Product Design: Developing a System to Strengthen and Facilitate New Zealand Food Bank Relationships

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Rachel Emma Grout

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This study aims to develop a product concept of a Donations Management System (DMS) which would enable supermarkets to donate surplus goods to food banks in an efficient manner. Wellbeing marketing has been employed as the underlying structure of development; ensuring that, while providing benefits to one stakeholder throughout the product lifecycle (acquisition, possession, consumption, maintenance and disposal), no harm is done to any other stakeholder. Semi-structured interviews were conducted with seven supermarkets and five food banks to explore their current practices. The results of these interviews informed the development of a focus group which was then conducted with four food banks to explore their needs.

The study showed that the established practices of supermarkets are sufficient in waste management and donation management and as such a DMS is not appropriate for that sector. In the food bank sector however an opportunity to provide coordination services for inter-food bank supply and donation redistribution was identified. The key finding of this study is that food banks do not need 'new supply'; they need to better manage current supply through maximising what they do already. The most viable core form of a DMS is one which is able to transfer excess goods, thus decreasing food wastage and increasing the food supply to smaller food banks, allowing them to assist more citizens in need.

Key Words: Food banks, supermarkets, Christchurch area, donations management system, well-being marketing, product design

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Table of Contents

List of Figures

List of Tables

1 Introduction

For every product, there is a producer and a method of developing, testing and marketing product offerings. The process of taking an idea and developing a commercially viable product can take many forms and differs between markets, product types and organisations. The selected method of design in this study are the principles of well-being marketing; ensuring that no harm is done to any of the stakeholders, including the public, environment, and any groups already using the surplus goods, in the course of providing benefits to the two primary targets (Lee, Sirgy, Larsen, & Wright, 2002; Sirgy & Lee, 2008).

There are two key actors: food retailers, often represented by supermarkets, and food banks. Supermarkets exist to create a profit through repeated sales of food products. In this process, they generate an amount of edible food waste. Food banks exist as a welfare back-up, providing food donations to people in need. This research investigates the development of a donations management system (DMS) to enable supermarkets to donate surplus goods to food banks in an efficient manner.

The proposed DMS, managing the communication between supermarkets and food banks, has been assessed according to the well-being marketing philosophy of delivering satisfaction at each stage of the product lifecycle (acquisition, possession, consumption, maintenance and disposal). In doing so, it analyses the key actors' needs, alongside the perceived risks and benefits, and translates these into the future product's attributes and specifications.

Hence this research provides insights into the needs of supermarkets and the food banks in the development and implementation of a DMS. Needs and specifications of each level of the future product (referred in literature as core, actual, augmented product attributes (Crane, 2001; Levitt, 1980)), have been identified. The proposed DMS aims not only to improve the relationship between supermarkets (providing the goods donations) and local community food banks (distributing donated goods to local people in need) but also to reduce food wastage.

1.1 Problem Statement

This study investigates the specifications of a DMS for both of the key user groups- supermarkets and food banks. Supermarkets are large retail organisations that, through the course of their operation, create a surplus of food which must be disposed of. Food banks are a temporary source of welfare support that are in need of food. The proposed DMS seeks to join these two organisations together through understanding their operating environments. It is anticipated that this relationship will be mutually beneficial and will reduce the amount of food wasted while increasing food bank supply. Thus the problem being solved is-

What do supermarkets and food banks require of a DMS to ensure successful implementation?

1.2 Research Aim and Objectives

The aim is to aid the development of a DMS, a new software product to meet the needs of supermarkets and food banks engaged in a donations management program. The objectives unfold around understanding each party:

NZ Supermarkets:

- To determine to what extent NZ supermarkets encounter edible, surplus goods and, in case they do, how do they dispose of it?
- To determine whether NZ supermarkets are currently engaged in any donation programmes. If they are, what type of donation programmes do they participate in? If not, what is the rationale for their non-participation?
- To investigate supermarkets' willingness to participate in donation programmes. Where they would be willing to participate, what would be the core, actual, augmented product levels sought by supermarkets in the new product?

NZ Food Banks:

- To determine to what extent food banks experience shortages in goods supply. If they do, what seems to be the re-occurring goods shortage scenario?
- To investigate the core, actual, augmented product levels sought by food banks in the proposed new product.
- To estimate the feasibility to adopt the proposed new product.

2 Background

"Wellbeing marketing is a business philosophy that guides managers to develop and implement marketing strategies that focus on enhancing consumer well-being through the consumer/ product life cycle (acquisition, preparation, consumption, possession, maintenance, and disposal of consumer goods) and to do so safely in relation to consumers, other publics, and the environment" (Sirgy & Lee, 2008). Strategies developed under this principle are externally focused; rather than stemming from a focus on the producing organisation and its strengths and weaknesses, they are focused on the end user and how at each of the steps, they can experience some form of satisfaction with the product/service/benefits being offered. Using well-being marketing in the context of product development takes the philosophy from the realm of consumer marketing to that of designing a product for a business market.

2.1 Business Ethics and CSR

Well-being marketing is a consumer/user-focused business theory grounded in business ethics. It is employed within this study as a founding theory driving the development and delivery of a good for a business context. Through developing a business in a manner such as serving a social purpose, this study then draws upon business ethic principles, and the notion of Corporate Social Responsibility (CSR). CSR is a form of corporate self-regulation, integrated into the business model, which ensures active compliance with ethical standards and norms (Min-Dong, 2008). It holds that for a business operating out of CSR practices, profit and revenue are still important (as their generation guarantees the survival of the business), but they are not the only focus, and are deployed into other projects and causes, outside the walls of the business (Fife & Hosman, 2007; Min-Dong, 2008).

With respect to this study, well-being marketing is essentially 'housed' within CSR, a business framework, leading the development of a DMS and/or a resulting organisation. The product attributes, generated from an understanding of the needs of each party, comprise a DMS- a vehicle to achieve CSR and address social needs within the community- food waste within food organisations, and consumer access to food.

2.1.1 Social Entrepreneurship

While housed in well-being marketing philosophies, the proposed DMS is also associated with social entrepreneurship; the philosophy of directing (limited) resources into perceived opportunities in social development (Dees, 1998; Mair & Marti, 2006; Martin & Osberg, 2007; Sullivan Mort, Weerawardena, & Carnegie, 2002). The theory of social entrepreneurship relies on the entrepreneur becoming aware of not only an underserved social need, but also on their creative ability to direct business innovations, theories and processes into serving this need (Dees, 1998; Martin & Osberg, 2007). The underlying mission of this form of entrepreneurship is not the financial gains, but the fulfilment of social development and the furthering of the position of others in the community (Dees, 1998).

In order to provide the key users with a DMS which does no harm at any stage of the product lifecycle, the study is closely associated to social entrepreneurship. A business innovation is being applied to a non-profit sector in New Zealand with the overarching goal of furthering citizen's social development. The DMS is not the 'mission'; it is a potential vehicle to achieve the social goals. Through assessing the various ways that satisfaction can be provided at each of the stages of the product lifecycle, it is expected that an avenue for deployment of resources, and thus social entrepreneurship, will be the result of this study.

This study draws upon, not only the CSR aspects of developing collaborative partnerships, which seek to serve an unmet social need (Fife & Hosman, 2007; Seitanidi, 2008), but also the well-being marketing principles of doing no harm to any party involved within the collaboration (Sirgy & Lee, 2008). Thus the potential DMS is a vehicle to achieve cross-sector collaboration between supermarkets and food banks, and seeks to join them in a mutually beneficial manner, which leaves both parties in a state of satisfaction, while serving the social needs. Through focusing on their needs, and meeting their needs in the best way possible, well-being marketing allows for flexibility within the way in which the DMS is conceptualised or delivered, to ensure satisfaction is reached.

2.2 Food Distribution

Food security is the availability and access to nutritional and culturally acceptable food through constant, non-emergency sources (Allen, 1999; Anderson & Cook, 1999; Chappell & LaValle, 2011; Gera, 2004; Hamelin, Mercier, & Bedard, 2007; McEntee, 2009; Riches, 1999, 2002; Tarasuk & Eakin, 2005; WHO, 2011). This term has been widely defined and discussed throughout the literature, but all definitions agree on the importance of two key concepts; availability and access. Availability implies that food must be available to the citizen through relevant points of purchase (supermarkets, markets, stalls), on a regular basis (Riches, 1999). The second important concept, access, requires citizens within the community to have access to these food chain outlets- through the transport, knowledge and financial resources needed to complete the purchase (Anderson & Cook, 1999; Friel & Baker, 2009; McEntee, 2009; Riches, 1999)

In bridging the gap between the supermarket and food bank the relative system of investigation is that of the food chain, or the process of producing and getting a food product from the initial grower to the consumer and the relative waste accumulated within each step (Burch & Lawrence, 2005; Heller & Keoleian, 2000; Maxwell & Slater, 2003; Pothukuchi & Kaufman, 1998; Sobal, Khan, & Bisogni, 1998; Sporleder & Goldsmith, 2001). The provision of food in any geographical region is dependent on the operation of the food chain which must be comprised in such a manner that the value added by each party is not only desired by the consumer/end user, but done so in a cost-effective manner to ensure access to all parties.

Figure one depicts the Agri-Food Chain, which is a specialised version of the food chain. The link between Supermarkets and Food Service Providers is the focus of this research study. While this link is usually thought of in terms of transactional relationships with food sellers further down the food chain (such as supermarkets, restaurants and cafe's) this study focuses on food banks as a potential food service provider and looks at the donations of accumulated food surplus as a means of providing food to those in need within the community.

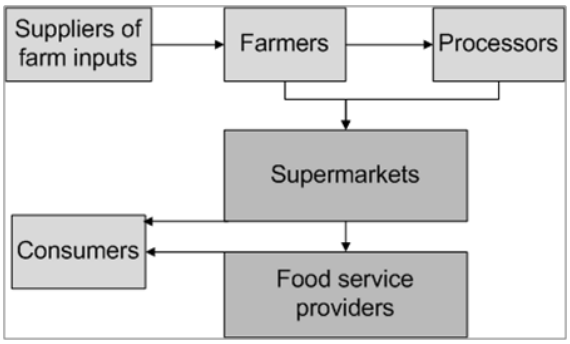

Figure 1 - The Agri Food Chain (Burch & Lawrence, 2005).

2.2.1 Supermarkets

Supermarkets are an important facet of the food chain as they provide a major source of access to food within any region. Their range, quality (both lower end, cheap goods and high end, expensive goods) and market position (size, form and structure) allows them to provide many different types of goods to the end user (Dixon, 1999). Through their corporate structure and the dominance of their chains, they comprise the largest point of purchase for consumers and their offerings and service is relatively standardised throughout the country (Maxwell & Slater, 2003).

A supermarket is defined as a retail food store that has annual sales of more than $2 million and has greater than 9,000 square feet of selling space (Chevalier, 1995). Supermarkets are an important source of affordable and nutritious food, offering a wide range of fresh produce, whole grain products and unprocessed foods at less expensive prices than convenience stores (Smoyer-Tomic, Spence, & Amrhein, 2006). Their acquisition of capital is undertaken through a philosophy of "engaging in repeated acts of exchange" with consumers (Dixon, 1999).

Based on the earlier definition, there are 327 supermarkets throughout New Zealand, operating under five brands (Foodtown, Woolworths, Countdown, Pak'N'Save and New World) (*Countdown*, 2011; *Foodtown*, 2011; *Our Brands*, 2009; *Woolworths*, 2011). This estimate does not include the Four Square brand, as there is no clear distinguishing between which of the 282 outlets are "small, neighbourhood shops...and (which ones are) large, grocery sites in regional and provincial locations" (*Our Brands*, 2009). These 327

supermarkets operate under two parent organisations, Food Stuffs and Progressive Enterprises, throughout both the North and South Islands.

2.2.2 Food Banks

In an environment where breakdowns exist in the food chain, there are a number of emergency sources of food that food insecure citizens can call upon for temporary support. Work and Income New Zealand (WINZ) or StudyLink (for students) are the main sources of formalised support which can provide food grants, where the items which can be purchased are somewhat controlled (for example no alcohol, cigarettes or phone vouchers/top-ups). Food banks are another system of temporary support. They operate without government support and rely on donations (made by individuals or organisations, in cash or kind) to provide food parcels to food insecure citizens.

Food banks exist as a welfare back-up, to provide redistributed food to the food insecure within the community (Riches, 1999, 2002; Tarasuk & Eakin, 2003). Core users are citizens within the community who struggle with the financial access to food (such as beneficiaries, the unemployed, or those on low-incomes) (Friel & Baker, 2009) and there are rules regarding the entitlement of individuals to these food parcels and the frequency to which they can be given, especially where stocks are limited (Riches, 1999; Zivanov, 2010).

Sources of food bank supply are either private individual donations (cash payments or stock), or larger corporate donations, stemming either from an unsellable food surplus or philanthropy (payments made additional to those occurring through the natural process of business) (McPherson, 2006). Where food banks gain the most is through the donation of redistributed corporate food surplus (Alexander & Smaje, 2008; Riches, 1999; Tarasuk & Eakin, 2003), as these donations are larger in size and enable additional members of the food insecure community to receive this vital commodity.

