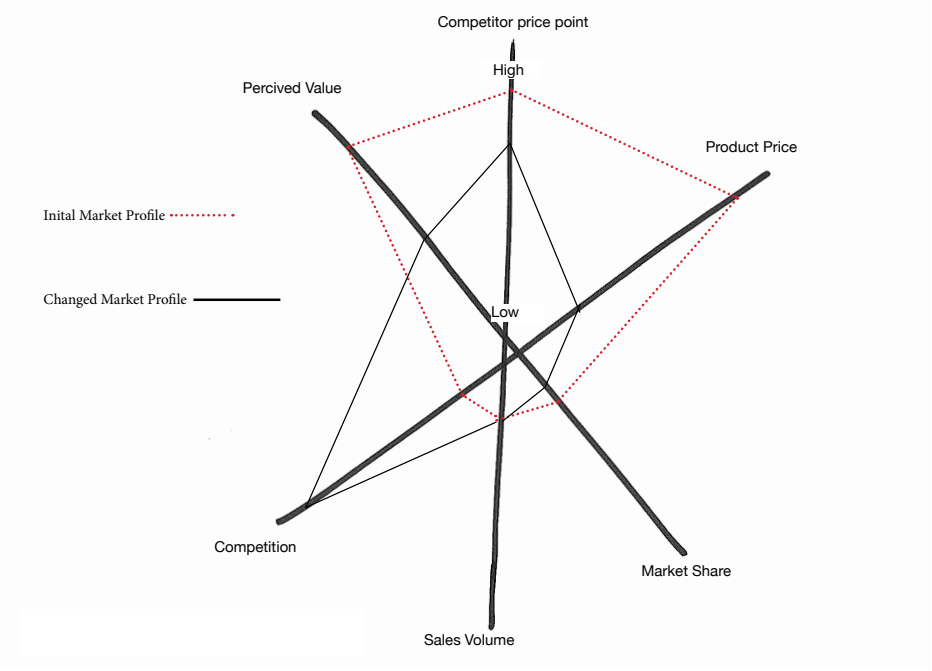


Figure 11: Diagram of Gourmet Ice Cream Company initial market position

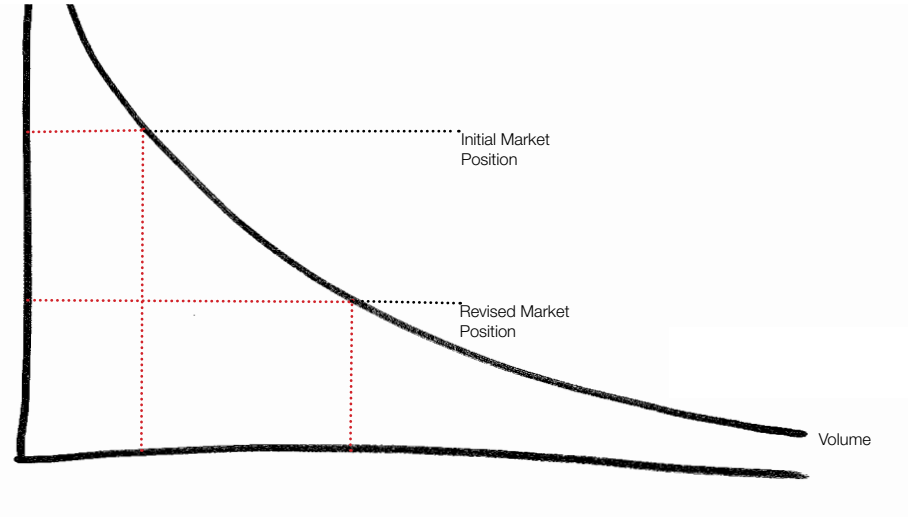


Figure 12: Diagram of Gourmet Ice Cream Company market position after utilising operational effectiveness as a market leaver

market sector they had little knowledge of (Figure 12). The original competitive advantage had been completely lost.

The inevitable outcome was the sale of the business; luckily it was sold to a complimentary company (no money changed hands) and the owner was kept in a salary position so it did have a happy ending. This is a classic New Zealand SME scenario, where the operator has become isolated from the consumer and is focused on the operational requirements of the enterprise.

Innovation in this case, had not been driven by the consumer, it was driven by the alignment with the corporate values of a dominant venture partnership. In the face of fiscal headwinds the company was unable to adapt.

4.3 Patterns of failure in food service production

Food production represents 30% (Coriolis, 2014) of New Zealand exports but only 5% of GDP. There is a remarkable 48% failure rate for food production businesses in the first year and 80% failure for the following 10 years. (Peacock, 2000) (Figure 13). These factors identify the opportunity based on the need for more flexible production models with which to adapt to a rapidly changing consumer behavior.

There are suitable and adaptable templates that currently exist outside food manufacturing. These processes could be grouped under the design umbrella of human-centred design (HCD). At its core the principles of HCD revolve about placing the end user or eventual consumer of the product at the start and centre of the development process. In this context use of design methods are core to

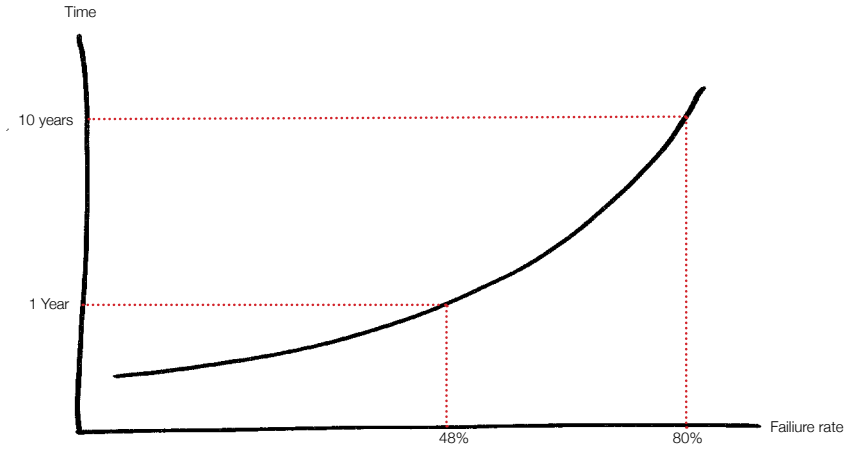


Figure 13: Failure rates for food enterprises over a 10-year period

the belief that “design is a response to a need” (Lucchio, 2013) the need in this case is to satisfy consumer preferences by creating agile and sustainable operational frameworks.

A classic trait within food startups is that they become bogged down in the operational aspects of the enterprise and lose sight of the initial elements that made the product or enterprise successful. The ability for a product to move past the ‘first mover advantage’ and to maintain its competiveness is vital. Focusing on innovating the production model relies on the producer being able to look outward. Focusing on innovating the production model can help enable this to happen.

Now the model is about listening to the consumer and anticipating their needs. The ability for companies to be agile enough to navigate these changes has seen development of a new form of Food Company were the ethics and beliefs of the consumer are aligned centrally with the company’s vision.

Observe

5. Observations and insights from innovative business developers

An important aspect of this study was to identify and talk to industry innovators, especially those whose business models were questioning the status quo within the wider industry. These individuals are part of an emerging innovation cluster within the food development industry. As part of primary research into innovative business models, I have been fortunate to interview the following people: Rachel Taulelei, founder and director of *Yellow Brick Road*; Ben Gleiser, Founder and National Director of *Conscious Consumers*; Fleur Sullivan, food author and owner of *Fleur's Place* restaurant; and Geoff Simonds, author, and economist at the *Morgan Foundation*. The interviews primarily focused on how these innovators addressed development problems by prioritizing customer involvement.

Another commonality of these businesses is that they have all turned environmental issues into economic solutions, making their business both environmentally and economically sustainable. These solutions represent simple and pragmatic answers to common and contemporary problems. The interviews comprised multiple sessions, which left the option of following up further lines of enquiry that arose. Notes were taken during the interviews and condensed for the purpose of this study.

5.1 Rachel Taulelei, founder and director of Yellow Brick Road

The success of *Yellow Brick Road* as a premier fish supplier was founded on Rachel's belief there was both commercial and ethical value in provenance and responsible fishing.

> As a word, 'sustainable' is overused and misunderstood. Put simply, a sustainable fishery is one whose practices can be maintained indefinitely without adversely impacting on other species within the ecosystem.
> (Tauleli, R., personal communication, 2014)

After completing her law degree Rachel was appointed as a New Zealand Trade and Enterprise (NZTE) commissioner to North America specializing in the food and beverage sector. There she was charged with aiding New Zealand companies to enter United States' markets. Part of this role involved her engaging with chefs and food producers in the United States and using them to showcase New Zealand products in the best possible light. After spending eight years working with the NZTE in the United States (US) she returned to New Zealand to set up *Yellow Brick Road*, a seafood supplier specializing in sustainably harvested fish and shellfish. In the US Rachel had witnessed the value that was placed on raw products. The value comprised interrelated factors, two of which pertained to the origin and sustainability of the product.

Rachel had also witnessed the amount of care, energy and effort put into the harvesting of the fish and the way the chefs would prepare them. By comparison she noticed that the transporting of the product was overlooked and, thus, was the weak link in the consumer chain. To address and overcome this problem she

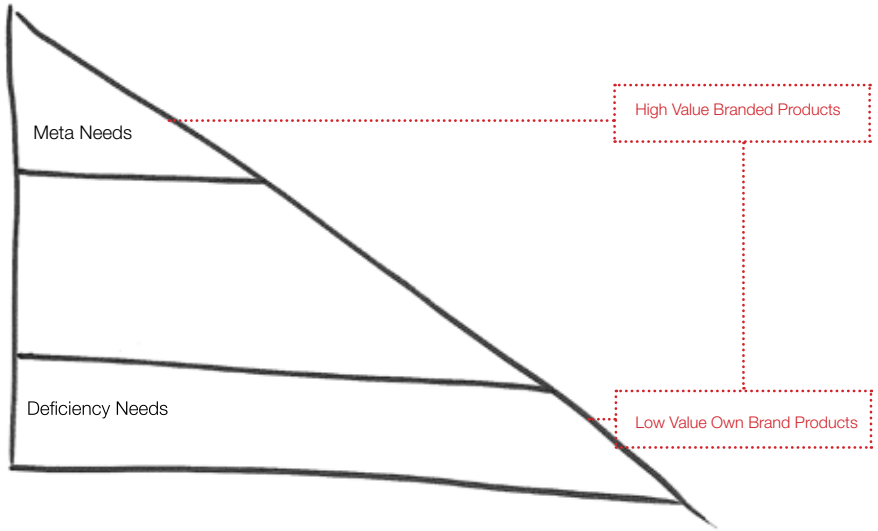


Figure 14: Diagram showing product value in relation to Maslow's hierarchy of needs

developed a distinctive and innovative approach, which identifies Y*ellow Brick Road*. Initially, the business model for *Yellow Brick Road* was similar to most New Zealand-based export organizations in that the company exported the bulk of the fish it received. The point of difference here was she was able to guarantee the transit time, 36–48 hours out of the water to her American customers, thus insuring consistent quality.

While grappling with the complex demands and compliances of supplying exporting markets, and from conversations with Wellington chefs including Martin Bosely, Rachel realized there was an unmet domestic need. This transition to a solely domestic supplier was completed without loss of revenue and has led to a sustained growth in the business. Initial demand for Rachel's products came from the food service sectors that were demanding a higher quality of product for an increasingly demanding and ethically aware clientele.

A problem for restaurants was the inability to get a consistent supply of quality product as most of it was being exported. It was assumed that the domestic market would not be willing to pay the premium prices that could be demanded offshore. This scenario is not limited to seafood only but is evident for meat and other foodstuffs.