While one group of researchers has been optimistic in the statement that food banks exist with little to no running costs (ex (Tarasuk & Eakin, 2003)), another, contrasting set has stated that the costs are actually quite high (Mackay, 1994; Riches, 1999, 2002). Many food banks operate with donated goods, volunteer staff and transport, and on the premises of

the founding organisation (usually a church, but whoever has started the individual food bank). If the food bank were to be charged with the costs of labour, goods, rent, and transport, costs would be likely to overwhelm the operation. Some food banks have demonstrated relative success in their mission of deploying excess resources in the community (Riches, 1999, 2002), while others operate with shortages and are unable to cope with the demand.

The last estimate of the number of food banks within New Zealand, undertaken in 1994 by the New Zealand Network against Food Poverty, estimated there to be 365 (Mackay, 1994; McPherson, 2006). While some food banks operate under a large non-profit organisational body (for example, The Salvation Army), the organisation of the food bank "industry" is rather ad hoc, with no united organisation, development, or control over the market (Allen, 1999; Lipsky & Thibodeau, 1988; Riches, 1999, 2002). The disadvantage of this includes a lack of both unifying protocols and regulations (regarding receiving a food parcel), as well as inequalities in receiving food supply to redistribute (Riches, 1999, 2002). One food bank in a given location can build relationships with donors and access a relatively large pool of resources, while another, in the same region, can be experiencing shortages and be forced to either purchase deficit goods, or severely limit distributed parcels.

2.3 Research Need

While the primary objective of a supermarket is a focus on the repeated exchange situations with consumers in the creation of wealth (Dixon, 1999), their operation practices lead to a certain amount of surplus goods (Alexander & Smaje, 2008; Chappell & LaValle, 2011; Hodges, Buzby, & Bennett, 2011; Tarasuk & Eakin, 2003, 2005; Winne, 2005). Research defines the term 'surplus good' in varying ways, but the definition provided by Alexander and Smaje (2008) will be used, which is simply "any product which is surplus to an ability to generate profit". There are many reasons for classifying a good as surplus (including near-to-expiry dates, damaged packaging or ordering error) (Tarasuk & Eakin, 2003). The challenge is in determining the method of disposal which provides the organisation with the greatest economic advantages, while at the same time not hurting the image of the organisation.

There is a need in the food bank industry to secure continued, regular food donations, enabling more food insecure within the community to receive the resources needed in times of emergency (Riches, 1999, 2002). Securing, not only food, but the right food for a healthy and balanced diet, requires some form of relationship management between food banks and corporate suppliers (termed here, supermarkets), who have a range of items which are classified 'surplus' on a daily basis.

This research study seeks to join the two organisations together and through redirecting supermarket surplus, provide increased supply to New Zealand food banks. Supermarkets waste edible goods for a number of reasons and disposal techniques see the destruction of produce, some of which is in an edible condition. The proposed DMS employs the quality control practices already in operation within each organisation to redistribute this food to citizens within need in the local community, and is discussed in the next section.

Undertaking this type of relationship requires CSR and sustainable business practices on the part of the supermarket to ensure that donations are made readily and enthusiastically, without fear of loss. Fundamentally, it is a corporate – non-profit collaboration, relying on the ethical values of the corporation to make valuable, lasting contributions towards the social advancement of the community. This study seeks to explore the key considerations for each organisation, the corporate and the non-profit, in undertaking such a venture which leaves neither party disadvantaged.

2.4 The Proposed Donations Management System (DMS)

A DMS concept has been developed by three Lincoln University web-design students as an answer to the issue of wasted edible foods. Following the concept development system used by Microsoft (Cusumano & Selby, 1997), the DMS will now be described in terms of the vision statement, goals for the product and the activities to be supported by the product features.

The vision of the DMS is to sustainably increase the food stock of New Zealand food banks by building relationships with supermarkets in their local proximity, allowing regular, frequent donations to take place (Hou, Almutairi, Yakubu, & Grout, 2011).

2.4.1 Goals

The Lincoln software serves four underpinning goals. These are to:

1. Reduce chronic hunger and food waste through the redistribution of surplus goods;
2. Reduce the amount of food which is being wasted;
3. Strengthen the capacity to reduce hunger and provide for those in need;
4. Provide access to quality food (Hou et al., 2011).

2.4.2 Supported Activities

The Lincoln software was developed around five key features:

1. Provide a platform by which supermarket managers can upload donations onto the DMS, to be viewed and accepted by local food banks (Hou et al., 2011).
2. Allow dual communication, whereby food banks can request certain items from their donors (where shortages exist) (Hou et al., 2011). This function could sidestep the food bank need to purchase food (from supermarkets or food wholesalers) for redistribution.
3. Allow food banks to submit donations of excess goods onto the system, reducing the waste within food bank supply (Hou et al., 2011).
4. Enable supermarkets, over time, to select their 'preferred destination' once the relationship has been built. This feature encourages food banks to be 'professional' and rewards those who collect the produce on time, or as stated. This mitigates the sometimes unreliable impressions due to volunteer staffing (Riches, 1999).
5. In time and after consultation with the parent company (of the supermarket), the software will be developed to be able to be compatible with the inventory management system. This will allow the system to automatically 'check' which items are nearing the expiry date, and upload these onto the software.

2.5 Structure of this Study

The discussion turns now to the current and relevant literature with regards to both the supermarket and the food bank. Firstly the acquisition of new technology is considered in terms of the process of adoption, the inherent risks and specifically the risks of participation

in a philanthropic effort. Satisfaction which arises as a result of possession is the next consideration. This comprises of all the benefits which arise as a result of owning the new technology for each party. Consumption (or use of the product) is considered with regard to the actual features which comprise the product delivered to the key actors. Maintenance is discussed next with respect to the two options available to keep the system in working order; proactive and reactive methods. Disposal of the system is the final consideration, looked at both in terms of redundancies and exit strategies for each party.

Following the literature review is the study design section. This outlines the qualitative approach taken to data collection. Specifically a two phase is employed. In the first phase semi-structured depth interviews are conducted with each party to determine the need of a DMS. In the presentation of the results and discussion for the interviews and focus group the decision was made to present the findings separately. The formation of the focus group relied heavily on the results of the interviews, and for this reason, the interview method, results and discussion are presented first, followed by the focus group method, results and discussion.

Through the interview stage, there existed three potential options for a DMS. It was determined that for supermarkets a DMS is not feasible. The focus group explored the three options arising from the interviews, and the results were discussed within the framework of the well-being marketing model.

3 Literature Review

This study employs wellbeing marketing as the basis for development of a new DMS between New Zealand supermarkets and food banks. The five main steps of the product lifecycle are acquisition, possession, consumption, maintenance and disposal (Lee et al., 2002; Sirgy & Lee, 2008). While well-being marketing is usually a concept discussed with relation to consumers, within each of these steps the core ideas of this concept are instead applied to the design of a software product with organisations as the target end users.

This literature review presents the main concepts relevant to the two organisational markets and how consideration or inconsideration of key areas impacts the satisfaction experienced as a result. Each stage of the product lifecycle is considered in order to identify the risks, barriers and specifications needed for the end user to arrive at a state of satisfaction. Through accessing relevant literature the areas which present a degree of risk to each party have been identified for further investigation.

3.1 Acquiring New Technology

The initial requirement for a well-being marketing project is that the organisations involved display 'satisfaction with acquisition'. Satisfaction with acquisition follows that consumers are satisfied with the experience of shopping, in terms of quality, price, hours and the provision of services within stores in the local area (Lee et al., 2002; Sirgy & Lee, 2008). Applying this term to the acquisition of a software service in a business context, the purchaser would exhibit satisfaction in terms of the process of acquiring new organisational technology including the factors of price, information available (in terms of their needs to be met), the location of the provider and the match with current organisational objectives. In the following discussion the process of acquiring new technology within an organisation is described providing additional insights in the context of a non-profit, small or medium enterprise (SME).

3.1.1 New Information Technology

Information Technology (IT) is the employing of computer-based hardware and/or software and the use of its features and functions to accomplish some task, process or operation (Ritchie & Brindley, 2005). Information (and communication) technologies can significantly impact the market-oriented dimensions of products and services as well as manufacturing processes, working practices and management practices (Ritchie & Brindley, 2005). IT not only automates practices and processes but also has the ability to fundamentally reshape the way business is done (Fink, 1998). IT is essentially a continuum of innovations which the organisation could choose to adopt.

In the consideration of 'New Information Technology' there are three different types of new technology. These are base technology (technology that is already embodied in the products and processes of the company); new-familiar technology (the company is familiar with industry technology, but it is not actually in place); and new-unfamiliar technology (new to the industry and the organisation) (Yeo, 1995). In the case of the proposed DMS the decision is currently classified in terms of new-unfamiliar technology; it is new to both the industry and the company and there is a large informational discrepancy to overcome (Yeo, 1995).

3.1.2 The Process of Adopting New Technology

Sourcing, assessing and implementing new technology is an important component to many competitive organisations as it allows them a number of perceived benefits including efficiency gains, increased management effectiveness and improved business performance (Fink, 1998). The difficultly in adopting new technology is not in finding innovative ideas to implement as there are numerous creative new systems developed, but it is in determining which ones are relevant to the business at hand. The process of selection, the determination of which technology pieces are relevant and achievable and which are not, is an assessment of the feasibility of the new technology with regards to business practices, finances, other technology and knowledge to name a few (Durrani, Forbes, Broadfoot, & Carrie, 1998).

The new technology acquisition process is a five stage process. The steps are establishing marketplace specifications (of the technology, and what the customers need), identifying technology solutions (the full range), classification of the technology solutions, assessing technology sources and making the technology acquisition decision (Durrani et al., 1998). As firms move through this process and analyse the technology in the context of current operations and products and their firm (in terms of resources (human and financial), powers, services and relationships (customers, suppliers and stakeholders)), benefits are gained through rejecting impractical alternatives and implementing efficiency providing systems (Durrani et al., 1998; Fink, 1998).

The proposed DMS is currently staged at step one and two within supermarkets and food banks as there is currently no alternative to this new technology. While there are other donations systems in operation, these are largely focused on relationship management, where monetary donations from certain groups or donors are tracked through time and online payments are allowed (for example see http://www.dnlomnimedia.com/donation-mgmt-systems.html). The proposed DMS is expected to facilitate the communication between the parties and forms the basis of communication.

In order for the proposed DMS to be considered by each party, marketplace specifications need to be established and the total set of technology-based solutions needs to be determined (if they exist). Communication to each party needs to be done in a way where their specifications, in terms of needs and benefits, are clearly understood. These considerations lead to the first set of research questions:

Research Question One: Is the proposed DMS a feasible solution to each party in the building of a strategic relationship?

- **a.** NO: Could the DMS be applied to another user group or in a different format?
- **b.** How important is the relationship (between the DMS users) to each party in solving the issues of food removal/distribution?

3.1.2.1New Zealand Food Banks

A non-profit organisation is a body which meets a social need in the community, without generating profit. Any financial resources which are accessed- either through funding or investment- are used to build the organisation and serve social needs within the community. When looking at literature for technology acquisition, with specific regard to non-profit organisations, the offering is limited. Non-profit organisations do offer important differences to their SME counterparts (such as limited resources, staff, training, availability of infrastructure, to name a few), and these limitations are similar for a SME, while of a different nature.

For the purposes of technology acquisition, food banks have been classified as a SME, as the depth of the literature available on the process of acquisition is invaluable. Where research directly relating to a non-profit organisation has been accessed, this will be presented also.

3.1.2.1.1 SME Technology Adoption

According to the New Zealand Ministry of Economic Development, a New Zealand SME is one which has fewer than 19 employees; and 92.7% of New Zealand businesses lie within this definition (*Small and Medium Enterprises (SMEs)*, 2010). When considering the SME and the acquisition of new technology, often one person is responsible for the sourcing, development and implementation of new technology (Fink, 1998; Ritchie & Brindley, 2005). New Zealand food banks fall into the classification of the SME and their processes are different from that of larger corporate organisations. New Zealand food banks can be considered both a non-profit organisation and a SME, and within this study, in consideration of adopting new technology, the SME classification has been selected. This is because of the depth of information available with regards to the organisational processes employed.

Fink (1998) in his research of the adoption of information technology in the SME case identified a three phase process whereby the risk of technology acquisition can be minimised through specifying an acquisition process for SMEs. After the completion of each phase the decision (of whether to continue or not) can be assessed. The three phases are:

1. A determination of the potential benefits and the organisational culture with regards to IT adoption, and the specific options available to the firm;
2. A determination if sufficient internal resources are available and appropriate procedures exist for the successful selection and implementation of new IT; and,
3. An evaluation of the external environment, support and resources available, especially where it is feared they are lacking (Fink, 1998).

With regards to the non-profit literature which was accessed, the process was smaller, and two-part; a strategic alignment with the organisation, and the prioritization of resources (including investment, staff and infrastructure) (Finn, Maher, & Forster, 2006). These two form the first two points of Fink (1998), but it is still important to keep the third point, the external environment, within this study. Because the DMS is an intangible tool rather than a physical good, the external support offered is important to ensure that the first points are achieved, and continue to be met.

The differences between SMEs and larger firms in the adoption of new technology can be described as environmental, organisational, decision-based and psycho-sociological (Fink, 1998). These differences form the foundation for the SME new technology acquisition process and are described as follows:

- **Environmental:** SMEs operate in a relatively uncertain environment. Their organisational size and structure makes them more susceptible to changes within the marketplace and often survival is one of their primary goals.