Rachel also saw that there were opportunities in three specific areas. Firstly by shortening the channel to market, the inherent value of the fish is increased. "Taking those who catch closer to those who cook" (Tauleli, R., personal communication, 2014). Secondly, by removing the necessity to check the quality and providence of the seafood for food service operators. Rachel was able to add value by integrating quality guarantees into the supply network. Lastly, by providing products that previously were considered unethical in an ethical manner Rachel found added value. A good example of this is evidenced in the supply of undersized and baby paua. These paua are perceived to be responsibly farmed and distributed so that the smaller shellfish are now removed to allow space for the larger shellfish to grow.

Rachel's innovative approach to food service won her the Restaurant Association of New Zealand's 2009 award for innovation, placed her as a finalist in 2010 Business Woman Awards, a winner in the Emerging Gold, Wellington Gold awards, and in 2012 the Sir Peter Blake Trust recognized her as an Emerging Leader (Global Woman, 2012).

To conclude, *Yellow Brick Road* has demonstrated that by evolving away from a traditional production and distribution model, it is possible to find added value, in Rachel's case in the freshness and providence of fish. By operating closely with her customers she has a deep understanding of their needs and requirements allowing her to remain relevant to them. By closing the gap between the producer and the consumer she has been able to deliver a better quality product that has benefitted all.

5.2 Ben Gleiser, founder and national director of Conscious Consumers

The aim of *Conscious Consumers* was to create a platform where consumers could leverage ethical considerations into the production of goods and to create a forum where ethical consumption is rewarded. The ability to create small changes in a large group of people, rather than radical change in a small group is viewed by its founder, Ben Gleiser, as a valuable tool for positive change.

> As consumers our purchasing choices shape the world we live in (Gleiser, B., personal communication, 2014)

Initial issues surrounding the lack of detailed scientific study regarding how ethics can act at a consumer driver meant Ben found there was scepticism regarding the concept. However, there was anecdotal evidence that it was becoming a generational issue with 'Gen Y' being the most concerned. With the combined purchasing power of Gen Y set to be larger than the 'baby boomers' (Gleiser, B., personal communication, 2014), Ben identified that these consumers were willing to pay a premium for products they believed were ethically sound. This created an opportunity to establish an enterprise with both a strong, sustainable standpoint and ethical boundaries.

The identification of this issue led to successful seed funding and by 2010 the *Conscious Consumers* website became a reality meaning that Ben, who was then

working for Treasury, was able to work full-time on the project. The *Conscious Consumers* website acts as a platform for facilitation and is composed of two portals, one for consumers and one for producers.

When logging onto the website consumers are given a friendly one-minute video outlining the objectives of the organization and its associations. They are then invited to become members by signing up, either through Facebook or through their own email address. Members then receive information regarding ethical products and services according to location as well as general information related to sustainability. They can also sign up for the *Conscious Consumers* app for mobile phones that will help to filter individual requests based on specified search criteria (e.g., location of a café which serves with free-range eggs).

Secondly, businesses and producers can become accredited members of *Conscious Consumers*. Accreditation involves applying for a series of 'badges'. These all relate to specific ethical standards. At least two badges are required to become an accredited member. The business is then finally validated by a third party audit. Thus, the halo effect (Gleiser, B., personal communication, 2014) is being stretched from *Conscious Consumers* over a now growing number of accredited businesses. Once accrediting is complete the business is then listed on the website, Facebook and as part of the mobile app.

Businesses also have access to data generated through the website, this data includes the amount of money the business puts into the local community and how effectively the business uses its resources. This information helps to add to the transparency of any business affiliated with *Conscious Consumers*.

While the service is free for customers, the revenue generation operates around a multi-sided revenue generation model (Osterwalder, 2010). The value proposition for the business using the service is to provide access to a larger and very defined market. Businesses are charged on a sliding scale based on the size of the organization. Further areas of revenue may be generated by using the website as a financial interface between producers. This model is currently used successfully by '*Bucky Box*' as service that can be used by food producers.

In summary, the underlying principle of *Conscious Consumers* is the 'second order effect' (Figure 16), where the consumer is able to dictate the conditions surrounding the creation of products, and in turn begins to create change through demand. *Conscious Consumers* is demonstrating the value of the 'green' dollar by giving customers the option to choose where they spend their money and on what basis. This area of consumerism is expanding as producers begin to see the benefits of aligning their corporate value with those of their consumers. Ben views *Conscious Consumers* as a social enterprise as it cuts through the 'greenwash' (Zaman, 2010) and rewards consumers beyond the initial purchase.

5.3 The Boat Shed Smoke House enterprise: a design experiment

The Boat Shed Smoke House enterprise was framed as a design experiment in the previous phase of the Master of Design Enterprise. The purpose of the experiment was to integrate character profiles of customers into the development of products and break away from traditional product development methods. A transition towards development based around empathy with the consumer allowed for more specific and tailored product development. A further purpose

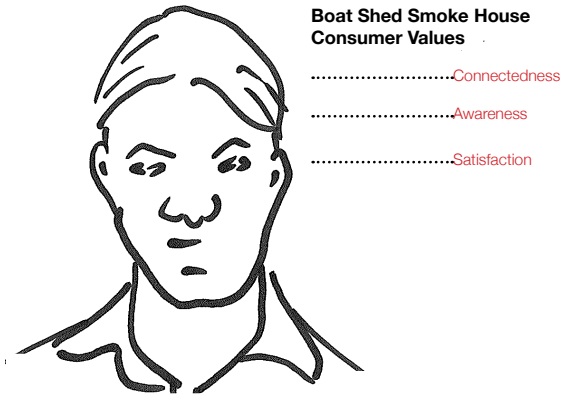


Figure 15: Diagram of Boat Shed Smoke House customer values

was to investigate the inherent value of products, which could include the sustainability aspects of fishing and provenance.

During this design experiment knowledge and insights were gained using a range of ethnographic methods, primarily with open-ended conversations being the most useful in helping to establish the motivators behind consumer decision-making. This strategy created a level of co-creation between the producer and consumer. Concepts such as 'lean' and 'agile' (Shaha, 2003) that normally would be used by large manufacturing concerns were also incorporated as a way of avoiding the development traps associated with the food service industry. *The Boat Shed Smoke House* is an enterprise that can quickly react to market forces whilst maintaining its market position.

The outcomes of this experiment were then analysed to establish distinct the relationships between demographics and consumer preferences. The study revealed that those interviewed were concerned about the welfare of the farmed fish, their feed, and the harvesting methods for wild fish. It also revealed that the majority of the study subjects currently or historically had a dietary bias. Three distinct purchasing groups were identified. The first group identified were the pescatarian consumers whose consumption of protein is restricted to fish. The second group considered themselves meat reduced and who restricted their consumption of animal protein to a couple of servings a week. The third group were the customers who bought indulgence foods without any ethical consideration. This represents a spectrum of different preferences according to ethical consideration of the source and means of production. Further investigation revealed that each of these groups had a similar value set. The values represent the utilitarian, that is, the functional and the operational aspects of the product, and the hedonic, which is the pleasure associated with the purchasing of products.

Top three values of *The Boat Shed Smoke House* customers (Figure 15):

- Connectedness—an inclusive belonging and experience that is exclusive to that product.
- Awareness of consumption—an educated and purposeful experience, rather than a temporary short-lived and disposable experience.
- Satisfaction—the expectations of the consumers are realized with regard to both product performance and hedonically.

The *The Boat Shed Smoke House* used profile generation to create products targeted directly towards the end consumer, thus demonstrating that the creative process could operate within fixed parameters without stalling the creativity of the producer. This shows that creative boundaries can also serve to allow the customer to become aligned with the final product.

In summary, *The Boat Shed Smoke House* demonstrated that if you align your product's philosophy with the customer's it adds the inherent value and creates the perception of a premium product.

The Boat Shed Smoke House also demonstrated that this inherent value, while more difficult to measure, could serve to reinforce its market position and the perceived value of the product.

5.4 Food consumption in New Zealand

For early white immigrant (Pakeha) New Zealanders, the predominantly bland British working-class diet meant New Zealand was a protein heaven for the early settlers, and as such, seafood was largely overlooked in favour of beef or sheep meat. The typical aspiration for the settlers was to eat meat three times a day. It was not until the 20th century that seafood became a major source of protein for

Figure 16: Visualisation of the second order effect in purchasing

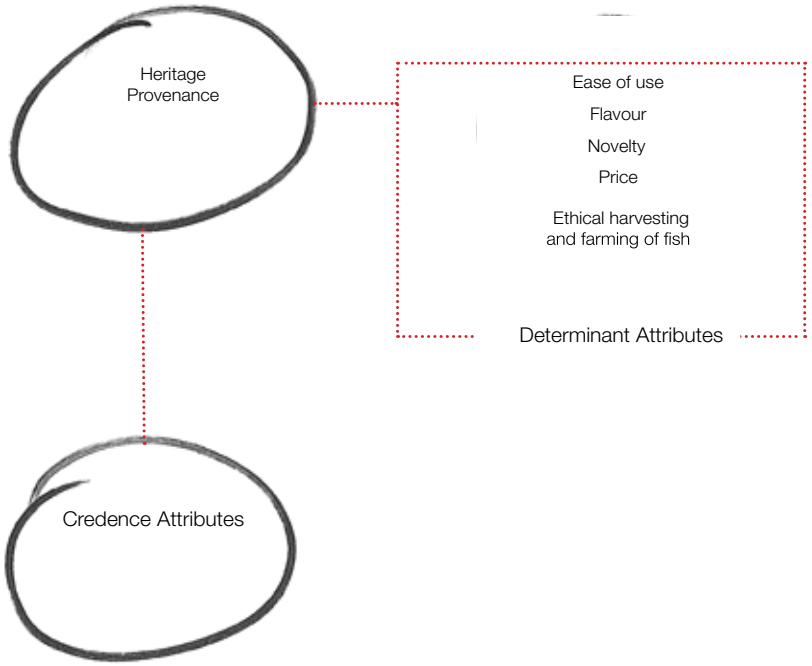


Figure 17: Determinent and credence attributes of the Boat Shed Smoke House products

Pakeha. However, for the indigenous Maori, seafood or kai moana had always been a staple of their diet.

Currently, 88% of New Zealanders eat fish once a month, and 45% eat fish once a week (Seafood New Zealand, n.d.), domestic seafood sales currently stand at NZ$0.16 billion and export revenue stands at NZ$1.53 billion (Treasury, 2011) meaning that 90% of New Zealand seafood by value is exported (Seafood New Zealand, n.d.). Supermarkets also underperform in seafood sales—relative to other proteins—creating a situation where traditional fishmongers and markets are still supported by consumers while in western countries there is increasing demand for sustainably caught/managed fish. (European Union Retail Forum for Sustainability, 2012)

In summary, seafood-aware consumption requires the reconciling and balancing of environmental factors such sustainability and wastage. The ongoing publicity surrounding this subject is bringing these issues to the fore, and the discussion is no longer simply academic. These pressures are becoming a motivator for consumers.

5.5 Fleur Sullivan

Fleur Sullivan is an internationally recognized restaurateur and author. She first came to prominence with her restaurant *Oliver's* in Clyde and has now relocated to the small fishing village of Moeraki where she owns and operates the restaurant *Fleur's Place*.

5.5.1 Fleur's food Philosophy

Fleur refers to her style of food as 'New Zealand Provencal' meaning from my province or my part of the country. She is famous for her use of local and unorthodox ingredients, which often are foraged from the surrounding area. Fleur's restaurants are extensions of the communities they are located in; this extends to both the people and the environment.

5.6 Development of a restaurant concept

After a cancer scare Fleur sold *Oliver's* and relocated to Moeraki to recuperate. There she would watch the fishermen from the small fishing fleet fillet the catch from the day in the shelter of the harbour. This may have seemed a peaceful and romantic way to pass the time, but for Fleur it was a disgrace. The processing of the fish on the boat was so inefficient that half the fish were being thrown overboard as waste. Fleur saw that outside of the fiscal context there was also a moral obligation to use the discarded fish. She convinced the fishermen to give the waste to her rather than throwing it overboard, and with this waste she made chowder selling it from a little food caravan she had set up. Because of the following she had gained from her restaurant in Clyde, news of her caravan in Moeraki began to spread. Jim Hickey, the TV One weatherman, gave it a plug

on TV One news, and Kim Hill interviewed her on Radio New Zealand National also helped publicity.

Unfortunately, the added publicity brought her into the spotlight of the local council who required the provision of toilets, dedicated car parking and a commercial kitchen to work out of. This made it apparent she had outgrown the caravan and should build a restaurant.

5.7 Development and growth of the restaurant

The style of building she had in mind had to reflect the history and heritage of Moeraki—a fishing port and whaling station with a strong Maori population. The building was constructed of building materials scavenged and repurposed from as far afield as Southland. The name *Fleur's Place* came about through locals asking, "When is Fleur's place going to open?"

5.8 Integration with primary suppliers

The next step was to purchase the fish directly from the boats as Moeraki has a working fishing fleet. This had the effect of shortening the path to market for fish that were to be sold in the restaurant, and ensuring the quality of the product for the customer. It also had the effect of adding to the romance of the restaurant. Fleur secured her fish supply by purchasing fish quota and becoming a licensed fish receiver (LFR). The quota was sold to Fleur for $50,000 per tonne of blue cod, and since then she has been able to land fish at the restaurant directly from the fishing boats. The whole fish are then filleted and processed outside in full view of the customers, adding to the theatre and experience of dining at the restaurant.

5.8.1 Validations

The ultimate validation for any restaurant is the ability to be fiscally sustainable; however, there has been further validation for *Fleur's Place*, internationally. Chef, author and presenter Rick Stein, when offered by a large United Kingdom paper to go to any restaurant in the world to write a review and have lunch, chose to eat at Fleur's. Fleur has also published two books *Fleur: The Life and Times Of Pioneering Restaurateur Fleur Sullivan* and *Fleur's Place Simple, fresh, naturally good food*.

In summary, the innovative approach Fleur has taken in her restaurant has allowed her to develop alongside the environment and community. This has emotionally grounded the enterprise with her customers; it is the emotional connection that has been the success of the restaurant. The connection extends past the enterprise and to the surrounding environment.

The initial opportunity was using the waste from fishing boats, waste she was able to convert into a ready-to-eat product for sale at a local level. Her approach was innovative and pragmatic and resulted in attracting positive attention to her already robust reputation. The story of how Fleur in her caravan selling chowder made from the waste off the fishing boats in a small town in South Island became international; Fleur was asked to demonstrate the chowder on Master Chef Australia, and international food writers romantically described the dish, the setting, and Fleur the personality behind it.

Frame insights

6. Success traits of food production enterprises

Although the enterprises investigated in Section 4 were diverse in their operations they exhibited common characteristics that contribute to their success. These attributes include:

- The reputation of both the operators and enterprise.
- Consumer groups that were accurately and consistently targeted. These customers are shown to be willing to pay a premium for their product, as they perceive the enterprises values to be aligned with their own.
- Enterprises who would generate innovative business models. Each of these operators chose to innovate from the base of traditional business models, adapting them to respond to changing circumstances.
- Sustainable economic, cultural and environmental practices were consciously developed, implemented and clearly communicated. All the enterprises investigated avoided the use of 'greenwash' and created pragmatic solutions to existing ecological problems.
- Development that was based on co-creation with end user. In these enterprises innovation occurs with the customer at the centre of development.
- A broad understanding of the value chain. Further to this concept is the understanding that value is layered and stretched beyond the product or service that is offered.
- The ability to expand the business without the loss of the initial authenticity and reconcile those tensions with that of C.S.R.
- Direct connections to customers. Enterprises created a direct path to market for their products and a deeper emotional connection through values that are shared between the enterprise and the consumer.
- Offerings based on value sets that Integrate into wider communities.
- Management perspectives that challenge the status quo. These outward-looking and progressive leaders were common to all investigated enterprises.
- An ability to adapt. The enterprises all had ability to adopt and adapt concepts from outside their respective fields to strengthen their practice.

6.1 Creating a comparative matrix

A value can now be placed on these respective attributes. A matrix system allows comparison of the attributes identified within the successful enterprises to the established set of consumer values gained from the *Dunedin Farmers Market*. The importance of the relationship can then be judged on three levels: great importance, moderate importance and not important or relevant.

This is a hybridized version of two of Kumar's methods, Insight Clustering Matrix and User Group Definition (Kumar, 2013). The hybridizing was required

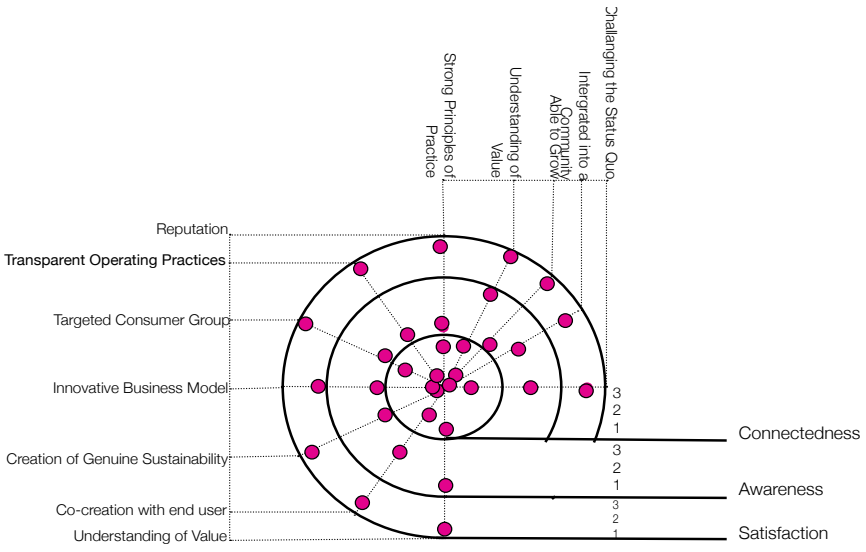


Figure 18: Comparative matrix of customer values and success and action points, with assigned values

as there was no single method that would allow the comparison between values and actions. The matrix is the first stage of development so it is important to establish the parameters within which product creation will take place. It also serves to outline the organizational values and culture of any enterprise that may stem from this process. The integrating of shared value (Porter, 2011) at the early stage of development serves to align potential products with end users or consumers.

6.2 Outcomes from matrix

The matrix has allowed a human-centred design comparison of customer values against the common success traits from the enterprises and allocates values with respect to the importance of the relationship to the customer (Figure 18) (Figure 20). The most important consumer values in order drawn from this exercise are connectedness, awareness and satisfaction. Connectedness in this sense implies the interwoven ideals of real sustainability (avoiding greenwash), a level of co-creation with the consumer, being able to reconcile tensions between tradition and growth together with a direct path to their various market segments.

Figure 19: An example of Boat Shed Smoke House packaging

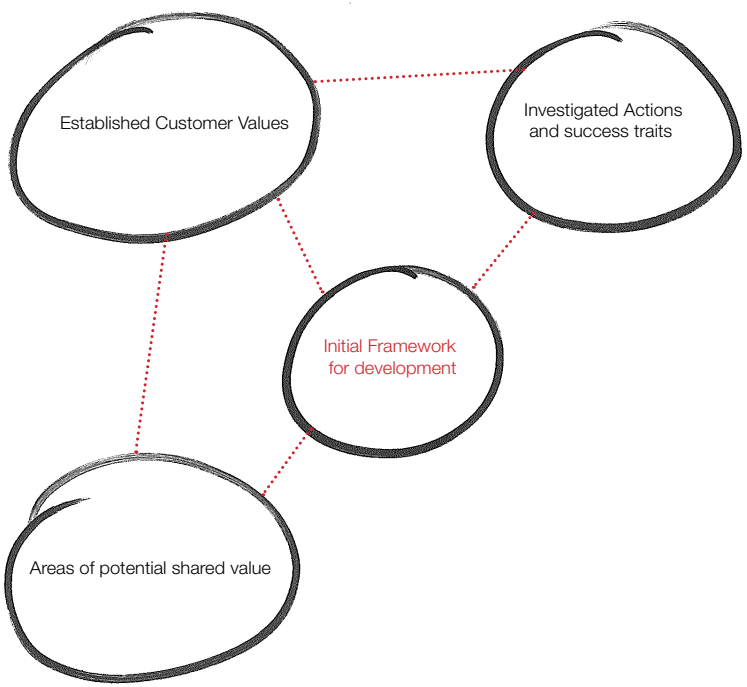


Figure 20: Aligning established customer values and success points

Awareness implies an understanding of the inherent value of the product combined with an acceptable resource footprint involved in the production of the product or service. Similarly satisfaction refers to the ability to identify and communicate with consumers that are willing to pay a premium for products with values they perceive as being in line with theirs.

By investigating the values that lead to the success of the investigated enterprises and comparing them with the values of the consumers we create a framework from which to begin developing concepts. This matrix begins to act as an interface between the consumers and the potential product. As the research to gather this information has been conducted by ethnographic means, the

human and emotional component has been placed at the very beginning of the development. This ensures that while at the end of this process there will be a tangible, realised product, it will still have an emotional link with the customers. Having a real and deep understanding of these customers can only help strengthen this link. The use of this type of research means one never has to resort to entirely subjective assumptions. These insights form the basis of the next phase of Kumar's model of the innovation process where concepts are created and explored.

Explore concepts

7. Definable product attributes

The definable attributes of these new products are made up of three attribute categories: the determinant attributes, the credence attributes and the hedonic attributes. One of the first steps towards developing these new products was to define the determinant attributes of the product prototypes. Determinant attributes are the factors that define the product in the eyes of the consumer and which trigger their purchase. This understanding is crucial to afford growth from a regional to a national and potentially international market. This also requires the replication of the combination of physical components, as well as the emotive components outlined and prototyped within products for sale at *The Otago Farmers Market*.

Methodologically identifying determinant attributes was challenging and best handled through the combination of two of the three methods offered from Mark Alpert's attributes analysis model. The rationale for using the Alpert model was that it fitted with the overall ethnographic focus of the primary research for this project. The use of these two methods was to try and minimise bias in the consumer feedback that was gathered. Firstly, this involved the direct questioning of customers as to why they were purchasing the product, and secondly, the technique of observation and experimentation (Alpert, 1971). In this instance a product would be introduced and its sales observed. Adjustments to the recipe would then be made and reintroduced the following week with consumer reactions and sales compared. The determinant attributes of the products using this method were identified as ease of use, flavour, ethical harvesting and farming of the fish, price and novelty.

The concept that the consumers are not purchasing the product itself but rather the characteristics they contain (Lancaster, 1966) is reflected in the credence attributes of the product that were given by the customers. The credence attributes in this case are the non-physical components of the product that contribute both to the pleasure of purchasing (hedonic attributes) and the perceived value of the product. These mainly consisted of heritage and provenance values for this product. Establishment of the determinant and credence attributes of the original products allows the transition to concept development and building of a conceptual landscape of potential products (Figure 17).

7.1 Concept generation

Product development can be broken down into three interwoven stages: conceptual development, concept evaluation and the evaluation of operational restraints. Each of these stages uses a different methodology with the objective of strengthening the product development framework. The refined design of this framework is one of the main objectives of this report.