- **Organisational:** SMEs have limited human, financial and material capital. Caldeira & Ward (2003) identified a second 'determinant factor' in the adoption of technology, termed technological capacity; "the Information Systems/IT competencies (people and knowledge) available within the SME". The development of in-house skills is limited by the hiring of qualified technicians and the associated resource costs (Caldeira & Ward, 2003; Fink, 1998; Woolgar, Vaux, Gomes, Ezingeard, & Grieve, 1998). Where these specialists are not available in-house the firm looks to services available outside the firm (Caldeira & Ward, 2003; Fink, 1998) of which the costs are often not as important as the information given (Fink, 1998).

- **Decision-based:** Decisions are made by one person on a short-term, reactive basis. The degree of difficulty in managing technological innovations depends on the company's ability to solve technology related problems (Yeo, 1995). SMEs have a limited capacity for self-sufficiency in terms of research and development and are heavily reliant on outside firms in solving technology related problems (Woolgar et al., 1998). Technical difficulties and a lack of IT knowledge often depress the rate of adoption within SMEs (Ritchie & Brindley, 2005). Solving technology related problems in a SME exhibits a high degree of difficulty.

- **Psycho-sociological:** Often the owner/manager holds a dominant position and sets the tone for organisational culture with relation to IT (Fink, 1998) and their view, attitudes and opinions towards the adoption of new technology will be replicated throughout the whole organisation (Caldeira & Ward, 2003; Fink, 1998). Caldeira & Ward (2003) state that management perspectives are a determinant factor of new technology adoption, crucial for the success of implementation. Management need to present an optimistic front, willingness to change and a desire to adopt and learn new processes.

In the process of acquiring of new software, each of the organisations will have different processes in place to determine suitability. Therefore, it is important to know how able each organisation is to implement new technology, and how each of these areas discussed above impacts this ability. Therefore, the second research question group is:

Research Question Two: How able is each party to embark on new software?

a. What are the environmental, organisational, decision-based and psycho-sociological issues considered in the process of acquiring a new technology?

3.2 Possession of New Technology

Satisfaction with possession refers to the "satisfaction which arises from the ownership of a particular class of goods" (Lee et al., 2002; Sirgy & Lee, 2008). Both the supermarket and the food bank will experience some sort of internal benefit which arises from the ownership

of the new technology and the features and functions provided. This section covers the ways in which the supermarket and food bank can experience satisfaction with the ownership of this new technology and also the potential barriers to this satisfaction which might be overcome with sound product design planning.

3.2.1 Possession Satisfaction in the Supermarket

The first perceived feeling of benefit arising from ownership of the proposed DMS is the positive internal feeling of 'doing the right thing'- donating goods to the poor in the community. These actions are in line with two of Ross's prima facie ethical duties, beneficence (actions which are done for the benefit of others) and non-maleficence (to 'do no harm' in the process of business) (Shope, 1965). Following these duties allows managers to make decisions which lie outside of the primary function of the business and further the position of others within the community. This allows them to 'feel good' about the decisions they are making within their position of business manager, and effectively and efficiently use the by-products of operation.

Corporate philanthropy as earlier defined has no explicit financial benefits to the organisation (Collins, 1994) and the benefits which arise are of a different form. For example one of the key benefits to an organisation is the increase in public image which arises as a result (Eikenberry, 2009; File & Prince, 1998; Seitanidi & Ryan, 2007). A positive public image can lead to increase sales/market share (through attracting new consumers) (File & Prince, 1998) and it has been said that the receiving non-profit becomes a "strategic partner for the donor" providing the means to achieving some sales goals or targets (Eikenberry, 2009).

There are two risks which could arise for the supermarket at this stage of the product lifecycle and these are the perceived risks of a loss of future sales and a fear of incompatible technology. In areas where there has been a sudden substantial increase to the amount of food provided to food banks, especially of commodity items where the prices are increasing (ex. milk and cheese), future sales can be hindered by people turning to the 'free' option rather than purchasing supplies (Weisbrod, 1997). While food banks could maintain entitlement rules to ensure that the supermarket's philanthropic efforts are not at the cost

of future sales (Riches, 1999; Weisbrod, 1997), it would be beneficial to understand the extent to which this outcome could become a barrier to the implementation of a DMS.

The second concern- a fear of incompatible technology -follows that as supermarket managers are entering this highly technological age where there is an 'app' for everything new technology adoptions need to work in conjunction with the current systems in place. Finding technology solutions to implement is not necessarily a hard task, the challenge is in determining which are relevant for the business at hand (Durrani et al., 1998). The supermarket may want to be fully aware of what the system is achieving, how it works and what kind of 'technical knowledge' is needed by the end user (Durrani et al., 1998); whereas in other cases the functional operation of the system could influence satisfaction without any prior knowledge.

3.2.2 Possession Satisfaction in the Food Bank

For the food bank, relationships leading to either increased supply or increased control over supply are the primary source of satisfaction. Recently it has been acknowledged both in the media and in current literature that food bank supply is anything but regular (Chilton-Towle, 2011; Pearson, 2011; Riches, 1999, 2002; Singer, 2009; Tarasuk & Eakin, 2005; Thang, 2009). Food banks consolidate the surpluses from a number of sources and because of this, supply can be irregular and infrequent (Riches, 2002). In overcoming this need, food banks often resort to purchasing food (Pearson, 2011; Riches, 2002), but this is dependent on the financial resources available. The primary goal of this project is increasing food bank supply through the redistribution of food surpluses (Hou et al., 2011). The proposed DMS may result in a degree of satisfaction from receiving help to build the donor-recipient relationship.

There are two key barriers to successful implementation on the side of the food bank; building the system into their core operations and sustainably increasing supply. Akin to the supermarkets need but, perhaps, at a different level, food banks will need to know how to operate the system in the most efficient manner, understand what benefits are being delivered and have the knowledge and complementary equipment necessary (computer,

internet and cell-phone) (Durrani et al., 1998). Once the system has been built into the core operations of the food bank, regular use is more able to follow.

Another risk to their operations is a potentially sudden and large increase in supply which would strain all aspects of their operation (Lipsky & Thibodeau, 1988). Large increases impact storage and supply facilities, the product sorting process and associated labour, and transportation (collecting the goods) (Lipsky & Thibodeau, 1988). A large increase could threaten the operations of the food bank through an inability to cope with the additional supply; therefore concerns about capacity need to be acknowledged.

In terms of possessing new technology, this study needs to understand how prevalent these barriers and benefits are, and whether they are able to be overcome through communication and DMS features. This then forms the third research question:

> **RQ 3:** What are the perceived barriers and benefits associated with possessing the DMS to each party?

3.3 Consumption of New Technology

Consumption satisfaction is the satisfaction that arises from the use of a good (Lee et al., 2002; Sirgy & Lee, 2008). In the context of this study, at this stage determination of whether satisfaction with consumption will arise is questionable. However, the areas of product design (especially as related to the development of a software package) can be assessed with specific attributes uncovered which need to be considered as part of the final product. This section will cover the main related theories of product design relative to the proposed donations management system and the key users; the supermarket and the food bank.

3.3.1 Product and Product Design

A product can be defined as the total package of benefits the customer receives upon purchase (Levitt, 1980). A product is comprised of both tangible and intangible benefits/attributes which combine to leave the consumer in a perceived state of satisfaction

(either directly after purchase or upon consumption) (Bloch, 1995; Crane, 2001; Levitt, 1980) Whether all the benefits received are expected or not (Levitt, 1980) each product has been purposely designed to at least meet the expectations of the consumer (Bloch, 1995; Keeney & Lilien, 1987).

Crane (2001) based on the work of Levitt (1980) breaks up the notion of a product into three separate layers; the core product (the fundamental benefit sought by consumers), actual product (the basic product which delivers those benefits) and the augmented product (extra services or benefits to the consumer in order to prompt purchase). These three product layers split the product into a set of the minimum possible specifications, the possibilities through which they can delivered and other specifications/services which can be done to attract and hold consumers (Levitt, 1980).

While there are many processes which could be employed in the design and development of a product the one which clearly aligns to this wellbeing marketing philosophy is a market-based approach. "A market driven product design process proceeds through the stages of formulating marketing and business strategy, understanding consumer desires within targeted markets, generating product concepts (that meet those desires better than competing products) and choosing one or more design for implementation (Srinivasan, Lovejoy, & Beach, 1997)". Through establishing the consumer specifications for the product first before any development has been undertaken the whole process can be guided around delivery of these (Chakrabarti, Morgenstern, & Knaab, 2004).

3.3.2 Product Design in Software Industries

It is important also to consider key concepts from within software design and how features and functions are defined within that body of literature. These concepts aid in the understanding of software as a product and the key features and functions which are specific to the development of a product of this nature. Software differs from other product classifications in terms of what attracts holds and captures the users especially as the 'product' is intangible. While users cannot touch it they still interact with designed features (colours, buttons, layouts, information and graphics, for example) and it is important to consider how these are defined in the body of 'software design' literature.

"In website design, hygiene factors are those which make the website functionable (sic) and serviceable, and whose absence causes user dissatisfaction. Motivators are those whose presence adds value to the website by contributing to user satisfaction" (P. Zhang & von Dran, 2000). Most of the underlying goals of a website are to provide the conditions and the environment that minimise user dissatisfaction and maximise user satisfaction by allowing them to focus on and achieve high task performance (Tarafdar & Zhang, 2006; P. Zhang & von Dran, 2000; X. Zhang, Prybutok, Ryan, & Pavur, 2009). Therefore in the development of software it could be said that hygiene factors act in the same manner as the actual product (the means which delivers the fundamental benefit), and the motivators as augmented variations (compelling the consumer into the purchase).

Two comprehensive research papers have been accessed which outline clearly each of the distinct areas which need to be considered in the development of software; Kim & Fesenmaier, 2011 and Tarafdar & Zhang, 2006. The work by Kim & Fesenmaier (2011) will form the majority of the structure of this section as within IT and technology time is the essential component (Caldeira & Ward, 2003) and their work is more current.

The six main areas of software design are; informative factors (the search for and access of information), usability factors (user-friendly design as seen in ease of understanding and navigation), credibility factors (cue-based trust displayed through cues (authentication logos)), inspiration factors (the degree to which the website motivates the visitor), involvement factors (interactivity with the website in the information search process) and reciprocity factors (allowance of dual communication) (Kim & Fesenmaier, 2011). Tarafdar & Zhang (2006) support the ideas within each area stating that the information provision, navigation, ease of use, personalisation and authentication are important attributes that users of service-based websites need in order to reinforce visitation.

Both the product design concepts and web-based design aspects are important to consider in this study. For the DMS to provide satisfaction with consumption, both of these areas are important to understand, and lead to the following research question:

> **Research Question Four:** What form should the proposed DMS take, in terms of core, actual and augmented product levels?

a. What web-based specifications of the DMS are needed by each party?

3.4 Maintenance of New Technology

Satisfaction with maintenance is defined as "satisfaction consumers experience when they seek to have a product repaired or serviced" (Lee et al., 2002; Sirgy & Lee, 2008). In the maintenance of software the work is done behind the scenes by the developers, providers, or a licensed organisation rather than being sought by the consumers. In this section the food bank and the supermarket have equal needs of maintaining the system and neither should be more or less disadvantaged if the other party needs to have the product repaired or serviced.

3.4.1 Definition

Software is a construct of interlocking concepts, data and relationships between data, functions, and consists of numerous (sometimes even millions of) lines of code (Brooks, 1987; Bulkeley, 1996; Castelli et al., 2001; Jiang & Xu, 2007; Kim & Fesenmaier, 2011). The process of changing software after implementation is termed software maintenance and is the act of "returning the system to its original state" (Goel, 2011). The three maintenance activities which are performed on software can be classified as correction (fixing any seen or perceived errors), adaptation (accommodating any external changes with regard to the users) and enhancement (adding new, additional features) (Goel, 2011).
Software is extremely complex, and even at this 'original state', is not completely free from error (Castelli et al., 2001; Jiang & Xu, 2007). Software which runs continuously for a long time-frame exhibits a progressive degradation of its capacity and performance, and an eventual system crash will follow (Ghoneim & Fahmy, 2003; Jiang & Xu, 2007). Jiang and Xu (2007) present a basic software aging process in which:

> "The software starts in a highly robust state (initial state S_0), which is a normal operation state and its probability of failure is almost zero. As time progresses, the software enters into probable failure state S_P, in which it is still operational but will suffer from failure with high probability. The software in probable failure state may transit to failure state S_F due to software aging. After recovery, the failed software will go to a robust state again."

There are two methods of software maintenance; reactive or proactive. Reactive methods wait until the system has crashed or experienced a failure of some description and then remedy the situation, whereas proactive methods implement strategies to prevent the system from crashing and continuously (at optimal times) maintain the system (Castelli et al., 2001; Jiang & Xu, 2007). Each of these and their implications will be discussed below.

3.4.2 Preventative Maintenance Methods

Preventative maintenance (also interchangeably termed proactive maintenance) is defined as the modification after implementation to detect and correct faults within the system before they appear as problems (Castelli et al., 2001; Goel, 2011; Vaidyanathan & Trivedi, 2005). Proactive methods do not actually contribute towards the efficient running of the system but they do however prevent the surfacing of serious errors and work at reducing any service errors which arise from faults – an inability to perform the required tasks (Goel, 2011; Jiang & Xu, 2007). Specific actions which could be performed include designing a change in the system, upgrading the system, making the system less complex or easier to interpret (Goel, 2011).