The first of these stages is concept generation. The free-form aspect of brainstorming for concept generation, while quite liberating, still needs to be framed to maintain focus. In response to this, a hybrid methodology was developed

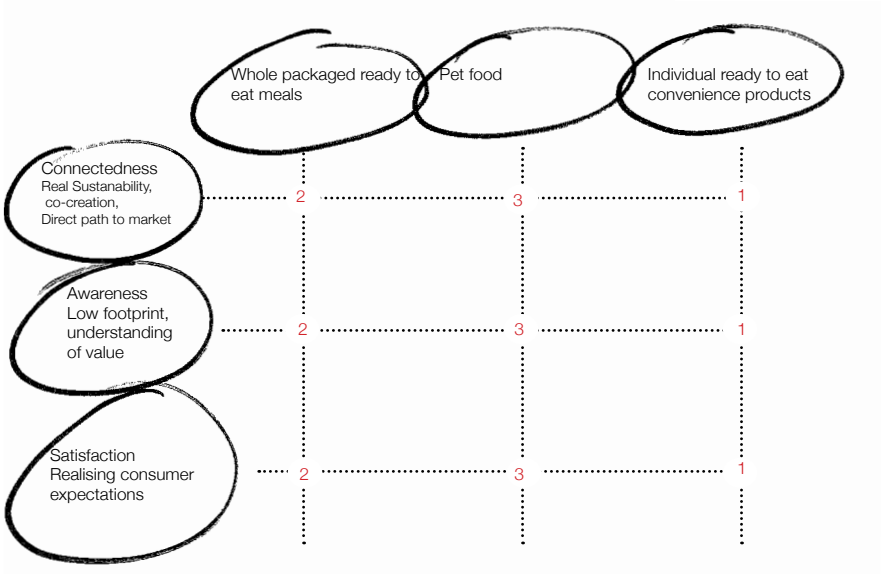


Figure 21: Comparative matrix of brainstorming session and established customer values

specifically to synthesize conceptual development. The more robust aspects of Kumar's model, such as using comparative matrices, are used together with the more relevant components of the IDEO Design Thinking for Educators' Toolkit. The IDEO toolkit also has a series of overall guiding principles for brainstorming; these are to defer judgment, encourage wild ideas, build on the ideas of others, stay focused on the topic, have one conversation at a time and to communicate visually.

The ideation process is also dependent on insights that have been developed from the interviews that were conducted earlier with successful food producers. Without these insights the brainstorming and ideation process will fail to deliver the focused outcomes required (Figure 25). The initial step in this process was to clearly define the topic to be explored. This involved framing the issue, which in this case was posed as a question "Can we create ethical fast-moving consumer goods (FMCG) from seafood waste that carry the same product attributes as the prototypes?" To facilitate the brainstorming process a diverse group of professional chefs took part. This was to utilise both their creativity and knowledge of food and food products. The session took place in an empty class room with a whiteboard used to record ideas and was limited to 45 minutes to prevent fatigue. At completion of the session three strongly grounded concepts from a range of six were identified. The first concept was whole packaged ready-to-eat meals, which could contain a mixture of fish, vegetables and starches with possibly a sauce. The meals could be sold chilled and ready to eat, and stored and displayed in the chilled section of the supermarket. The next concept was pet food where fish could be processed into both wet and dry versions, with dry made into pellet form and displayed directly on retail shelves. The fresh version could be displayed in the chilled section of the meat counter. Finally, individual ready-to-eat convenience products could include pate, burgers, pies, all of which could either be displayed in the chilled or frozen sector of the supermarket.

7.2 Concept Evaluation

These concepts were evaluated against the established customer values. Again, Kumar's comparative matrix was used to gauge the relative importance of the relationships (Kumar, 2013) (Figure 22). The strength of the relationship is rated from a scale of 1 to 3: (1) being of Great importance; (2) Moderate importance; (3) Not important or relevant.

The outcome of this comparative matrix showed that the individual ready-to-eat convenience products would be the easiest to align with the consumer. A further brainstorming session was undertaken to explore different possibilities within this concept. This session revealed several ideas that all had possible merit: a seafood chowder, fish pies, seafood pate, salmon croquettes, salmon burgers/sliders, poached fish quenelles, and seafood sausages.

7.3 Operational considerations

The operational implications of these concepts, which are aligned with the identified consumer values, were at this stage considered. At this stage the operational components are just indicators to help guide decision-making and begin grounding it in preparation for its rapid prototyping. The operational aspects to be considered at this stage include speed of production. This includes considering how labour-intensive it is to produce, and would outsourcing of production be viable. Also, what are the possible price points and market value of the

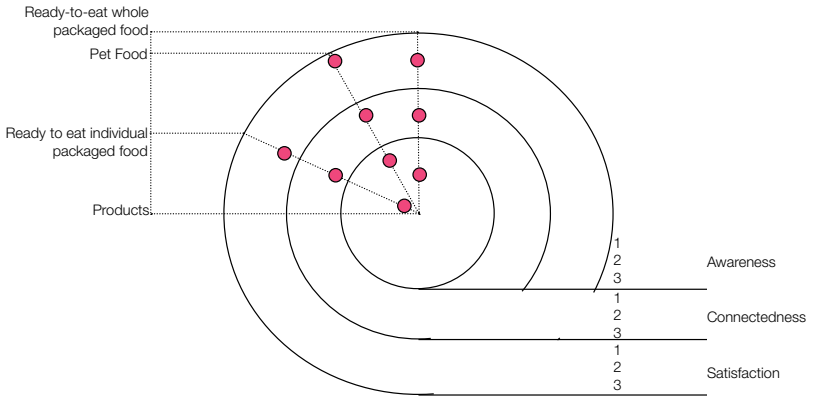


Figure 22: Condensed visual matrix of brainstorming session

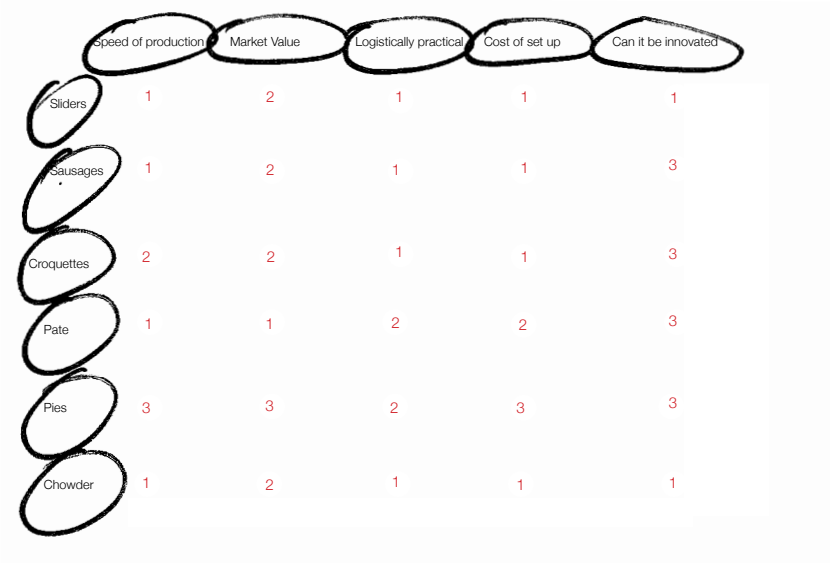
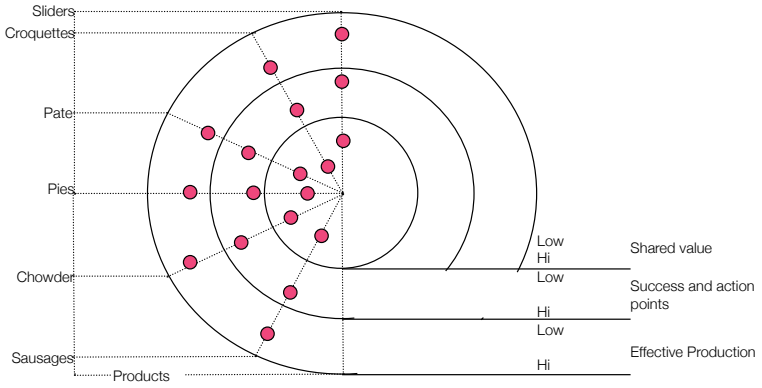


Figure 23: Comparative matrix of brainstorming outputs and operational considerations



Outputs

This comparison ranks product concepts in terms of their operational merits.
Pies (14), Croquettes (9), Sausages (8), Pate (9), Sliders (6), Chowder (6)

Figure 24: Comparative diagram of brainstorming outputs versus established shared value, success points and effective production

product? where will the product position itself in the market place? what are the market perceptions? and will the market position be appropriate for optimal revenue? Other considerations also include the logistics of distribution, such as will the product need a chill chain? will distribution be costly? and how will it be stored? Also to be considered is the cost of setup: will it require an expensive upgrade of existing equipment? How long will it take until those costs are covered? Again the strength of the relationship is rated from a scale of 1 to 3: (1) is of Great importance; (2) Moderate importance; (3) Not important or relevant.

After this evaluation it is possible to see that the chowder, sausage, slider and pate concept are worthy of further investigation. This is because their respective values shown in the matrix were the lowest and they will be the easiest to align with the shared value of the customer, operate within the success points from the case studies, and be produced quickly and effectively (Figure 24).

7.4 Refinement of concepts through extended value

Lastly, this section considers in greater depth the stakeholder context for each products with the objective of exploring the possibility of extending the credence attributes of heritage, providence and environment and their associated value.

7.5 Chowder from Fleur's seafood restaurant at Moeraki

Fleur Sullivan initially developed the chowder to use the waste from the local fishing fleet. From humble beginnings of being served from a caravan on the Moeraki coastline the chowder soon became famous nationally. Recently, its

profile has been further strengthened when Fleur demonstrated the product and discussed the rationale underlining it on the contemporary Australian television show 'Master Chef'. While it may seem that Fleur was acting solely as a celebrity endorsing a product, she was in fact acting as a representative of the product's rich environment, Moeraki. This is the same model of practice Fleur has employed in the development of all her distinctly regional restaurants, for example, *Oliver's* in Clyde Central Otago and the *Loan and Mercantile* in Oamaru.

The opportunity is to build on this regional resonance and to take a Fleur Sullivan branded chowder, and the story behind it, to a national audience while still maintaining its core values of reducing the waste from fishing boats.

The initial concept for *Fleur's Seafood Chowder* was based around an integrated supply chain, where the customer is receiving a quality product from the source with as little intervention as possible. This creates for the consumer a genuine sense of the product's providence and a transparency of ethics of sourcing, production and distribution. The strategy of this product would be to show that a food source considered as waste could be transformed into a desirable and scalable product while sustaining a small- to medium-sized enterprise. Successful expansion of this product would demand that at each stage of growth the environmental and cultural values remain imbedded in a consistent manner.

7.6 The Waitaki Salmon Burger/Slider

The development of this innovative burger (slider) would also be centred on the use of waste or by-products. In this case the innovation comes from the combination of waste from two previously unrelated commercial harvesting and production processes: the filleting of fresh water salmon and the unsold bread from an artisan bakery. While this product would not have the celebrity endorsement of Fleur, the intrinsic value of the product will come from the messages of sustainability and waste reduction. It will fit the "reduce, reuse, recycle" mantra that is used by the media and would also align itself with the three different demographics and consumer values outlined in Section 6. The burger/slider would serve as an example of how creating sustainable products can deliver economic solutions to real-world problems.

7.7 Smoked Salmon Sausage

In the process of creating a burger/slider, a secondary form of protein is harvested. This comes from parts of the main fillet that are missed during the filleting process; these can be used in the production of a smoked salmon sausage to create a product that has a high value at a lower price point. As with the burger/slider a major source of market leverage for smoked salmon sausage would be around the product being sustainably produced, however, there would be a far greater novelty value associated with it than the slider burger.