Aside from the modification of the system to simplify it or keep up with changing user specifications, two main preventative methods have been found to combat faults relating software aging; system rejuvenation and environment diversity. System rejuvenation takes a 'snapshot' of the system at a time when the errors are expected to be at their lowest point (typically at implementation or delivery) and periodically and pre-emptively returns the system to this clean state (Ghoneim & Fahmy, 2003; Goel, 2011; Jiang & Xu, 2007; Vaidyanathan & Trivedi, 2005). Environmental diversity is a similar process, whereby the errors are cleaned up through a modification in the running environment (Ghoneim & Fahmy, 2003; Vaidyanathan & Trivedi, 2005). The purpose of both these techniques is to implement planned and scheduled maintenance that aims to postpone and reduce operating errors (Goel, 2011).

One concern within this method is the selection of the 'optimal' time to perform these duties (both in the context of the users, and also the age of system) (Castelli et al., 2001). Adopting this technique requires the system to become periodically 'unavailable' as the

actions are performed (Castelli et al., 2001; Ghoneim & Fahmy, 2003; Goel, 2011). The users need to be considered as to what the heavy times of use are and when would provide the least inconvenience to those who are paying to use the system (Jiang & Xu, 2007).

3.4.3 Reactive Maintenance Methods

Reactive methods to software maintenance are largely event driven and focused on remedial efforts – fixing a system crash or bug which impairs the functionality (Goel, 2011; Jiang & Xu, 2007). The method undertaken in performing maintenance in this manner holds significant costs caused to the company through the system experiencing large amounts of 'downtime', users being unable to accomplish fundamental tasks and it can actually lead to software disposal through an "inability to complete service functions" (Ghoneim & Fahmy, 2003).

Inherent in the nature of software is the inability to provide a fully bug free system to an end user (Castelli et al., 2001; Jiang & Xu, 2007). There will always be residual faults within the operational software but the ones that lead to problems are those whose presence causes long term depletion (Castelli et al., 2001). Adopting a reactive software maintenance approach can therefore be considered dangerous as waiting for an error to present itself can lead to massive issues.

Providing software maintenance to users is not merely a choice between reactive and proactive methods, but an understanding and incorporation of both. While efforts will be made to ensure that disruptions are as minimal as possible, there is an acknowledging that they will, at times, be inevitable. The purpose of this next set of research questions, therefore, is to understand how impacting downtimes will be, and how resilient these potential users are. The questions, therefore, are:

> **Research Question Five:** How important is it that the system of goods donation and acceptance does not fail?
>
> **a.** How detrimental would DMS outages be?
>
> **b.** What is the organisational ability to respond/adapt to both minor and long term system outages?

c. How can modified specifications/needs be communicated to the design team to avoid core needs not being met?

3.5 Disposal of New Technology

Disposal satisfaction refers to the degree of satisfaction a consumer feels with the disposability of goods (Lee et al., 2002; Sirgy & Lee, 2008). Applying this term to the notion of business goods, the users of the new technology must have their expectations associated with the possibility of ending their use of the software met. For this reason the earlier steps of acquisition, possession and resulting consumption and maintenance must have furthered the position of the users and left them in a socially 'bettered' position. In the following paragraphs three perceived methods of disposal are discussed being those of developed relationships, changed specifications, and service rates. The process of 'exit' from the continued use of the software and the relative barriers are then considered for each key actor.

3.5.1 Disposing of Software

Software obsolescence is defined as the situation in which the technology becomes out of date within the market due to either changed specifications or an inability to meet service needs (Ghoneim & Fahmy, 2003; Jiang & Xu, 2007). This is the situation in which users cease use of the software as they experience dissatisfaction with the product. A failure due to changed specifications is where the users of the software experience un-met needs and the actual product no longer serves their newly required purposes (Ghoneim & Fahmy, 2003). Through adopting a preventative maintenance philosophy the developers are able to position themselves in a manner to avoid this situation through un-complicating the system and making it more able to handle system adjustments or building in new features and functions and thus pre-empting user-generated additional specifications which cannot be met in a timely fashion (Castelli et al., 2001; Ghoneim & Fahmy, 2003).

In the second situation the software is disposed of by the users due to the inability of it to meet their basic need (Ghoneim & Fahmy, 2003). This is the situation where the software is failing or presenting system errors and, through the development team taking a reactive

stance toward maintenance, system failure occurs before fault remedy. Users are unable to complete their tasks, the system is in failure mode and the results are high costs (both in time and finances) to repair the faults (Castelli et al., 2001; Ghoneim & Fahmy, 2003; Goel, 2011). Frustrated and dissatisfied users simply cease to use the system as part of their daily operations and look for alternative means to solve the current need.

3.5.2 Implications of an Early Exit

Exit barriers most often represent economic, strategic and emotional factors that prevent a firm from exiting a strategic direction even if they are earning low or negative returns (Porter, 1980, 2008). At the disposal stage of the product lifecycle an important consideration is the notion that the proposed new product would, for some reason, cease to fulfil the original need of both the supermarket and food bank. In adopting the wellbeing marketing philosophy the design team would aim to avoid a situation where the end users refrained from exiting, because of a feared loss, where it is in their best interests to exit. The purpose of the proposed DMS, and in line with social entrepreneurship, is to see this social need being met on a continued basis, whether the DMS or other means.

Both organisations face the two strategic exit cost barriers of invested time and financial resource of implementation. With the implementation of any new technology there is the financial cost of accessing and integrating the system and the time costs of determining the problem being solved and progressing through the acquisition and implementation process (Durrani et al., 1998). These strategic costs have already been deployed and are unrecoverable. Often the benefits of implementation in turn recoup these costs but an early exit would see them lost. The relevant design goal is to enable each organisation to recognise how well the system is or is not working for them so that a good decision can be made about continued system usage.

For the participating supermarket disposing of surplus goods has the potential to become rather simple; someone else collects and uses the good. This forms the operational benefit for the supermarket- a component of their job becomes easier through the use of this system. The benefit of participation could become a barrier which prevents the

supermarket from stepping aside from the donations management system, if other areas are being impaired through continued use.

Emotional barriers to exit are those that exist within the individual manager or decision maker and emotionally prevent them from acting in a different manner (Porter, 1980). In the case of the supermarket the emotional barrier which would keep those supermarkets participating when this may no longer be in their best interests is the 'feel good' factor of knowing you are doing the right thing. Instead of dumping produce which is edible and usable the manager is donating it to people in the community who are in need and, potentially, furthering their social position. If the manager feels good about the job at hand, s/he may be less likely to dispose of the proposed system.

The main exit barrier for the food bank (aside from the time and financial costs previously discussed) is the risk of decreased supply. If they were to step aside from the implemented technology, even if it was dysfunctional, it would be at risk to what would become their regular supply. This would prove to be a significant barrier, especially at specific times of the year when food bank demand is greater (Christmas, holiday seasons or a time of natural disaster).

The purpose of investigation at this stage of the product lifecycle is to enable the key actors to operate within their best interests and to provide a product which is suitable in meeting each of their needs. The ultimate goal is to enable the organisations to make the best decision about both implementing this technology or, possibly, discontinuing use should the product become unsuitable, for whatever reason. Therefore, it is important for the designers of the DMS to understand how this decision is going to be made, and the important considerations which lead to this decision. The final research question is:

> **Research Question Six:** How would each organisation determine whether or not the system was continuing to be suitable in meeting their needs?

3.6 Summary

This study aims to develop a DMS which leaves each party in a perceived state of satisfaction at each of the stages of the product lifecycle. Through considering each of these stages in detail and accessing relevant literature, six research question areas have been identified for further investigation. In the following chapters the research process of this study is discussed; incorporating both interview and focus group techniques. Then the method, results and discussion of each stage are presented, detailing how each research question has been covered. Finally, the findings relative to the well-being marketing model presented earlier are discussed, with reference to how satisfaction could be provided to the user group at each stage of the product lifecycle.

4 Study Design

In order to investigate and answer the research questions outlined in Chapter Four, a two part research study was designed with supermarket and food bank managers. The purpose of using a dual approach was to understand, at a deeper level, the working environment of each of the managers, and whether the issues which arose in the literature review are applicable and/or severe. This is then able to be translated into potential DMS features and specifications, and represented within part two to check for feasibility and suitability.

Stage one comprised of qualitative interviews with managers from Christchurch supermarkets (seven) and food banks (five). An interview script was developed based upon the literature review and research questions and sought to understand each organisation's needs in terms upon consideration of a DMS. The qualitative nature of the research allowed for digression within the interview and the 'conversational' nature explored insights not previously thought of.

Following analysis of the interviews, a focus group was run with four food bank managers, coinciding with a Christchurch Food Bank Forum (Christchurch FBF) meeting (where usually seven to nine food bank managers meet). The focus group was organised around understanding how the issues discussed in the interviews might be able to be mitigated in a DMS. Through discussion and later selection of certain alternatives, the concept of a DMS has been developed in terms of the core, actual and augmented product levels which need to be presented in order for the users to arrive at satisfaction at each of the product levels. This interview process is discussed in more detail in this section.

4.1 Qualitative Justification

"Qualitative research is that which involves analysing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon" (Auerbach & Silverstein, 2003). The primary difference between qualitative and quantitative research is depth of meaning (Auerbach & Silverstein, 2003; Flick, 2006). While quantitative data allows inferences based on numerical significance and tests, a qualitative approach allows

the researcher additional insights and a richness of meaning (Babbie, 2007). The focus of qualitative research is the subjective experience of the respondent; what they actually feel about their current experiences (Auerbach & Silverstein, 2003).

Auerbach & Silverstein (2003) present two tentative 'rules' for the selection of qualitative research methods; situations where not enough information is known to state meaningful hypotheses and select independent and dependent variables; and where numerical representation of variables do not adequately reflect subjective experiences. The heart of this research project is in exploring the understanding of the two key actors (supermarkets and food banks) in the development of a DMS. Qualitative research thus allows insights into the experiences, feelings and processes of each party through the communication of meaningful statements. Instead of numerical measures of whether or not the need exists, qualitative research allows insights into the significance of the need, the degree to which a solution is needed and translated system specifications.

One of the benefits of qualitative research is the incorporation of diversity into the study. Rather than assuming all respondents are similar in terms of thoughts and processes, qualitative research makes room for the diversity of respondents, allowing them to communicate based on their own experiences (Auerbach & Silverstein, 2003). The benefit to this research study is that, logically, there exist differences between different supermarkets and food banks. Interviewing representatives from each organisation allows insights into the different types of organisations and draws together a better picture of the overall problem being solved.

4.2 Semi-Standardised Approach

The method employed in this research study is modelled on the Semi-Standardised Approach presented by Flick (2006). In this process a semi-structured interview is undertaken with a respondent. The results are then tabulated in an initial and brief manner and represented to the respondent in the focus group to confirm the result and structure layering techniques are used to link concepts and preconditions to each other (Flick, 2006).

In this study the idea is to use the Semi-Standardised Approach in determining what set or sets of attributes, features and services are suitable for the successful implementation of a DMS. The initial interview took place in a semi-structured manner and investigated the relevant research questions stemming from the earlier wellbeing marketing assessment (and the product lifecycle stages of acquisition, possession, consumption, maintenance and disposal) with supermarket and food bank managers. Results from this analysis formed three sets of 'product attributes' which were presented in the focus group. Respondents were asked to select one preferred option for each level of a proposed DMS.

This method allowed for exploratory insights into the working environment of the organisation's managers. The interview results were able to be represented to the same respondents within the focus groups, in attribute form, for discussion and further insights to be gained. At each stage the scripts developed were used as a guide and the interview was able to be redirected into the concerns and issues which were both meaningful and relevant to the managers present.

4.2.1 Data Analysis

It is commonly stated that there are four types of qualitative data; grounded theory, narrative psychology, discursive psychology and phenomenology (Flick, 2006; Smith, Flowers, & Larkin, 2009). Each of these techniques looks at a different type of data and holds different implications for not only the analysis process but for research design. Grounded theory looks at factors, impacts and influences in the development of an explanatory level account; narrative psychology focuses on how the narrative relates to sense making (of the world of the respondent); discursive psychology focuses on interaction of the responses over and above content; and phenomenology focus on the common structure of a concept, as an experience (Smith et al., 2009).

The research questions within this study explore the nature of disposal/supply challenges for supermarkets and food banks. These questions seek to understand the depth of the problem, how it is being solved currently and how a new system could meet these needs in a better/more efficient manner. Questions of this nature align closely with the phenomenology approach and, more specifically, Interpretative Phenomenology Analysis

(IPA). IPA focuses on personal meaning and sense-making in a particular context for people who share a particular experience (Smith et al., 2009), which is why focus groups were selected for the second phase of the research.

4.2.1.1IPA Justification

In attempting to understand the nature of supply issues within supermarkets and food banks, it is important to know not only 'how great' the problem is (for example how much food is wasted), but the implications this has on the business operations, and the manager. It can be assumed that these issues are more or less shared amongst the two groups (the supermarket managers will experience some degree of waste; the food bank managers will experience some degree of shortages) because they are issues arising from the operation of the sector as a whole, not the result of the individual organisation.

IPA has been employed in the data analysis of this research study because it allows the analyst to engage with each interview response, determine what the actual issue is the respondents are facing, and, through generating key themes, determine the implications this has on the operations of the organisation. Through repeating part of the analysis in the analysis of the focus group response (there will be one transcript, not several) these issues will be able to be explored further, by a group of people who share the experiences, and can discuss further in a group setting how much they deter and distract from the main functions of the organisations.

4.2.1.2 Use of IPA

Through the analysis, the key themes have been organised into logical sets within each of the relevant steps of well-being marketing. This provides a link between the over-arching theory of development and the process sued to analyse the data, and draws the two together in a meaningful and insightful manner. Where possible, visual diagrams have been generated using these themes, where they fit together in a process-based manner.

In the tables following, the steps presented by Smith, Flowers and Larkin (2009) have been summarised and elaborated on in the formulation of an IPA analytic approach. The overall

process is three-fold; form notes, which are used to generate key themes present in each of the respondents, and then connect these together across the board of responses to form an interlocking pattern of how the themes fit together to answer the research questions.

The results from this analysis will be three sets of attributes the proposed DMS may be able to provide to the users at each stage of the product lifecycle. For each stage (acquisition, possession, consumption, maintenance and disposal) there are a few ways that a DMS could deliver satisfaction and the purpose is to reach a consensus on which option is preferred.

This first step is the process of analysing the individual transcripts from each of the interviews. This is where analysis is centred on capturing a feel for the transcript as a whole body and assigning comments to each portion (or question in the interview) which are further broken down later into themes. The themes are then connected throughout the interview creating a structure which is both useful and insightful.

Table 1: Initial Data Analysis Process

Step 1: Analyse the individual respondents transcript					
Interview Questions	**Participant Response**	**Initial Noting**	**Exploratory Comments**	**Emergent Themes**	**Connections Across Themes**
The actual question asked by in the interview.	A transcript of the response given.	Initial comments after reading the transcript several times.	A detailed and comprehensive set of notes and comments resulting from engagement with the transcript and the data. Describes the things which matter to the respondent and the meaning of them. Comments describe, look at language use, and at a conceptual level.	Exploratory notes are fragmented to discover themes which are emerging throughout the data. It is a statement of what was important in the various comments attached to a portion of the transcript. An overarching goal was to ensure it doesn't move away from the whole context of the rest of the transcript.	Charting, mapping or fitting the themes from the different segments together. The organised analysis produces a structure pointing out all of the most interesting and important aspects of the participant's response.

After all transcripts have been analysed as individual responses, combined themes are then sought across all respondents' transcripts. In this manner the themes are grouped together and are renamed or modified to cover variations in speech and comment. This process looks for mutually present themes across responses to determine the product attributes needed by each party. The final step of this stage is to transform statements and meanings into deliverable features of a product concept. For each group of potential features focus group respondents are asked to agree and choose one option which best delivers value to them.

4.3 Population and Sample Selection

As mentioned earlier there are 327 supermarkets (*Countdown*, 2011; *Foodtown*, 2011; Mackay, 1994; McPherson, 2006; *Our Brands*, 2009; *Woolworths*, 2011) and 365 food banks (Mackay, 1994; McPherson, 2006) operational in New Zealand. Each of the two types of organisations is significantly different from each other and they need to be considered as two target end-users of the same DMS. Therefore there will be two samples within this interview process, those from the supermarkets and those from the food banks.

Flick (2006) presents seven sampling suggestions for qualitative research which determine the general size of the sample and hold implications for both the significance and variance within the results. The position selected here is that of maximal variation- "to integrate only a few cases, but those which are as different as possible to disclose the range of variation and differentiation in the field" (Flick, 2006).

The purpose of this sample selection process was two-fold; to ensure the specific needs and specifications of each type of entity are considered in the development of the proposed product, and also, to purposely select for participation a sample which is known to be experiencing heightened demand within the last 20 months. The Christchurch Earthquakes (both September 2010 and February 2011, and the relevant aftershocks) have placed particular strains on the Christchurch food banks and the increased demand is on-going due to the residential displacement which accompanies the repair and rebuild of Christchurch homes.

There are two types of differences between the organisations; size and locality. Each of these two differences results in differing operational practices, service areas and supply needs which need to be considered within the development of a DMS. The sample for this research study was comprised of 12 semi-structured interviews with 7 supermarket and 5 food bank managers from a mix of urban and rural geographical areas. All food bank interview respondents were asked to participate in a follow-up

focus group, which was organised to coincide with the April Christchurch FBF meeting.

The sample was taken from Christchurch and the surrounding area as defined by the New Zealand White Pages. The reason for selecting one geographical area is twofold. Firstly it allows insights into the total food distribution network in one area between supermarkets and food banks. Secondly, for convenience in drawing together the focus groups, the respondents all need to be within the same geographical area. This reduces the time commitment of comprising the group both to the researcher and the individual respondents.

4.3.1.1 Supermarkets

The supermarkets for consideration have been decided based on the two variables discussed earlier; urban/rural and medium/large (small operations do not fit within the earlier definition of a supermarket). According to the New Zealand Yellow Pages (*Yellow: New Zealand Business Search*, 2012) there are 29 supermarkets in the Christchurch Area- Pak'N'Save and New World (Food Stuffs Limited) and Countdown and Fresh Choice (Progressive Enterprises).

Within this consideration there are two supermarket brands – Woolworths and Foodtown – which do not operate in the South Island. Woolworths has recently been rebranded to comprise part of the Countdown brand (*Woolworths*, 2011) and Foodtown simply do not operate outside the Auckland/Waikato/Bay of Plenty area (*Foodtown*, 2011). The only supermarkets found to operate in the more rural portion of the Christchurch area (not within the boundaries) are New World and Countdown. While most of the selected set is from the southern end of Christchurch (including Selwyn) they represent the total set of supermarkets in Christchurch and comprise of a mix of both urban/rural and medium/large operations.

4.3.1.2 Food Banks

In looking at, overall, the body of food banks in New Zealand, there is an inability to determine the size of each food bank operational. This most recent estimate of food bank numbers is Mackay, 1994; prior to the Christchurch Earthquakes, which saw the closure of some existing outlets, and opening of others. Therefore a search for maximal variation has been applied to the group of Christchurch food banks. There are 23 food banks and emergency food organisations in Christchurch (organisations which are not explicit food banks but are able to provide some form of food assistance to their clients, such as Bernardos, an early childhood centre). A few of the food banks operate under the umbrella of a larger organisation (City Mission, Salvation Army, for instance), but most of them stem from a church affiliation. There are four main food banks in Christchurch which are the Christchurch City Mission, St Vincent de Paul, The Salvation Army and Delta Trust (McPherson, 2006), and two of these were represented in the research.

4.3.2 Research Process

There were two steps to conducting the research for this study. Firstly, qualitative interviews were undertaken with representatives from each of the entities. The purpose of the interviews was to gain an understanding of how important effective surplus removal is to the supermarket, and to what extent food banks experience food shortages. Following analysis, the results from the interviews fuelled a focus group stage to determine the form and specification a DMS may take.

Following analysis, it was determined that proceeding with a focus group of supermarket managers would not be suitable. This was because of the already existing technical capacities of this group to track, monitor and, therefore, avoid wastage due to dated goods.

4.3.3 Structure

The following sections of this thesis have been organised in line with the research process employed. The next chapter, Interviews, discusses the method of research and analysis employed throughout the interview stage. The results and discussion are presented, in light of the research questions and how these have/have not been answered.

Chapter Six outlines the focus group method and formation, with particular reference to how the results of the interviews shaped the direction of the group. The results and discussion are then presented in line with answering the research questions and forming the features of a DMS.

Each of these chapters follows the method, results and discussion format commonly used within presentation, while the interview and focus groups are presented separately. This study relied on the interview stage being used as the formation for the focus groups, and for this reason the presentation remains true to this time-dependent research.

Following the results and discussion of the focus group, there is a final "Research Summary" section in which the results from the interviews and focus group are drawn together to give an overall picture of how the research questions have been answered.

5 Interviews

This chapter discusses the design and application of the semi-structured interview with seven supermarkets and five food banks. Script design is based around the six research questions identified in the literature review. Each research questions is discussed here in terms of focus, the type of data needed in answering it and how analysis will be undertaken. Following this, the results and discussion are then presented for each group of interviews.

5.1 Method

In a semi-standardised manner, interviews were conducted with representatives from each organisation. This section outlines the interview design, how the interview script was designed and tested, and the expected data. The resulting script was used as a base for the discussion which followed in each interview, allowing for the discussion to move into the themes and issues each individual respondent mentioned. The method of analysis is then discussed, outlining how the rich data of this stage was broken down into themes, which were then further reorganised into potential DMS specifications for further investigation in the focus groups.

5.1.1 Instrument Design

The following table shows the list of research questions and how these flow into the types of interview questions asked, and examples of the prompts which could be used to encourage the respondents to reveal the necessary information. The qualitative nature of the interview allows for flexibility within these questions as the discussion between the two participants develops.

Table 2: Interview Design

Research Questions	Interview Questions	Prompts
1. Is the proposed DMS software a feasible solution to each party in the building of a strategic relationship?	SUPERMARKET: Can you please describe your current surplus practices to me? FOOD BANK: Can you please describe how you currently access food? BOTH: Does this work well? Would a DMS (describe) help?	Is there a need to work together in this way (with the supermarket/food bank)?
1b. How important is the relationship to each organisation?	Have you worked in this manner with the other party before? Could you work with the other party?	SM: Estimates; Impacts on operations; current disposal. FB: How do you get supply; monthly estimate; adequate for demand
2. How able is each party able to embark on a new software piece?	How do you make technology decisions? Who makes the decisions? What would be your risks or concerns?	Risks, barriers, concerns, issues
2a. What are the environmental, organisational, decision-based and psycho-sociological issues considered in acquiring new technology?	When considering acquiring new technology, what are the most important challenges to your organisation?	Knowledge, adapting, information, user knowledge...
3. What are the perceived barriers and benefits to each party?	What do you see as being the barriers/benefits to participating in a DMS? (Describe DMS)	SM-Image, increased sales, feel good, costs, sales, FB-image, supply increases…
4. What form should the proposed DMS take in terms of core, actual and augmented?	What is the main thing a DMS could do for you? Where in your operations could an online system remove issues?	Operation with new suppliers, current suppliers, or food bank-food bank…
4a. What specifications of the DMS needed by each party?	What do you need to help you solve the problems you currently have with disposal/supply?	Time, cost, support, trust, assistance...
5. How important is it that the system (of goods donation and acceptance) does not fail?	What can go wrong in the process of removing goods from your store (FB- or receiving them)?	What things have happened in the past? What are you worried about happening?

Research Questions	Interview Questions	Prompts
5a. How detrimental would DMS outages be (planned or total system crash)?	After a new system has been implemented, how impacting are unplanned outages to your organisation?	Inconvenience, doing something different, operational errors...
5b. What is the organisational ability to respond/adapt to (both long term and minor) outages?	Should an outage occur, how able are you to adapt or modify behaviour?	Did you do something different? Did you do nothing?
5c. How can modified specifications be communicated to the design team to avoid core needs not being met?	After purchasing and implementing a system, how would you deal with a change in your needs?	Communicate to providers, use something different and stop using it...
6. How would each organisation determine whether or not the system was continuing to be suitable in meeting their needs?	How important is system reliability to you?	Dealing with an outage, availability, reliability, capacity...

The first set of research questions (1a and 1b) explored whether the DMS software is feasible or practical for each of the identified organisations in the context of their business operations, current systems and technology and needs. It is almost the qualifying question, whereby if the organisation would get little or no value out of the system then all other research questions are void for them. The feasibility of the entire study is summed up in the answering of this research question. If the software is not feasible for one, or both of the organisations, the rest of the investigation is invalid. Given that these organisations are not likely to be now using a DMS, though, the concept of "feasibility" can be explored in the nature of answers received rather than queried directly (e.g. "What types and sizes of waste do you have currently?" "How do you solve this issue?" "Does this work well?").

This second group of research questions asked the respondent what their role is in making the technology decision, (for example, identifying who would determine how important certain product features would be), and how important the pursuing of a

relationship between supermarkets and food banks is. The data are primarily insights into how the organisation operates currently and fulfils their organisational need at the time interviewed. It seeks to understand how well they are currently operating and whether the DMS System might be able to fill this need better than their current method.

The third research question asked the respondents about the central benefits and barriers they perceive with regards to the adoption and implementation of a DMS. The data was exploratory insights into the issues experienced within each organisation and how the benefits and barriers balance out to either leave the manager with a favourable or unfavourable impression of the DMS.

The next group of research questions sought to uncover the form of the product, which features are necessary and how the system should operate. Responses from this section will directly relate to the final product concept. This will include the software design aspects covered in the literature and how needs and requirements can be transposed into system features.

Maintenance was the theme of the next research questions, and understanding the failures which can take place, both in technology, and the 'system of receiving donated goods' and how able the proposed DMS software might be able to mitigate these. The data here are experience based and cover the issues which have arisen in the past, or the perceived issues which may arise, or any fears the respondents may have about how things can go wrong.

The purpose of the final research question is to assess the resilience of each organisation in terms of how much system outages can be tolerated without impairing their desire to use the system. Given they would have had a financial and resource investment in the adoption (time, information and synthesis) there will be some degree of resistance to avoid wasting committed resources. The data is an assessment of the degree to which continued system outages will increase dissatisfaction with the implemented system.