7.8 Rapid prototype modeling

There is also a further opportunity in the creation of these products to demonstrate a new model of practice for the rapid prototyping and production of foodstuffs. The ability to rapidly prototype foodstuffs and gain immediate feedback could potentially help to avoid the production pitfalls outlined in Section 3 and create a new success factor for producers. This production template could also evolve into a consultancy service for the writer where the rapid prototyping and validation of a foodstuff is required.

While the initial opportunity was to demonstrate that a resource that was considered waste, when approached from a design-thinking perspective, could be transferred into a value-added product. Distribution of these products past the regional level and into the national arena will validate not only the product but also the process of development. This will create a new template of development for SME food production enterprises based on innovation and the principles of human-centered design.


Realise offerings

8. Realise offerings

This stage considers how products may operate within respective markets and what is required to push the products from prototype to production. This requires a combination of strategic, operational and pragmatic considerations. Kumar's innovation model and in particular his "pilot design and testing" mode is of particular relevance to this phase. This mode requires a 'soft' launch and relies on the release of the product in a controlled situation where it can quickly be amended according to customer feedback.

8.1 Overview of production

While it is difficult to find data on new product releases, anecdotally, the majority of new products released are the extensions of existing product lines. It is also estimated that 80–90% of new products fail within the first year of production (O'Meara, 1961). As has been outlined in earlier sections the capital-intense nature of the traditional production model often causes the enterprise to be burdened by the costs of development by the time the product gets to market. In order to avoid this cycle the production model for these products has been innovated. Product development and research under this new framework will be conducted separately by a matched final producer. While initially this will put some pressure on profit margins of the product, it will avoid the enterprise entering the market place while carrying unnecessary debt. This innovation incorporates the use of lean production concepts.

8.2 Product development for chowder

One of the success factors of this product is maintaining the integrity that made it successful in the first instance; the production model has also been designed around this characteristic. As *Fleurs Place* is a licensed fish receiver it can legally on-sell fish received directly from the fisherman or, in this case, the fish frames that are left over from filleting the fish. These frames will be back-loaded from the Moeraki restaurant to Dunedin using *Kaan's* catering trucks returning to Dunedin after delivering products to Oamaru. The frames will be delivered to wholesale manufacturer *Pasta d'Oro* in Dunedin where they would be made into fish stock and chowder under licence from Fleur. Once the chowder is produced and packed, *Blue Water Products* in Dunedin will be used for dispatch and storage of the product.

8.3 Supplier set

Lindsay and Coral Kaan founded *Kaan's Catering Supplies* in 1991; they are one of five wholesale grocery distributors operating in the Dunedin area. Lindsay Kaan has taken the role of General Manager while his brother Geoff is the Distribution Manager. The company operates 30 vehicles throughout Otago, South Canterbury, Central Otago, South Otago and Southland. *Pasta d'Oro* is a Dunedin pasta manufacturer and wholesaler and was established in 1987. They also undertake product development and contract manufacturing work. *Blue Water Products* was established by former fisheries officer Ross Hutchison, Initially, the company focused on primary fish processing supplying wholesale, retail and food service. A sister company, Valley Foods, operates out of the same premises and is a distributor for Life Health Food, which operates the brands Lisa's, Naked cuisine and Bean Supreme. The linking of existing infrastructures means it is possible for the newly formed enterprise to focus on the development and strengths of the brand. It also reduces the amount of initial capital required for the venture to proceed (Figure 25).

8.4 Technical development for the production of chowder

As the chowder is currently being produced and consumed within a short period and within a restaurant (a controlled environment), it is necessary to explore the requirements to take the chowder from the restaurant to a wider retail environment and then consumed in a non-controlled environment. To this end it

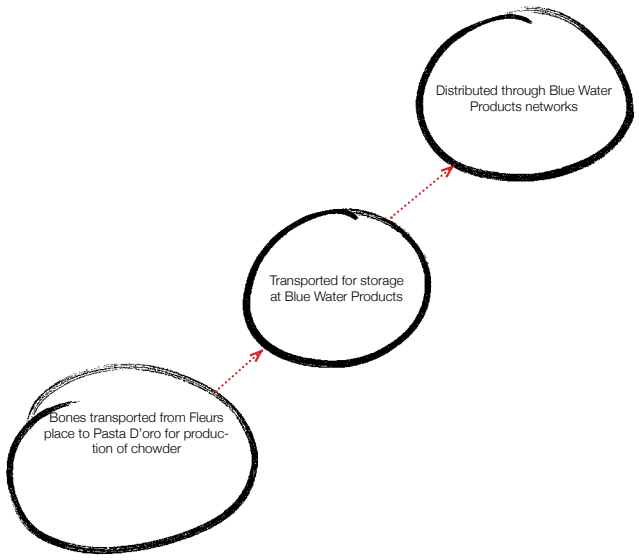


Figure 25: Supplier set for chowder production

may not be possible to do an exact replica of the dish that is served in the restaurant. Instead it may be a shelf-stable, branded and packaged version of the original dish.

In order to safely extend the shelf life of the chowder it will require pasteurization, the process in which pathogens harmful to humans are destroyed through exposure to sustained heat (O'Mahony, 1988). There is a relationship between the required temperature and time: the longer the exposure to heat, the lower the required temperature to destroy any harmful pathogens (Filipa, 2011). Traditional pasteurized foodstuffs, such as milk, have relied on very high temperatures (for a short time). However, this is not suitable for more delicate products, such as seafood chowder, as it can result in loss of colour and texture (University of Oregon, 1997). A similar, comparatively new method has evolved, known as Moderate Temperature Thermal Processing, and is used to extend the refrigerated shelf life of certain prepackaged seafood. The relatively mild heating conditions result in retention of the natural characteristics and properties of the fish (Hendricks, 1995).

A further method of preservation that has been used successfully in delicate products, such as seafood, is pascalisation. This is a process where excessive atmospheric pressure is placed on the product. This has the effect of killing the microorganisms and yeast spore present in the product and thereby extending its shelf life. However, there is no local plant capable of this process, so the additional costs incurred make it unfeasible. The use of moderate temperature thermal processing for this product would be the most appropriate and can also be undertaken by *Pasta Doro*.

The original chowder was designed to be delivered and consumed within a controlled restaurant environment. The redesigned chowder will have a shelf life of several weeks, if not months. For the product to maintain a consistent texture and appearance over this extended time means it must be stabilised. The use of stabilisers maintains the physical and textural integrity of the product during the transporting, storage and reheating of the product. This is achieved by preventing the separation of oils from the water component of the chowder. There are several different types of stabilizers, all with individual characteristics and properties. Those relevant to this project are firstly, starches derived from wheat, grains, legumes and potato. Secondly, pectin (E440), which is sourced from fruit, often used for thickening jam . Thirdly, Arabic gum (E414), which is extracted from the stems and branches of Acacia trees. Fourthly, locust bean gum (E410), which is extracted from the kernels of carob trees. Guar gum (E412) is taken from the seed of the Cyamopsis tetragonoloba acts as a water store. And lastly alginates (E400-4), which are extracted from seaweed, and Xanthan gum (E415), which is a microbial polysaccharide and has naturally high hydroscopic qualities. Stabilizers also help to add volume to product and, in the case of low fat foods, replace the fat component while helping to maintain the 'mouth feel' (the physical interaction between the mouth and product), which in some cases can add to customer satisfaction.

The process of modified atmosphere packaging involves the removal of the oxygen surrounding the product and replacing the void with an inert gas to prevent spoilage.

In the case of reduced atmosphere packaging, the product is surrounded by the vacuum creating an anaerobic environment preventing pathogenic growth and extending the shelf life. The disadvantage with reduced atmosphere packaging is that the vacuum can potentially crush the product.

The evolution of the chowder from a restaurant dish to a shelf-stable retail product will require the use of additives to make the product viable. The addition of preservatives has been avoided by using an innovative new technique, "moderate temperature pasteurization". Reduced atmosphere packaging will also be used in the packaging to extend the shelf life, and the use of stabilizers will be confined to plant-based starches. An important consideration of this stage of development is that the determinant and credence attributes established in Section 6 are adhered to, as these will be key factors in the success of the product as a retail product.

8.5 Technical development of the slider/burger

Development of the product took place at the *Blue Water Products* factory and uses the same joint venture and outsourced production model as *Fleur's chowder*. The difference in this case, however, will be that in the absence of celebrity endorsement the sustainable nature of the product will be used as a prime market lever. The frames are manually scraped with a spoon, or similar instrument, to remove the remainder of the flesh that has been missed in the filleting process. The ribcage is then removed and the remaining protein is mechanically recovered, which increases the yield from the fish and, thus, financial viability.

One of the points raised during the brainstorming session with the chefs was that for the slider/burger product to have appeal to the food service sector, it must be a 'ready-to-eat, cook-from-frozen' product. This would allow total portion control and maximum revenue for the kitchen as there would be no waste. To appeal to the retail sector, the product must be easily cooked and safe to consume at any stage of the cooking, for instance, half cooked on the barbeque; this requires precooking. Precooking is the method where the product is cooked in the process of manufacturing. In this way the product is sterilized and ready to eat from the packet. The two processes of precooking and freezing give the product a very long shelf life—has the effect of pasteurizing the product—and does not require a great deal of expensive equipment. Because of this process, it cannot easily be damaged allowing greater flexibility in the packaging, but it does mean that there will have to be an existing chill chain for distribution.

As the mechanically rendered protein from the salmon has a very soft, almost runny, texture, it is necessary to stabilize it in order to gain a uniform texture. This requires the blending of several products in order to get a pleasant and uniform 'mouth feel'. Unfortunately, the use of product stabilizers in this context has the potential to go against the customer values and attributes outlined at the start of development because of the negative perception of stabilizers. For this reason the following stabilizers have been selected for their natural properties: Sorghum, a natural, gluten-free cereal grain, which has a more common use as a form of animal feed. Historically, its uses include making a type of porridge or to make flat breads such as roti; Xanthan gum, which is produced by the fermentation of glucose and lactose. After fermentation is complete, the gum is precipitated from the growing medium using alcohol, and it is then dried and ground to a powder. It is extremely hydroscopic (able to absorb water); Rice flour is a type of very fine flour made by milling rice, and it has moderate moisture absorption properties; Potato flakes are dried and flaked—more commonly used as a form of instant mashed potatoes when added to water; Mineral salts are organically occurring salts that are used to alter the pH value of the proteins and allow the myosin within the protein to adhere to other protein strains giving greater fat and water retention.

8.6 Production of the slider/burger

As with the chowder, a 'lean' approach to the production of the burger is adopted, so the bulk of the work will be outsourced to *Agora Butchery* to produce the raw product. This will then be returned to *Blue Water Products*, which will manage storage and distribution logistics. As with the chowder, the supplier set is

a critical factor. The supplier set in this case will be, *Agora Butchery,* a Mosgiel butchery/delicatessen operating for approximately 10 years. They are well known for award-winning sausages and bacon. Agora also has licensed facilities for the processing of home-kill and wild animals. *Blue Water Products Ltd* operates a hub of food service outlets and was founded in the 1980s by former fisheries officer Ross Hutchison. It is a distributor for *Life Health Foods*, which operate the brands *Lisa's*, *Naked Cuisine*, *Bean Supreme*, and for *Sanitarium*.

As with the chowder, the same production methodology has been adopted for the production of the slider/burger (Figure 26). The innovation lies with using waste and by products of two industries to create a valuable product. And while it may seem counterintuitive, this methodology increases the inherent value of the product as it is directly aligning the product with consumer values and creating shared value with the consumer.