5.1.2 Validation of Interview Instrument

The first step in the data collection process was a 2-part pilot study. After the initial interview script was developed, it was tested with food industry employees for understanding and accuracy of the content. Following this, the interview was then tested on managers from Leeston SuperValue and Ellesmere Food Bank to determine if the information being received was what was intended. Leeston Supervalue is excluded from the supermarket classification by their size, and therefore not a member of the population and Ellesmere Food Bank has worked with the DMS project heavily in the past, and therefore were considered to have bias. At each stage the results were recorded and used in the modification of the script, which can be found in Appendix One.

Each interview was recorded using the iProRecorder application on an Apple iPod Touch. This was preferred over standard hand-held recorders as it allowed for the file to be electronically uploaded and saved to PC. After all interviews had taken place the files were uploaded and transcribed into Microsoft Excel for analysis. This method of data collection was successful, and was used in the subsequent interview process.

5.1.3 Data Collection: Interviews

The focus of this study is Christchurch and the surrounding districts. The purpose of this is to understand, at a greater depth of meaning, the issues and experiences surrounding one group of food banks. Each of the food banks in this geographical area operate in the same environment (such as the earthquakes, and suffering with a loss of suppliers) and have similar resulting concerns. There are 29 supermarkets and 23 food banks and organisations which are able to offer food assistance to clients. These organisations were identified, organised into lists of small and large, urban and rural outlets; each of these organisations were contacted in a random manner until either there was a representative sample at least six, or each organisation has been contacted. The sample was therefore randomly selected, akin

to quota sampling procedures, and representative of the supermarket and food bank industry in Christchurch.

5.2 Results and Discussion: Interviews

Of the 29 supermarkets in Christchurch, 23 were contacted for participation and seven agreed to an interview (a response rate of 30%). Due to brand and franchise considerations the individual stores are unable to be named but comprised a mix of urban, rural, and mall outlets with a variation of each of the four brands (Countdown, Fresh Choice, New World and Pak 'N' Save).

Each respondent's position was at least the level of the store manager, with one being the owner/operator (SM4). Three supermarkets had been opened within two years, but each manager had worked within the supermarket industry for at least ten years. Those who had recently been moved to the newer stores had transferred from other outlets of the same franchise in New Zealand. Each demonstrated a knowledge of not only their store (staffing, product placement, ordering and rotation), but also their franchise (rules, regulations and considerations with regard to franchise level decisions) and the supermarket industry as a whole. Each was well placed to be able to answer questions about the running of their organisation, with respect to technology.

Of the 23 food banks in Christchurch, 16 were contacted for participation and 5 agreed (a response rate of 31%). The food banks which participated were the Christchurch City Mission, Linwood Avenue Community Corner Trust, Delta Community Support Trust, Ambrosia Empowerment Trust and 0800 HUNGRY. These food banks are able to be named, but asked for comments and statements to preserve their anonymity. Each of the food banks varied in distribution (from five or fewer parcels per week, through to approximately 200). Four of the food banks participate in the Food Bank Forum and serve different areas of the Christchurch community. 0800 Hungry does not participate in the forum and grants parcels to citizens from anywhere in the wider Christchurch Area (Rolleston – Rangiora/Oxford).

Every food bank respondent was the manager. Every respondent, except FB1, was the manager of the food bank operation only, as the food bank stemmed from within a larger, non-profit organisation, providing other services to the community. Each respondent had worked within the food bank for a prolonged period of time and knew the establishment, clientele and suburb (in terms of demographic information and socio-economic position) they operated out of very well.

5.2.1 Supermarket Results

Due to franchise and brand considerations the individual supermarkets who participated are unable to be named. For this reason, each supermarket has been given the code name of SM1-7, for the chronological order in which the interviews took place. Where the discussion requires more detail, the brands have been given a code based on the chronological order in which they are discussed.

The data was analysed using the IPA approach. This involved developing notes and transforming these into emergent themes for each of the respondent's transcripts, and then connecting these theses across all of the respondents. For a detailed list of the theme areas, and key statements see Appendix Two.

5.2.1.1Software Feasibility

Brand One (SM3) is not allowed to donate any items for consumption due to the Food Safety Programme (FSP) and Guidelines from the distributor.

> The waste is either out of date product or damaged products (compromised packaging), therefore because of our (franchises) food safety programme; what we can't sell gets thrown out because we can't guarantee the safety aspect of things. So we basically throw those at a cost or we reduce to clear what we can. If the product is still good to eat or use we sell it. Once the product is no good, out of date we don't sell it - it goes down as waste and that is just a cost to the company.

This means that, for security and health reasons, no donations can be made to food banks of products which are not in a sellable condition. This was confirmed by the other supermarkets which were contacted for participation over the phone, and was the reason they did not wish participate. A DMS as proposed is therefore not appropriate for Brand One.

Brand Two (SM1, SM5 and SM6) has software in place which gives an electronic printout of all the products within the store expiring within the next two weeks, and effectively removes the prevalence of surplus goods within their stores.

> As the goods come in (when they are scanned in to become live items) they have their (expiry) dates noted beside them. The system will automatically warn the manager when they are close to the date (at the specified times) to be reduced and sold, and each manager gets a daily print-out… We tell the system how many items we have of one particular product, how many will actually fit on the shelf and when we want them to send us a box. With this new auto stocker system everything that comes in our back door pretty much goes out straight into the shop, we don't or have very little that goes back into our storeroom. (SM1)

They have minimal inventory storing only on-sale items; overall, they use a just-in-time supply philosophy. The goods wasted are primarily in an inedible condition. A DMS as proposed is therefore not appropriate for Brand Two.

Brand Three (SM7) has the ability to implement technology of their choice.

> We are working with software and we can choose to use things or not. It can be better if the whole group is using it and get everyone into it but we can still choose things if we want it or not. We have a stock loss figure and we scan the things and stock take what our losses are. It is system where it's a running total, working off a stock loss percentage.

The flip side of this is the cost (of purchasing and implementing software) falls to the individual store rather than being brand-wide, and this directly impacts their technological efficiencies. The goods are simply written off as a per-year shrinkage percentage.

Brands Three and Four (SM2 and SM4) rely solely on human effort to check rotate and know their stock.

> There are dates on the product and it is up to the managers to rotate the products and make sure they aren't carrying any old stock…we might come in in the morning and there might be two blocks of cheese left in the counter and they'll take those two, bring them to the front if they are still alright and put new stock in behind them to use first…They have to rotate it around and do that sort of thing there's no easy way to do that. The clever ones manage it well and they know what is on the shelf when they go away at night. (SM2)

Staffing competence therefore has the ability to impact the amount of surplus goods within these stores. Therefore the DMS is suitable for Brands Three and Four, effectively reducing the size of the target market (of New Zealand supermarkets) from 327 to 13.

The majority of food which is wasted is fresh goods (which are unable to be redistributed). Because of this, the DMS software becomes redundant. There are other goods like cans and packets which infrequently arise (due to staff incompetence or system malfunction), but the size and quantity of these goods does not financially justify the new technology. As SM1 said:

> The amount of stock that we have now that is able to be salvaged is very minimal compared to years ago. Maybe years ago it would have been good to have something when our backroom door was overflowing with damaged stuff".

Whilst the interviews showed an insufficient market for the DMS within New Zealand supermarkets, the insights they provided are important to understand the environment in which they operate.

5.2.1.2 Current Position

The Current Position is a 'snapshot' of the current organisation. It is where each supermarket states the current systems used in operations, and initial barriers or thoughts in response to the proposed new system. The standard system in place is SAP (Systems, Applications and Programmes in data processing) (86%), a live inventory management programme which shows live stock at any point in time. As stated earlier, SM7 uses a similar but different system and budgets on a percentage shrinkage figure. The inventory system they use is closely aligned according to SAP, but it is a different type. SM1 and SM5 have technology in place which allows for electronic tracking of expiry dates and the reduction of waste due to this reason.

SM2, SM3 and SM4 all stated that for them food bank donations are outside the normal course of business. SM3 considers donations in terms of the costs, separate from waste, and any donations are written off as donations.

> Waste is waste- therefore because of our food safety programme what we can't sell gets thrown out. We try and support the local community so we give them good product, or vouchers.

SM7 states that they would "use the 'reduce-to-clear' practice less often (if an electronic option was available)" within the framework of "weighing up the total costs and losses for financial viability".

The reoccurring theme coming through from the supermarkets interviewed is the impression that "what they are doing now works really well", in terms of removing their surplus goods. At this point they do not see a need to take the effort to modify what they are doing now, and in terms of the decision making process, they are not aware of a gap between what they are and what they could be doing. CSR, for these supermarkets, is less of a business philosophy, and more of an 'accidental' decision- if the donations can be made in terms of profit (it's more financially viable to donate the goods to a food bank than dispose of them) then it will be done, outside the normal course of business.

The challenge for the DMS would be to present the relationship; the collaboration between a non-profit organisation and a supermarket, as a mutually beneficial relationship in which each organisation helps the other meet a desired goal. It is drawing on the notion that the profit would come as a future result of furthering and empowering citizens within the community (Fife & Hosman, 2007). In this instance it would be when the citizens reach a state whereby they can routinely purchase their daily needs, and do so through one of the local supermarkets.

5.2.1.3 Current Processes

SM1, SM4, SM5 and SM6 all state fresh goods as the main cause of waste, and SM3 and SM6 state dates are the biggest cause for them. But there are three main areas for waste:

> There are three areas of waste- firstly food that comes outdated; second, the offcuts and by-products generated in making in-store items; and the third type of waste you've got are stock goods and stuff which is left in the store room and it is missed. SM2

The general process given by each outlet (aside from SM7) is to "locate the good, scan it out of the system, and take it to the sorting area. Anything which can be salvaged is, and anything else is either given to a pig breeder (who comes and collects waste food) (all supermarkets interviewed use the pig-man to varying degrees), dumped (depending on the item and packaging), or added to the food bank bins at the store" (SM1.

As stated earlier, SM1 and SM5 have the ability to electronically track expiry dates, and have minimal inventory. This allows them to efficiently reduce-to-clear products with up-coming dates which sell the good rather than waste, however it is slightly different for SM5:

> With this store at the moment because we are a new store our waste is not exactly where it needs to be. We are dumping a lot more that we should be but that is just because we are new and we are trying to find out where our sales patterns are, what sells and what doesn't. We use Hornby for example but that is not going to be exactly what our data is going to be.

SM2-4 and SM6-7 rely on staff competence in the process of determining the products shelved which are approaching use-by dates and reducing the price to clear. Depending on the staff member and the department this can work either really well or really poorly. The technological capacities of each organisations and their fulfilment of stock rotation varies, and presents an opportunity for development.

5.2.1.4Relationship Status

In terms of food bank relationships, all supermarkets interviewed have an imposed relationship stemming from head office. This tells them the food bank to work with (either the local Salvation Army or City Mission) but not at what capacity. Some outlets only use the customer bins (SM1, SM2, SM3, SM5, SM6) and some outlets add to this with goods which are able to be distributed (such as dented cans or label damaged stock) (SM4, SM7). All stock is credited in some manner (either a percentage of each invoice (SM4) or a percentage of the actual product lost (SM3)). Through this, they are given discretion as to where the good goes to from there and what decisions are made.

Food safety is the biggest risk to the supermarket (SM2, SM4, SM5, SM6 and SM7) and the idea of preserving the integrity of the good chain (SM3). No supermarket wants to be either known for distributing bad products, or causing harm to people through compromised handling techniques.

> In terms of the supply chain, from purchasing right through to selling, the supply chain is not compromised in terms of food safety. As soon as a product is damaged or potentially damaged or out of date it is compromised obviously so we don't give anything out for that reason. SM3

While SM3 also mention food safety, the biggest risk they talk about is store security. They have had issues in the past where people who are "on-site to take away certain things" have been found to be taking other items as well and going through the stock area.

> We have had issues before with the multiple people on site which cause security issues. It became a security issue with people in the bins and the public would see a person in the bins which is not what we try to betray. There have also been a few who have been granted access and been in places where they have not been allowed to be, taking more than what was given to them.

These risks, which in some form or another are inherent in any collaborative partnership, can be overcome early in the piece through a third party "initiating, cultivating and nurturing the relationship in the contract forming stage" (Fife & Hosman, 2007). In this sense, development of the DMS and its implementation could bridge these two organisations together through the designers, developers and marketers working closely with each organisation and bringing the two together through an understanding of their needs. As this study uncovers the barriers and benefits associated with each organisation, and works closely to overcome these, a platform is designed which bridges the two together and allows them to work together.

Collaborative partnerships are important in the social sector, as they provide a more holistic way in which to deal with the problems (Eweje, 2008; Fife & Hosman, 2007). They not only make a difference in terms of CSR and the reach it has in the community, but they help shape non-profits through sharing of business information and encouragement into later technology and practices (Eweje, 2008). They not only shape the community, but the collaborating organisations. As the DMS enters into the further stages of both research and development and uncovers the depth of these risks, and works to overcome them, the DMS will become the platform, allowing communication and goods-transfers to take place.