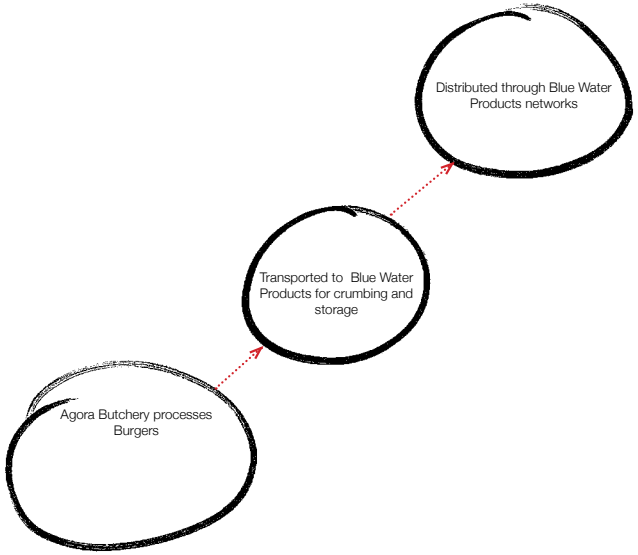


Figure 26: Supplier set for burger/slider production

8.7 Product development for the salmon sausages

The sausages use the scrapings from the salmon frames. These scrapings are very fine and so do not require mincing before being stuffed into sausage casings. Further advantages come from the fact there is no requirement to add filler binders or additional fat, as there is for a traditional meat sausage. This presents opportunities in several areas; the first is the ability to produce a comparatively healthy sausage that will appeal to the three demographic groups identified by the *Boat Shed Smoke House*. The appeal is further broadened because the sausage price point will be lower than standard smoked salmon. As the sausage is different from a traditional meat sausage in which an emulsion must be formed between the fat and the meat, there is little need for the use of stabilizers. Only a small amount of potato flakes are required to absorb liquid leached during freezing and maintain mouth feel.

The manufacturing of the sausage follows the same model that has been outlined for the slider/burger and chowder. Development is separated from the manufacturing by outsourcing the production, which is performed by *Agora Butchery* and storage and distribution by *Blue Water Products*. The product is smoked and then pasteurized in a modified atmosphere packaging; the sausage has a hang sell card wrapped around it and is to be presented vertically in a retail environment.

8.8 Market segments for the newly developed products

The main gauge for establishing a segment size is through sales data; this information is collected as scan data. The scan data in its raw form is sent to an agency such as *Nielsen* or *Aztec*. These agencies then begin compiling the information according to various categories, subcategories, manufacturers, brands and items. From here the volumes of sales can be compared with other products and trends observed. This information is then returned in the usable form to

the supermarkets that will then on-sell it to manufacturers. The only brands excepted from this process are the supermarkets' own brands, and this information is kept confidential. From this data the value of the market segment that will be entered can be estimated. It is also possible to look at the gaps between market leaders and other brands, not only in terms of units but also in value. This analysis can help to understand the marketing strategies of the operators working within particular segments. However, the costs associated with obtaining this information make it prohibitive for all but the large operators. To this end the writer had to resort to some innovative but gently 'unscrupulous' methods.

8.9 Gathering sales data on market segments

A small independent supermarket chain was contacted and the academic nature of the project explained. It was further explained that the academic supervisor was uncomfortable with paying for data; the chain agreed to supply sales data on the ready-to-eat seafood section. From this it became possible to extrapolate the sales to a national level and to judge the value of the market segment. Unfortunately, the information was limited because chowder is considered a winter stock item (it was summer at the time of writing), and due to the innovative nature of the sausage there is currently is nothing comparable in that market segment. However, the sales figures for fish cakes could be obtained, and it is reasonable to use these figures as a basis for sales expectations.

From the data supplied the wholesale value of the ready-to-eat fishcakes sold through *Foodstuffs New Zealand* would be approximately $900,000 per year without seasonal adjustments. From the same data supplied the value of ready-to-eat fishcakes sold through *Progressive Enterprises* (excluding Super Value and Fresh Choice) would be $963,600 per year, not seasonally adjusted. Looking at the turnover of fishcakes and multiplying it by the outlets and the average value of the products obtained these values. The raw data was obtained through *Moore Wilson* in Wellington.

Although the value of the market segment is based on a single product, it indicates nationally there is enough value within it to warrant further investigation. A soft launch, as will be outlined, will give insights to larger consumption patterns and show the viability of using larger supply chains for further expansion.

Market feedback

9. Market feedback

In this phase Kumar's innovation model has again been followed and in particular his pilot design and testing mode. Prototypes of both the burger and sausage were placed into respective markets in order to gain real world feedback.

The chowder is being produced, albeit in a different context; it is possible to evaluate its success or otherwise in *Fleur's* restaurant at Moeraki.

The purpose of this process is to evaluate the market acceptance of the products and evaluate any possible refinement of the products before production is increased. It also allows co-creation and development between a sector of the targeted demographic group and the writer. The Kumar pilot design and testing model is slightly different from straight market testing, as there is no control group with which to compare the data. This is in part because the Kumar model is interested in how the customer responds to the innovation of the product. The more accurate way to establish the customer acceptance of innovation for these products is to look at the volume of product sold rather than the total value of the product sold. This allows observation of the purchasing patterns without any distortions that may occur from looking solely at the value.

Based on the customer feedback generated from the branding exercise the strategic decision was made to place burger/slider into a food service environment. This would allow for a greater volume of the product to be sold. An advantage was that the product could be sold without packaging.

The smoked salmon sausage was placed into a retail environment.

As both of these products are appealing to a similar customer base, the strategy of placing the products in two different environments allowed consumer interaction within the different contexts to be witnessed.

9.1 Burger/slider testing context

The sliders were trialled at a local restaurant/café. This allowed observation of the customer responses to the product by the staff. As the chefs and owner were also involved, it meant that the practical and operational aspects of the product could be examined. The outcome of this process meant that before the product was sold to the wider food-service community, there would be certainty not only of the customer engagement but also that the functional components of the product work effectively.

9.2 Smoked salmon sausage testing context

The testing of the sausage took place in a national retail context.

Due to efficacies in production, this product is targeted directly at the large-scale retail market. Initially, there is little point in exploring the possibilities for food service, as the price point would be too low. For this reason two supermarkets were chosen, one in the centre of Dunedin and one in Auckland. This allowed for a comparison between the two outlets to try to establish a pattern.

This section discusses the point where the human-centred aspect of the development begins to translate into sales. While the Kumar model does not focus on the sales data as a traditional market test would, it is necessary to look into these as the sales give an insight into larger consumer patterns. However, because of the user-centered nature of the development, both anecdotal and solicited feedback is also included. Furthermore, ultimately achieving sales of these products is part of the rationale of this project, as the sales both validate the development concept and validate this model outside of the academic realm. Because the sales information is commercially sensitive, exact sales details cannot be given. However, sales trends for the products can be shown to indicate the consumption patterns.

9.3 Results of market testing of fishcakes and sliders

The overall feedback for the fishcakes was positive: the rustic nature added to the appeal for the restaurant owners as it removed the look of a generic mass-produced product and was in line with the identity of the restaurant. Owners commented that they liked the uneven sizing of the cakes, which added to their

homely nature. It was noted by the chefs that several customers quickly took to becoming regulars solely to purchase the fishcakes. The chefs' feedback was positive because the fishcakes were easy to prepare and gave a consistent result. The chefs also explained the fishcakes were easy to customize by adding a different salad or sauce to them, and the time it took to get them on the plate was fast. As a product the fishcakes were fulfilling all the requirements of the chef and customer. Sales of the fishcakes have continued to remain strong, and feedback for their development is continually sought.

9.4 Results of market-testing smoked salmon sausages

Initial market testing was confined to the farmers market because of costs, considerable insights were gained into how consumers interacted with the product. The first observation was that the concept of a fish sausage polarized people's opinions. The meat-reduced customer group embraced the product, with one customer claiming, "at last I can eat a sausage again", while others were pleased they could now be completely engaged in occasions such as barbeques, where in the past they would have been excluded from eating as it would be mainly meat.

On the whole, the feedback was positive; there was a little confusion over how to use the product because people were unfamiliar with the concept of a fish sausage, so guidance was required to remedy that. Sales of the sausages have now expanded to supermarkets and remain consistent over both outlets.

The feedback from the market testing has been positive with both products being very well received by consumers. This soft launch of the products allowed for their final prototyping before a full launch and gave feedback to be assessed and alterations made to the products without spending large amounts of capital.

Brand development

SMOKED
SALMON
FISHCAKES

USING THE BEST PRODUCTS
NEW ZEALAND HAS TO OFFER

MADE IN NZ

FOUR FISHCAKES PER PACKAGE

WITH NO ARTIFICIAL COLOURS, FLAVOURS, OR MSG.

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10. Brand development

This section will explore the brand development of the various products produced through the use of the prototyping and production template that has been developed over the course of this project. This brand development is done with the assumption that the brand and product have an entwined and symbiotic relationship. The project now encompasses three separate brands, *The Boat Shed Smoke house* start up which is operating at the *Otago Framers Market*, *The Wharf Street Kitchen*, another start up which is producing the salmon sausage and the salmon burger/ slider and *Fleur's of Moeraki* which involves the development of a retail brand based on an existing operation.

Keller's brand equity model provides an open, adaptive and consumer-centric template in which to frame brand development processes and understandings. The grounding premise of the Keller model is that the brand's influence lies in what customers have learnt, felt, seen and heard about it (Keller, 2001). The model is based around four basic but fundamental questions about branding. Who are you? (identity), What are you? (meaning), What about you? (responses), What about you and me? (relationships). These questions look to solicit responses that facilitate a deeper understanding of the brand and its relationship to the customer. They also relate to Keller's four steps of brand development, which both generate and create an understanding of the depth (purchase frequency) and breadth (places to purchase) of the brand.

10.1 Keller's four steps to consumer brand equity

The steps of the brand equity model help to create a clearer, more holistic view of the brand development. This establishes the depth and breadth of brand identity, creates brand meaning through strong associations with the customer, enlists positive assessable responses from the consumer through the product and forges brand relationships with customers that strengthen their loyalty. In order to generate these four steps Keller employs six building blocks that act as the foundations of brand development. Brand salience refers to consumer

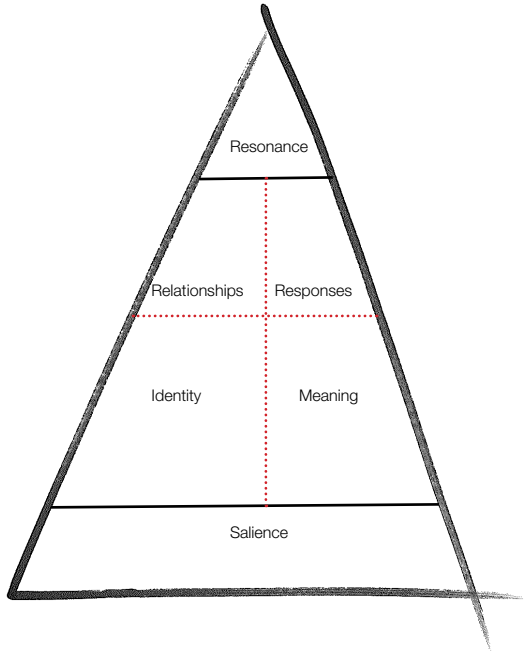

Figure 27: Kellar's Brand Equity Model

awareness of the brand, that is, how easily or often the brand is used and in which circumstances. Brand performance considers the physical product and the consumer experience, this experience can also refer to reliability. Brand imagery considers the ways in which the extrinsic properties of the brand meet the psychological and social needs of the customer. Brand judgments involve the consumer's personal opinions about the brand and the perceived quality and credibility of the organisation behind it. Brand feelings are the emotional responses and reactions to the brand. How does the brand make the customer feel about themselves and others? Brand resonance examines the ways in which the customer identifies the relationship that exists between themselves and the brand? Does the customer actively seek out the product?

Keller employs a matrix of emotional responses which identify a further six feelings. These are, warmth, fun, excitement, security, social approval, and self-respect. Keller also outlines a research method that can gain feedback specific to each of the concepts allowing insight into how the customer is interacting with both the brand and product on physical, emotional and physiological levels.

10.2 Keller's brand equity model applied

Established feedback mechanisms at the *Otago Farmers' Market* meant it was possible to use that network to gather information about the Keller branding model. The gathering of this information was aligned with design thinking and the overall "quick and dirty" ethnographic approach. It involved the questioning of hundreds of customers over several months. To generate insights from this mass of information the responses were rated from 1–5. With 5 being very relevant to customers and 1 being of little relevance to them. The average value of the responses was then calculated. The assembled questions have been mapped to allow a direct visual comparison between the brands.

Brand identity

These questions related to the salience building block and involved the question "how often do you think of this brand?" The *Boat Shed Smoke House* scored very highly, indicating that the consumers regularly thought of, or considered the products and the brand *the Boat Shed Smoke* House represented. This can in part be attributed to the regular customers. This was in contrast to *The Wharf Street Kitchen* and *Fleur's Place at Moeraki*, which scored much lower. This highlights that *The Wharf Street Kitchen* operates in the food service arena where there is little brand loyalty.

Brand meaning

The responses to the performance and imagery building blocks give us insights to the consumer's opinions of the brand meaning. The questions asked were "How courteous are the providers of this brand?" "How much do you like people who like this brand?" and "To what extent does thinking of this brand bring pleasant memories?"

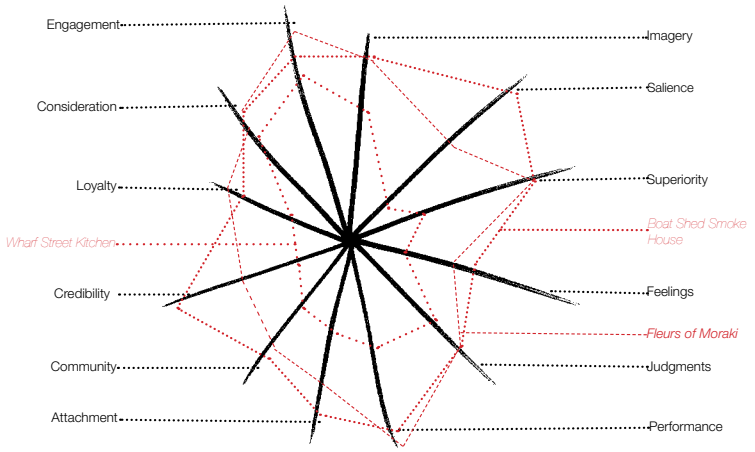

Figure 28: Diagram of customer responses to questions—Kellar's brand equity model in relation to The Boat Shed Smoke House, The Wharf Street Kitchen and Fleurs of Moeraki

While all the brands scored well in this section, there were two areas where it was apparent the consumer perceptions differed. The first was in response to the question "To what extent does the brand bring pleasant memories?" Here *The Wharf Street Kitchen* scored lower than the other brands. This can be attributed once again to the fact that it is operating within a food service arena where the brand is operating anonymously.

Further differences in the brand perceptions were shown in the words the customers were asked to associate with the brands. Customers associated 'down to earth' and 'honest' with *The Wharf Street Kitchen*, but 'successful' and 'upper class' with The *Boat Shed Smoke House* and 'charming' and 'outdoorsy' with the *Fleur's Place* of Moeraki brand.

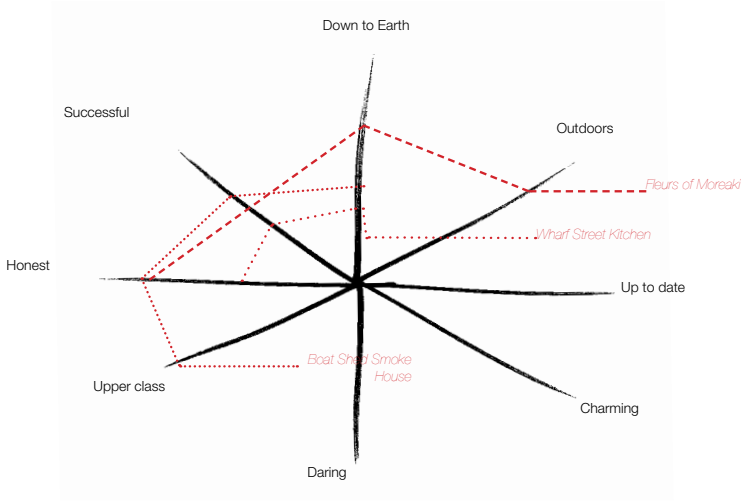

Figure 29: Diagram of responses to the feelings component of Kellar's Brand Equity mode

Brand responses

The responses to the judgments and feelings building blocks where triggered by the following questions, "What is your overall opinion of this brand?" "What is your assessment of the product quality of this brand?" "To what extent does this brand fully satisfy your product needs?" and "Does this brand offer good value?" Within the judgments section of the survey the *Boat Shed Smoke House* brand had the highest overall rating, and an interesting point was that the product quality *The Wharf Street Kitchen* brand scored lower than the other two brands, but its ability to satisfy the customers' needs scored perfectly. This may in some way demonstrate the compromises that are required to produce a price-competitive, food-service product.

Feelings

Responses were triggered by the questions "Does this brand give you a feeling of warmth, fun, excitement, social approval and self respect?" From these results it was possible ascertain that the *Boat Shed Smoke House* brand represents, security, social approval and self-respect. For *The Wharf Street Kitchen* security rated the highest and for *Fleur's Place* self-respect, social approval and fun were the strongest feelings the brand elicited in the customers.

Brand relationships looks at how the consumer and the brand interact and how that transfers into loyal and regular purchasing patterns. This involves the analysis of the loyalty, community, attachment and engagement building blocks. To facilitate this the following questions were asked, "Do I consider myself loyal to this brand", "Do I feel that this is the only brand of this product that I need", "Is this the brand I prefer to use", "I really love this brand, would I really miss this brand if it went away?", "This brand is special to me", "This brand is more than a product to me", "I really like to talk to others about this brand", "I am always interested in learning more about this brand", "Would I be interested in merchandise with this brand's name on it?" and "Am I proud to have others know I use this brand?"

All of the brands were nominated as the preferred brand within their relevant market segment. The generation of this loyalty can be attributed to positive attributes such as how the brands satisfy the consumer's needs and the co-creative development process.

All the customers indicated an attachment that went further than just the brand. This indicates an empathy and understanding of the values that support the brand. *The Wharf Street Kitchen* brand had a slightly different response as it is generating loyalty with the purchaser and not the end user, which is common in food service. The customer loyalty generated between the establishment and the customer trickles down to the producer.

Responses to notions of community were elicited by asking the questions, "Do I really identify with the people who use this brand?", "Do I feel like I belong to a club of other users of this brand?", "Is this brand used by people like me?" and "Do I feel a deep connection with others who use this brand?" The results revealed that the *Fleur's Place* brand had the strongest sense of community and The *Boat Shed Smoke House* had the highest score for people who identify with the brand. *The Wharf Street Kitchen* had the lowest sense of community; once again