5.2.1.5 Technical Issues

In terms of implementing technology, all the software in SM1, SM3 and SM5 is head-office instigated. The decisions are made at the franchise level and each manager

stated a decision would be outside their sole ability to implement (even for a stand-alone application). SM2, SM4, SM6 and SM7 are allowed an amount of variability in terms of what they can implement, but SM6 stated that

> Obviously the stores are independently owned so the owner/operator can do something to a degree. Quite often things like that may be passed through to [*the brand owner*] for them to look at it as a whole group type of thing. We are always open to people coming in and obviously explaining things like that and we can either consider it but yeah, it removes our risk and keeps the franchises similar. (SM6)

SM2 raises a possible technology evaluation process outlining how a decision should be made.

> First look at the improvement it is going to make and whether or not it is significant and whether staff could do things better here to make that improvement happen without the technology. Then you would have to look at the cost, and then you'd have to look at the potential benefits. Then you'd have to consider whether or not it would compromise the group's position. Then product testing and look at the software and after sales service available and they make, the makers of the software and licensing, all that sort would have to be looked at and I suppose you'd make a decision.

The reoccurring theme is that the software would need to accommodate the franchise-specified food bank relationship. SM2 and SM4 bring up negligence in terms of appropriate storage of donated goods and the need to prevent this and protect the final user. SM2 states that "the speed in write-offs is not as important to me as potentially compromising the (food safety) systems in place. There would need to be a deal signed which would protect both the supermarket and the food bank, and guarantee the quality control measures within each organisation".

5.2.2 Food Bank Analysis

The five food banks who participated in this interview part of the research were all very different in terms of their operations and associations. It is important to note that FB1 exists in relative isolation. They are able to gain higher end donations (from wholesalers and distributors) and are limited (by their suppliers) in terms of how they can supply other food banks.

> We have the recipients call us and 'order a parcel. We log it and log the ones in the same areas together and get people from the church to come in, get the goods and deliver. So it's kind of a distribution centre. And we operate centralized distribution- we have the resources (refrigerated transport) to collect large quantities at one time.

Each of the other food banks brought them up in conversation in a negative manner and do not wish to work with this organisation.

Aside from FB1 (who hold a superior position in terms of accessing bulk supply from distributors/wholesalers) and FB4 (they do not currently have a computer) each of the other food banks were open to the idea of a software system and two (FB2 and FB3) stated that a food bank distribution application might be the best way to implement it.

> You could actually as a collective look and say our resources need to go where the need is, so how do we make this work…It would require all of those organisations to buy in to that…I think it would give more structure to allow that to happen because it is something that is more institutionalised rather than just in the knowledge of a few people's heads… It would be a way of collaboration that might branch out into all the other works that we all do, which would be great. (FB2)

In that manner the system could move toward allocating goods to the needs within the community and ensuring each food bank had adequate supply to the need. There would be some risks and barriers which would need to be overcome if this were to happen (where would it be, who would oversee it, who would operate it, how would it operate).

5.2.2.1 Current Position

In terms of technology, all food banks interviewed aside from FB4 use technology in their organisation but not for inventory. They are technologically capable, but not at the risk of minimising human interaction. To varying degrees they seem capable of managing an implementation process as long as the main user/implementer had all the knowledge necessary and continued use was not dependent on one person within their organisation (FB2 and FB5).

> We have a database (I can't remember the name she gave me) where I store all the information on all the people who receive donations from us. This allows us to track how many times they come in, their particulars etc. I use it, and I am the only one in the office of the food bank who uses the computer. I am computer literate and very capable. (FB5)

> It would require the organisation to have someone who knows computers to then teach the others how to use it. So if it was reasonably straight forward - yes, and already set up and it's just about teaching people how to use it that's fine...But with this I am imagining it would be reasonably similar in every situation and so once it is developed

> as long as it is user friendly then most organisations would have an it person who could probably teach others rather than relying on one person. (FB2)

Food is not the only focus of food bank operations (FB2, FB4 and FB5) and there are other services provided to those in need to empower them to make better decisions (such as budgeting advice, counselling or WINZ applications). Accessing food is not the primary objective and employee/volunteer time is spent in maintaining all services. FB3 states;

> Further down a software would be a list of people who aren't food banks but can do with food, for instance there was the group could Mother and Peppy, and then there on the list from donations from anywhere but from me they get everything to do with babies and children and that out it goes to them so that feeding it (the excess) through the system; or a system where you could identify the organisations who could help clients better than you can, with more service offerings would be beneficial. (FB3)

5.2.2.2 Current Processes

Most food banks collect the goods themselves (aside from FB4) and have recipients come and collect parcels (aside from FB1). The goods are broken down into individual lots and made into parcels to hand out with each food bank having variable supply capacities. Breaking down food items and preparing parcels is the labour intensive portion of the operation. Cash donations and grants are also available for things outside of food purchases and enable them to give a small amount of money for things such as school shoes/uniforms.

Finding good day-to-day staff is a challenge as most are volunteer-based and directly relate to an increase/decrease in church size (FB4).

> We are a small and decreasing church, with four of us (working here). It's hard to get good staff because of that. (FB4)

Some people who have received donations in the past offer to help (FB2) and "volunteering is the best way where we can let the people we have helped in the past 'pay us back' and give back to the community". FB1 talks about the risk of volunteers who can waste time, steal products from inventory or damage property (for example tagging or deliberate destruction of vital equipment).

> The only thing stopping us is not having another receptionist to answer another phone… I'm not trying to be a hero but I can't get funding or finance or help from people… if you don't watch, the girls grab what they can and put it in their pants and stuff… (FB1)

In terms of regulations and allocations to food parcel recipients, the standard allowance is 4-5 per year. FB1 "allows 6 parcels within a short space of time and outside this advises people to seek advice". The organisation has the supply to be able to offer additional support, but it is more than likely people who go to them could also be going elsewhere. A common problem all food banks have "is clients who try and get additional parcels through preying on Christchurch-wide issues (health, bugs and fires) or who are known to go to more than one outlet" FB4.

5.2.2.3Accessing Supply

There are a few levels of accessing supply; relationships with high-end producers, wholesalers and distributors, long terms relationships with donors, church and local donations, relationships with other food banks and purchasing supply. Each of the food banks uses one or a combination of these techniques. The interesting note is that purchasing supply often opens up new donor relationships which wouldn't otherwise be available (through discounts and/or damaged goods).

> And when we buy stuff from Trents, they are good and help us when stuff is on sale, or when they have stuff they can't use or is damaged or whatever, they donate to us, and that is stuff we wouldn't get otherwise (if we didn't buy through them), so in buying from them, we get a lot of stuff too. (FB5)

Often the donor relationships are not formalised and depend on one person either in the food bank or in the supplier organisation (FB1, FB2 and FB3). Something to formalise the process, protect the supply and enhance the communication (in terms of donations and sizes) would be beneficial. FB5 considers the needs of the supplier more important than their own and will work and co-operate to the sacrifice of themselves (in terms of personal time, collection specifications/times, for example).

Many ranging issues with accessing supply were raised, but the most prominent was the risk of saying no. Food banks fear that if they say no to a food donation they will be cutting off an avenue for future supply. Something which would be really beneficial to them would be empowering them to say no to a potential donation. Depending on the operational size of the food bank and the food type being donated, donation size is a very important consideration, as is frequency and quality.

The food bank forum has opened up food bank communication and in times of over-supply enables large food banks to redistribute this to the smaller food banks. Some food banks are able to state how much of the donation they want and are informed of when it will be delivered (FB2), and others have no notification, with the deliverer "just turning up and unloading the van" (FB3).

> Sometimes Salvation Army calls and drops some food off, there are one or two other smaller food banks that drop some off - but we also share food with them so it is like a reciprocal thing…The Salvation Army or City Mission would do that knowing that we would give it to about three other even smaller food banks - pass it on down the chain. (FB2)

> They just bring the van around and unload and unload and I'm like "where am I going to put it all". (FB3)

A potential system feature could allow this to happen, give notification, and allow them to select how much of which goods they need.

5.2.2.4 Technical Issues

Each food bank has one decision maker who would need to approve the implementation and financial outlays, and one core user who would daily use the DMS. These two roles are fulfilled by two separate people, and both would have informational barriers to overcome. The majority of food banks have the technical knowledge to be able to use the system and adapt their processes to accommodate for a DMS. This excludes FB4, who "have no technology or computers in their organisation" so a DMS would be a massive shift for them in operations.

This fits with the SME culture of the manager setting the tone with regards to ICT adoption and perceptions. The one decision maker is responsible for not only making the decision, but also for how the ICT projects are received within the organisation. If this one decision maker is unable to see the potential benefit, or the communication of how the project will meet the need which is being faced, the project will die in the early stages. A clear understanding of the issue the DMS is solving, and good communication of the solution needs to be provided to each manager to meet this initial barrier, and be considered a feasible solution.

The main theme coming through in terms of software specific features is that the system could be applied in a food bank distribution model, where all food banks are able to view and request 'food bank supplied' goods. It is unclear how this would be managed and how much of the individual supply would be redirected here, but a system which fed out FB supply would be desired.

5.3 Interview Summary and Research Questions

In this section the results described above are reorganised in the answering of each of the research questions presented in Chapter Four. This section thus makes sense of the findings, and organises it into a logical depiction of how each question has been answered, and the gaps to be filled in the focus group.

5.3.1 Research Question One

Is the proposed DMS a feasible solution in the building of a strategic relationship?

- **a.** Could the DMS be applied to another user group?
- **b.** How important is the relationship (between the DMS users) to each party in solving the issues of food removal/distribution?

The results of stage of the research show that, for New Zealand Supermarkets, it would not be feasible to adopt the DMS software. Through technological innovation the target market within supermarkets is only a third of what was first thought and the volume of suitable goods is low and managed through other processes. Results from the interview stage of the research show that there are three clear 'futures' or applications of the DMS software:

1. A DMS between food banks and smaller food outlets such as convenience stores, dairies and other food service providers
2. A DMS between food banks and their current suppliers (excluding supermarkets), to streamline the communication and donations process
3. A DMS between food banks and food banks to share excess supply and manage the Christchurch Food Bank Supply in a better way.

While the DMS is only feasible for one party, it does allow for a different form to be explored throughout the focus groups. This being a DMS operating between food banks; either allowing them to share excesses in supply or opening up a food bank distribution warehouse allowing supply to be allocated based on regional need. Food banks currently share food where there are excesses and/or shortages (FB5 in particular) and this system could allow them to do this more efficiently and with more warning/choice in what is received. A barrier to the distribution warehouse application is the decision of which organisation/manager would oversee the distribution system and ensure that it is fair (that supply is allocated based on need, not food bank size, power or resources).

5.3.2 Research Question Two

How able is each party to embark on new software?

a. What are the environmental, organisational, decision-based and psycho-sociological issues considered in the process of acquiring a new technology?

In terms of implementing software, each food bank acknowledged that the roles of user (of the DMS) and implementer (into the organisation) would be fulfilled by two different people. A potential barrier is the communication of information between these two people, and the assurance that both the user and decider are aware of the benefits, costs, and are able to make the decision based on this full understanding. Their ability to use, and implement technology into their organisation mean that the psycho-sociological issues surrounding technology use and uptake would not be a barrier to their implementation. Each manager discussed the importance of technology to their organisation, and acknowledges its appropriate use and implementation can enhance their operations.

5.3.3 Research Question Three

What are the perceived barriers and benefits associated with possessing the DMS to each party?

There is a reluctance to give up the supply that the FB already has, and the software needs to balance out the fear of losing supply/protecting supply/enabling new supply (not poaching from others but enabling pure, new supply). They talk about the system needing to offer value for the effort in changing their processes (FB2, FB4 and FB5) but ultimately, if it is supplier driven, they will give it a go (FB5).

A second barrier to the DMS application is the operations of FB1. This food bank has the potential to make all of these applications redundant through highly systemised operations, large resource pools and the opening of a new distribution centre which would service Timaru, Ashburton, the West Coast and Kaikoura, as well as their current Christchurch area. Each of the other food banks mentioned this operation, in terms of his supply, power, and access to distributors. At this stage there is a reluctance to co-operate with this food bank, which could jeopardise the future success of a DMS.

Each food bank manager stated the importance of their supplier relationships. They could well see the benefits to their organisation for each and every food donor, as it means it is one less item they need to purchase/do without. The primary benefit, therefore, is anything which allows them to do their job in a better way, or help more people in their regional locality. And "we would say yes to anything which increased our supply".

5.3.4 Research Question Four

What form should the proposed DMS take, in terms of core, actual and augmented product offerings?

a. What web-based specifications of the DMS are needed by each party?

The interview stage of this study has shown some very clear results to be taken forward into the focus group. There are three DMS options which could be provided to food banks;

1. A DMS which operates between food banks and other, smaller food outlets (such as convenience stores or dairies).

2. A DMS which operates between food banks and their current and/or potential suppliers, of which there is a loose agreement.
3. A DMS which operates between food banks and other food banks for the transfer of excess donations (either in a warehouse model, or under status-quo management).

These three potential avenues for the DMS will be discussed further throughout the focus group stage, alongside all the other features which could be provided to the food bank managers (and the other desired user group) in order for each party to arrive at satisfaction with each of the stages of the product lifecycle.

5.3.5 Research Question Five and Six

How important is it that the system of goods donation and acceptance does not fail?

- **a.** How detrimental would DMS outages be?
- **b.** What is the organisational ability to respond/adapt to both minor and long term system outages?
- **c.** How can modified specifications/needs be communicated to the design team to avoid core needs not being met?

How would each organisation determine whether or not the system was continuing to be suitable in meeting their needs?