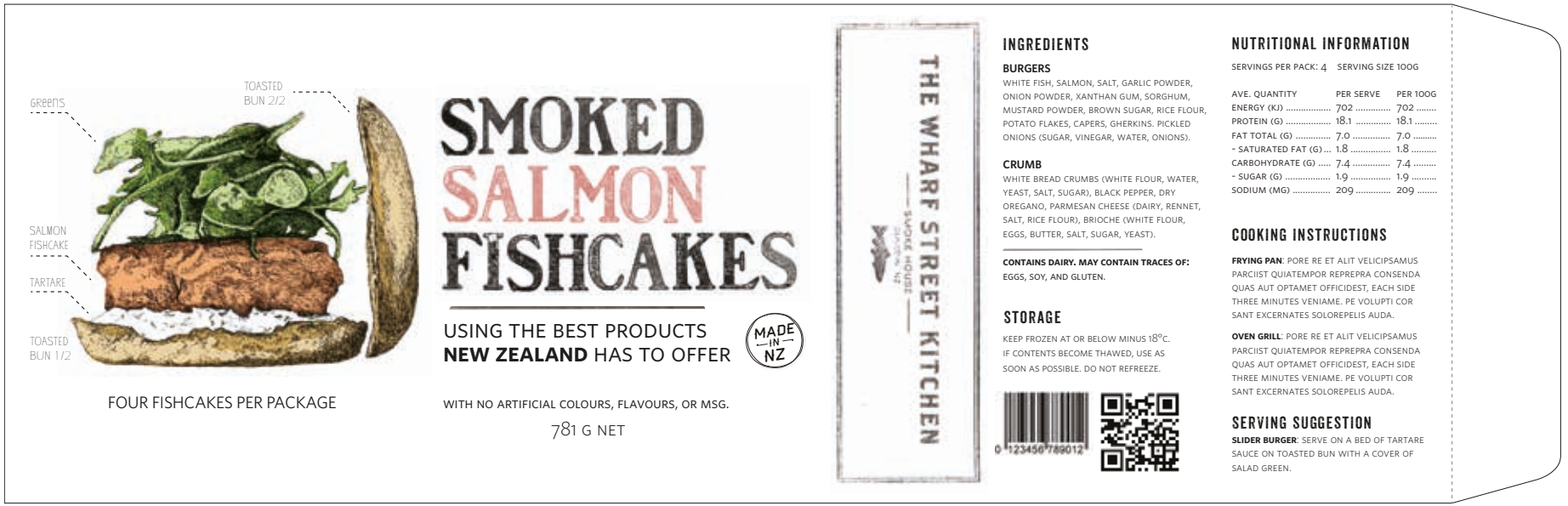

Figure 30: Finished packaging for burgers/sliders

Figure 31: Finished packaging for salmon sausages

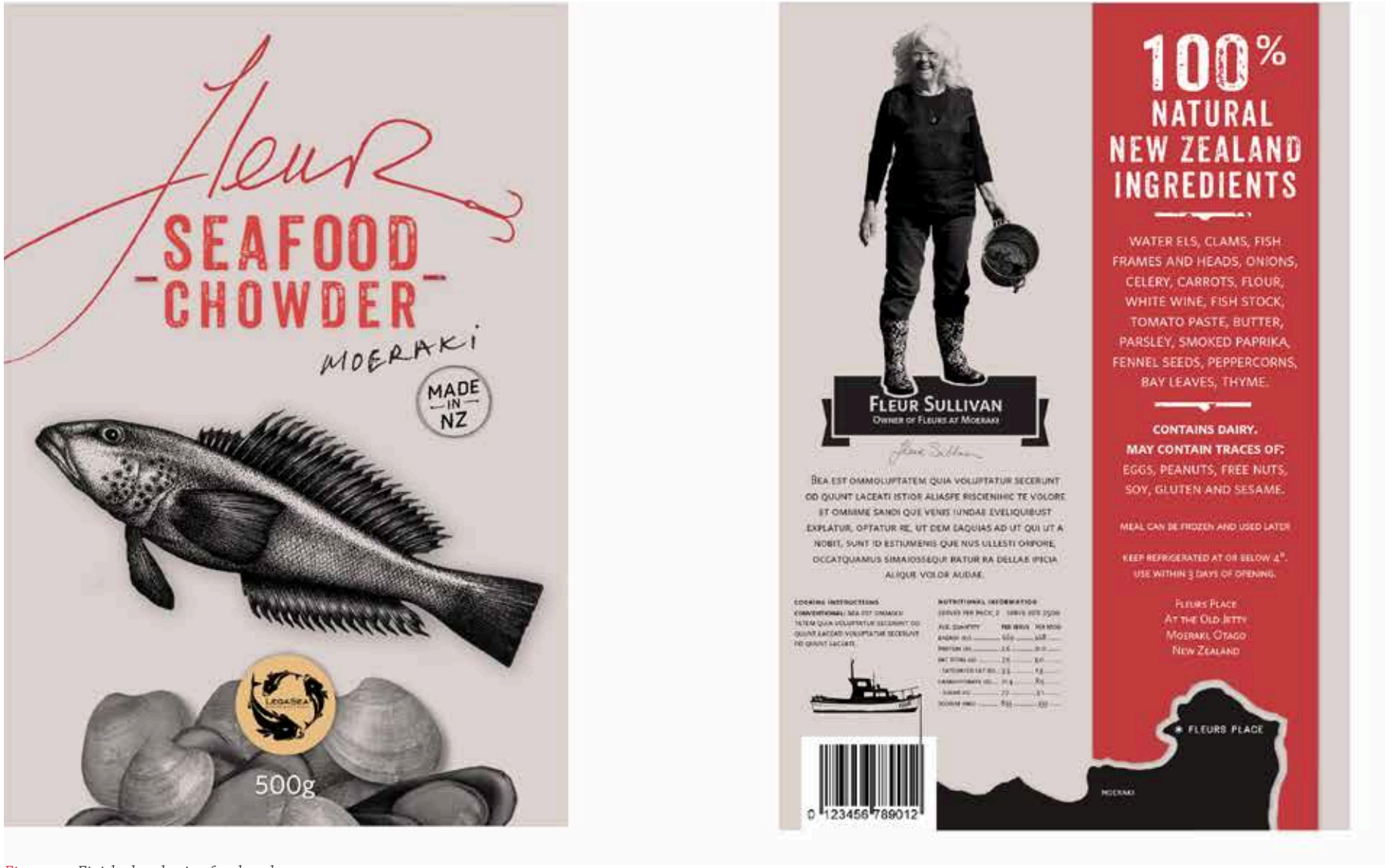

Figure 32: Finished packaging for chowder

this is a result of the anonymous nature of food service. Consumer engagement revealed that *Fleur's of Moeraki* brand was the most talked about, and *The Wharf Street Kitchen*, due to its anonymous nature, was the least likely to be mentioned.

The responses also showed that the alignment of consumer values at the start of production has percolated through to the customer and is encouraging the consumer to engage at a deeper level of interaction with the product.

The responses also showed the differing requirements for the food service sector and how the owners and chefs act as representatives to the customers and the understanding of both of those stakeholders' is imperative. *The Wharf Street Kitchen* whose product quality was rated lowly but whose ability to satisfy the consumer rated very highly demonstrated this. It also became apparent that the requirements for food service were different to those of consumers in other markets such as the *Farmers' Market* or supermarket. In the case of these two outlets it is possible for the product to be overt about its values but within food service the values have to align with both the restaurant and the consumer.

11. Conclusion

In order to discuss the characteristics of the products with greater clarity, it is best to consider the tangible and intangible aspects separately. While the intangible outputs represent to some extent the understanding of the consumer, the tangible outputs are the realisation of those understandings and act as an interface to the market place.

Several tools have been used to allow a deeper understanding of people as consumers and their motivations as drivers of design decisions. These tools have been organised into an adaptive toolbox (see Figure 33) applicable to product development in many different aspects of food development production. The most notable of these methods is a model of co-creation where development closely involves consumer input rather than being in isolation. This method of co-creation was developed in response to the appalling attrition rate in SME food manufacturing start-ups. Further intangible benefits have been the strengthening of links between members of the food production network throughout New Zealand. This broader understanding of context through human-centred design approaches has created a deeper understanding of the industry and its workings. Engagement with innovative leaders within food development and production sectors has led to a holistic view inclusive of both existing and potential customers and new ways of working. To this end the next project currently being brokered is with a local free-range pork producer. They require insight in to how to gain market share on a national level, how to put mechanisms in place to accurately develop consumer-orientated products and how to appropriately brand both the new and existing products.

The development of The *Boat Shed Smoke House* enterprise represents a real-world design-led experiment. While initially the business was meant to be an exercise in data gathering, and examining alternative production strategies, it evolved into a functioning and operational business within a prestige market. The development of the four products currently under *the Boat Shed Smoke House* brand all evolved through utilising the unique development process outlined in this document. The creation of the *Boat Shed Smoke House* also facilitated the financial means to undertake the primary research and design experimentation of this project. *The Wharf Street Kitchen brand* has been established to produce products for markets that The *Boat Shed Smoke House* could not compete in. These include national large-scale retail market and food service, and represents expansion of the ideas generated locally with The *Boat Shed Smoke House* into a national identity. *The Wharf Street Kitchen* sustainable practice involves the prototyping of food products for large-scale retail distribution utilising waste from other food industries. The conceptual development of the *Fleurs of Moeraki* brand has been completed. This enterprise framework is set up specifically to target the large-scale ready-to-eat market. *Fleurs of Moeraki* will complement the existing Boat Shed and Wharf Street brands, as they will all be operating in a similar market but aimed at different demographic segments thus creating an overall, laminated business structure. Distribution and production corridors for this enterprise are already in place and the relevant intellectual property secured in the form of design registration so that the product can be realized immediately. The development of this cluster, where each of the brands are operating in different market segments, allows them to quickly react to changing consumer preferences in an agile manner.

The Boat Shed Smoke House enterprise was initially devised as a method to gather real-world data and as such expansion past the regional level was never a priority. However, the process used to establish the enterprise could easily be adapted for different products in different environments. Consumer response to *Boat Shed Smoke House* products has been overwhelming. Demand well outstripped supply and it took several months before production allowed supply demand equilibrium. The local nature of the brand would allow for national expansion. However, it is worth noting that national expansion would place the

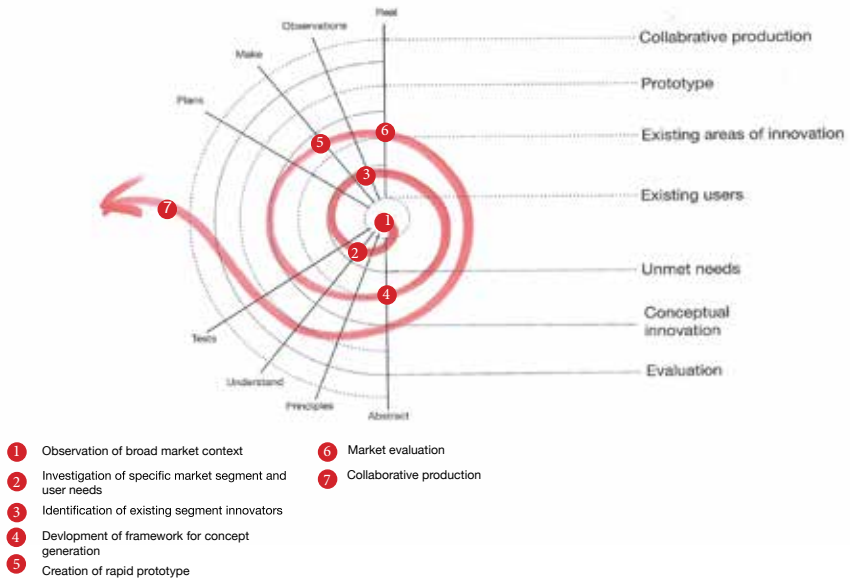

Figure 33: New product development template

products in direct competition with larger established market players and so it was a calculated decision not to expand the brand. The adaptive nature of product development utilised within this enterprise means it could easily be applied to other food products. *The Wharf Street Kitchen* demonstrated how adaptive the model could be; rather than utilise the established prestige brand, a second operation that targets different demographics was established. The development schematic followed the established model but produced a series of very different products. Customer response once again has been overwhelming and the strategic decision was made to restrict the volume of sales to allow for robust brand and product development. *The Wharf Street Kitchen* was always intended as a national brand. This demonstrates the adaptive nature of the design model, as it has been as effective on a regional level as a national level. The model in *Fleurs of Moeraki* has been utilised to take an existing product (albeit in a different context) and expand it from a regional to a national level.

While any product is the fusion and disposal of many ideas, the greatest output has been the realisation of the importance of a robust process. This is in keeping with the nature of applied methodology that has been adopted for this project. To this end the ability to replicate this process of development through the creation of a new and validated development template has ultimately been the most valuable output.

The primary aim of this project report was an applied exploration and development of an evolved model of food development and design, which sought to avoid the patterns of failure that are currently evident in SME food producers within New Zealand. Rather than representing an operational study into this issue, which by convention would exclude the end user, the mindset of the consumer and producer were explored and how, together through their interactions, they form a single community. This approach aligns with the general approach and specific methodologies of human centered design that considers user behaviour within defined contexts as a basis for developing design driven concepts within an enterprise framework. It should be remembered that all research findings and the insights they generate are interconnected so as to produce holistic solutions. This report and its design enterprise templates should be viewed as a living tool that will evolve, rather than a static piece of work representing solely the development of the products and business contained within.

Glossary

As with all industries there is specific language that comes with the territory. While every effort is made to avoid excessive use of industry terms and acronyms, at times it is unavoidable. The definitions given relate to this project so may be different from their everyday usage.

Agile: The ability of business to adapt rapidly to evolving economies through lightweight business structures.

By-catch: Non-target fish species unintentionally caught.

C.S.R.: Corporate and social responsibility.

Co-creation: The development of products in collaboration the eventual user.

Concept: An abstract idea conceived but unrealised. In the context of this project it also refers to a broad framework within which an enterprise may find itself working.

Design Thinking: The creative human centred process of incorporating contextual empathy and the needs of people into any design related solution.

Design: The process of creating solutions to new or existing problems. Within this project these come in the form of either a tangible product or an overall strategy to effect change.

Enterprise: An endeavour that may evolve into a business or company.

Ethnography: A research approach used be anthropologists based around observation in the field.

Fast moving consumer goods (FMCG): These are generally non-durable, low cost, high volume products including foodstuffs.

First-mover-advantage: The economic benefits gained by being the first operator in any market segment.

FOBL: Foodstuffs Own Brands Limited, a sister company of Foodstuffs New Zealand responsible for the distribution of own brand products.

Greenwash: The disproportional promotion of the environmental benefits of a product or service through media channels.

Human-centred design (HCD): A design approach that places end-users at the centre of development process.

Innovate: A new method or approach to an existing problems or issues.

Insights: A deep and specific understandings of a subject, generated through primary and secondary research.

Lean: A manufacturing philosophy where value is placed solely on the product the customer receives.

Learning first product design (LFPD): Utilisation of knowledge and prototypes to generate a deeper understanding of a concept prior to launch.

Market segment: A group of products that share similar characteristics.

Market share: Proportion of sales within a market segment held by a company or business.

MDE: Master of Design Enterprise, programme offered by the Otago Polytechnic School of Design.

Mind-set: A specific perspective with which individuals or groups frame a situation or opportunity.

NZTE: New Zealand Trade and Enterprise, a government agency.

Price point: The optimum sale price of a product that allows for competition with similar products within a market segment.

Quota Management System (**QMS)**: A centralised method of controlling fishery resources within New Zealand.

Rapid prototype: A quickly produced approximation of the final product in order to gather operational information.

Scalability: The ability to increase production and gain scales of economy.

Second-order effect: Where the purchasing of a product can create change in other areas of its production.

Shared value: The aligning of the value of the consumer with the value of the producer.

Small and medium size enterprises (SME): Enterprises that employ less than 19 employees.

Stakeholders: Any individual agent or group with an interest or involvement in an area or organisation.

Toolbox: A metaphorical set of skills or exercises that are use to undertake an intangible issue.

Total Allowable Catch (TAC): The volume of any given species of fish allowed to be caught under the QMS.

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