Each food bank stated that in times where the system is unavailable, alternative methods would be used for communication with the other party. "Software fails…we would be able to work around this if the system is what we need". While outages would interfere with the day-to-day work environment, each respondent presented a desire to persevere with the software and use of it, even though it could fail in the early stages of implementation. Currently, these relationships are undertaken over the phone, and the respondents indicated that they would fall back on this method in times of unavailability.

5.4 Summary

The purpose of this stage of the research was to gain an understanding of the operating environments of each organisation, and how feasible the proposed DMS is for them. Research Questions One and Two have been largely answered, and there are three potential 'forms' of the DMS which have been taken forward into the food bank focus group to be answered and elaborated upon. In delivering these three options to the respondents, the remaining Research Questions will be used to formulate the types of questions and structure which is presented to the respondents.

5.4.1 Supermarket Withdrawal

The results from the interviews showed two clear themes emerging from the selection of supermarkets as the second user group. Firstly, that Brand Two has the technological capacity to greatly reduce store-waste through electronic entry of product use-by dates. This innovation allows managers a greater depth of knowledge at the 'click of a button'. While it is only one supermarket brand currently using this technology, to implement a DMS type of system into the other brands would have a perceived 'limited viability' as its success is relying on compared technical deficiencies.

The second theme arising is that Brand One is unable to donate goods for charitable reasons because of a stronger stance on the Food Safety Policy. In their eyes, all food which is unable to be sold is unable to be donated because the safety is impaired. While only one manager agreed to an interview, the other four managers in Christchurch backed this up when called and declined an interview on this basis.

The total potential sample for a supermarket focus group is five (as the remainder had disagreed to participate in the interview stages). While a focus group could have still proceeded with this number, the decision was made to discontinue with supermarket research. As a potential user of the DMS, supermarkets are not the group which are going to provide the food banks with the most value. While this is

disappointing, there are still other groups within New Zealand which could be pursued at a later date, which could provide food banks with a greater level of value.

Research question one explores whether the DMS is a feasible solution to each party. While it is not feasible for the supermarkets, it is still feasible for food banks, and the focus group thus explores the best option for a DMS with Christchurch food banks. The following chapter details the method, results and discussion of the focus group research and the findings as they impact the potential DMS and relate to the research questions.

6 Focus Group

The purpose of the focus group was three-fold; address the gaps in the research questions, discuss as a group the impact of the issues arising earlier, and to gain feedback on how each area of the product lifecycle can be addressed, in attribute format, to leave the users in a state of satisfaction. This section discusses the research questions and how these have been used to form the Focus Group Script, a copy of which can be found in Appendix 2.

6.1 Method

Following the interviews, a focus group was conducted with food bank managers in Christchurch, involved with the Christchurch Food Bank Forum (Christchurch FBF). This chapter outlines how the focus group script was formed and the key areas which were discussed within. Following this, the analysis, and how the data influenced the deliverable aspects of a DMS are presented, with particular reference as to how they related to the research questions.

6.1.1 Instrument Design

Of the six research questions presented earlier, the main focus of this part of the research were the following research questions:

Research Question One: Is the proposed DMS a feasible solution to each party in the building of a strategic relationship?

- **c.** NO: Could the DMS be applied to another user group?
- **d.** How important is the relationship (between the DMS users) to each party in solving the issues of food removal/distribution?

Research Question Two: How able is each party to embark on new software?

- **b.** What are the environmental, organisational, decision-based and psycho-sociological issues considered in the process of acquiring a new technology?

Research Question Four: What form should the proposed DMS take?

b. What specifications of the DMS are needed by each party?

The remaining research questions were semi-answered throughout the interview stage and while they were not the main focus, they still came up in the discussion and answering of questions. The research questions and script questions are presented in the following table.

Table 3 - Focus Group Script Design

Research Questions	Focus Group Questions
Is the proposed DMS software a feasible solution to each party in the building of a strategic relationship?	PART ONE: A set of hypothetical questions exploring the issues food banks face and asking them to imagine how a DMS might over-come this. Eg Watties has just called with 5 pallets of Baked Beans, what do you do? How might a DMS be able to solve this?
What are the specifications of this new technology?	
How able is each party to embark on a new software piece?	What would you think of an online DMS which connected you to your suppliers and aided your communication with them?
What form should the proposed DMS take (if feasible)?	What I would like to discuss with you now is, if there was an online DMS available to you, what would be the main function or purpose you would like this to achieve?
What potential features of the system are needed by each party?	For the final part of the focus group I have a list of options the designers could provide to you. I would like you to, as a group, choose the option which suits you best out of these three possibilities.

For the proposed DMS to be considered and valued by each party it needs to provide them with a level of value-for-effort. The DMS solves supply-side issues for each of the potential users and the first section of the focus group asks them how they currently address each of the four main issues which came up in the focus group and then, how a DMS might be able to solve this for them. This question allows them to 'design' the software themselves through brainstorming how the system might be able to solve the problems they face every day.

The second question, “What would you think of an online DMS…” asks the respondent for the first thoughts and concerns which arise as a response to such a system. Internally, there will be a set of concerns and perceived risks and benefits which arise, and this is what this question sought to uncover. These concerns will relate to the organisational constraints and processes of the food bank the respondent is from, and it was expected they would generate discussion on how these issues are prevalent in each organisation.

The next question is a crucial moment of the software. It is asking the respondents, of all the things we have talked about, what is the one thing you would like a DMS to do for you? Within the options available, they are also asked which would be good to have but not essential, and which would definitely not be needed. It was expected that this would narrow down their view of a DMS from everything it could do, to the one or two things which are quite essential. The options were:

- A system that provides traceability of goods & parcels
- A system that manages FB clients (to stop people over-consuming)
- A system that manages food bank clients/recipients
- A system that invites ad-hoc donations from retailers
- A system that manages FB inventory
- A system between you and your main suppliers to facilitate communication
- A system that works with bulk providers to manage large donations
- A system that lets FBs trade food surpluses
- A system which communicates your needs to suppliers

The final group of questions presents the respondent with eight different areas of specifications which could be provided to them. For each area there are three options and the respondents are asked to select and agree upon one. This question effectively asks them to define the type of system and features they desire, and also screens the response of the ‘main purpose’ question by providing them with the three options which arose out of the interviews, and having them select one. In this manner, group agreement becomes essential, and each question needs to have one option selected. The areas and options are as follows:

Table 4 - Focus Group DMS Options

System Features	Option 1	Option 2	Option 3
In accessing supply through a DMS, I would prefer working with...	A few suppliers	Any Supplier	Food Bank Distributor
If I was using a technologically based system of donations management I would prefer...	Online system for use on Computer	Mobile device and computer	Mobile device
I could see using a web-based Donations Management System for…	All donations (both in receiving and giving out oversupply)	Large/peculiar donations	Oversupply only
In the initial phase of using the DMS, I would prefer:	Free Trial Period with phone support	Off-Site Trial	On-site Information Sessions and Assisted Implementation
With respect to the overall food distribution system	All food supply should be loaded onto the DMS system first to then be 'shopped' by the FBs	All supply should be loaded onto the DMS system first to then be allocated to the FB	A DMS could help with the food distribution systems already in place
In building trust between users, I would prefer	A contract to exist between all users of the DMS	A 'Chat' function to be embedded in the DMS	Small pictures (avatars) being associated with each user so we can see who we are transacting with
With respect to Maintenance, we prefer	Communication with designers as needed	Designers to call us Regularly	Designers to visit regularly
If there were costs associated with DMS use…	We could not participate in using the system	Costs should be based on a stable, monthly charge	The system should be user-pays

6.1.2 Validation of Focus Group Instrument

A pilot focus group was run with non-technical respondents to check for understanding and timing of the focus group script. The time available through the Christchurch Food Bank Forum (FBF) was strictly one hour and so this was essential. Through the pilot, the timing was around 30 minutes. While the pilot was shorter than anticipated, it was expected that the 'real' focus group would be longer as the discussion would be more in-depth.

6.1.3 Data Collection

A food bank focus group was scheduled to coincide with the Christchurch FBF meeting in April (03, 12.30pm at Delta Community Support Trust). This includes six Christchurch food banks and one from Rangiora. The participants in the FBF cover both small and large operations within Christchurch and also outlets which serve the lower and higher end socio-economic areas. While there are seven members of the FBF, four members participated, with respondents from the Christchurch City Mission, Delta Community Support Trust, Linwood Avenue Community Corner Trust and Bhuela Trust. The manager of Bhuela Trust was the only participant who had not participated in the interview stages of the research and the earlier stage was explained prior to the commencement of the focus group.

6.1.4 Data Analysis

Analysis of the focus group functioned in the same manner as the interviews. For the open-ended scenario based questions the script was analysed for key themes. Because there was only one transcript to work with, the ability to connect the themes was limited.

For the decision-based questions (where the respondents were asked to choose the preferred option at each level), analysis was more straight forward. The selected option forms the desired feature or service, and the discussion is used to either support the level of agreement reached, or intensity of conversation.

6.2 Results and Discussion: Focus Group

The five focus group respondents were questioned with regards to the proposed DMS and the specifications they would need in order for it to be considered a viable technological solution for their organisation. Each of the questions was asked in a non-leading manner, and essentially they were asked to 'design the best system for them'. This section discusses their initial response to a DMS, the core function it would need to achieve, and the features they would need prior to adoption.

6.2.1 Initial Response to a DMS

The initial response to the proposed DMS was favourable and the food bank managers are willing to try anything which might/could ease the process of accessing and distributing supply. This is evidenced in comments such as "brilliant...that would be good...not really any concerns". The issues which did arise later were more in regard to product type (such as alcohol or high sugar/fat content goods) and standard concerns (safety of the product) rather than concerns directed to the use or implementation of a DMS.

Food banks tend to offer recipients of parcels a variety of different types of food within nutritional standards and the current offering available. This does mean that certain foods which are high in sugar or fat (such as processed foods, sweets, soft drinks) are given in limited amounts. The concerns raised by the participants showed they did not want the implementation of a DMS to mean they had to accept everything which was offered along these product lines. Currently, when dealing with donors "we don't say no to anything". This means that if a DMS was to provide food banks with new avenues of supply, they don't want a large increase of these items which can promote an unhealthy lifestyle.

Two instances are raised in which the safety of donated goods is questionable and has led to consequences for the donating company. The food bank itself informs clients about goods which may be impaired and places the accountability on the user. This is a concern for a food bank who finds out about the safety of the good

after it has been donated. Therefore, the DMS should incorporate this into the description of the good which is being donated, so that, at the time of acceptance, all known quality information is shared. While there is no way of knowing that a good may pose a risk until the manufacturer is aware (which could arise after a customer complaint) the DMS would provide a means to be in contact with all organisations the good has been forwarded to by having a 'history' feature and not 'deleting' previous donations off the system.

6.2.2 Main Function of a DMS

The process of defining one core function of the proposed DMS was the most debated part of the focus group. From the list of nine potential main functions (see Appendix 2, page 94) the functions pertaining to the large ad-hoc donations were the well-received options. These were "A system that invites ad-hoc donations from retailers" and "A system that works with bulk providers to manage large donations".

While the respondents agreed that they would not want a system which communicated needs to their suppliers, they did state that they would appreciate a system which could "get a hold of all businesses and say 'are you aware that we will take stuff next time you have a clean out, or (when you have) something you can't use'". The prevailing theme is that they avoid communicating explicit needs, at the risk of shutting out other supply ("stating 'we need white flour' could cut out brown flour donations", for example). Food banks promote a thankful nature to all of their suppliers and avoid communicating anything which would make donors feel less-than important.

One food bank manager stated that "A system that lets food banks trade food surpluses; well we already do this so it could be not necessarily essential". The other participants did not comment on this theme and the discussion moved onto other areas. This classification is an outlier in the context of the entire discussion which followed in the focus group. Later, when given a list of potential services and

features the DMS could provide, this respondent selected the option “A DMS for trading excess/oversupply only” and all other respondents agreed.

6.2.3 Necessary Features

When asked in an open nature what a DMS would need to do for the participants, there were two themes which came through. The first is that it would need to “maximise the amount of food being given to us and allow more opportunities to do it (donate food parcels to citizens in need)”. ‘Maximise’ in this context represents either allowing the food bank to access more food, or accessing the same amount of food in a better/more efficient manner. It also needs to acknowledge the food bank as an individual entity; all food banks within the Christchurch area operate in different areas, deal with different levels of poverty and operate in a different manner. The DMS needs to acknowledge this and work with them at their own level.

The second theme is the knowledge that food banks are in need of other resources outside of food. “It would be useful to know if there are people who could offer storage or property or vans, (shipping) containers (for storage), freezers or other resources”. In order for a food bank to operate efficiently these resources are needed and often their current capacities “hang on a knife’s edge”. Donated resources rely on the goodness of the donating party, and often can become unavailable to the food bank should the donor’s situation change. FB5 in particular is currently able to access a food warehouse, but every three months this is reviewed and causes them great uncertainty.

6.3 Focus Group Summary and Research Questions

The foundation of this study is the product lifecycle; with the goal being to identify how users could experience satisfaction at each of the five stages of the product lifecycle- acquisition, possession, consumption, maintenance and disposal. This section, therefore, explores the services and features the final DMS should incorporate and how these relate to the research questions and theories discussed in the literature review.

6.3.1 The Well-Being Marketing DMS

With respect to the well-being marketing model presented earlier and the specific attributes desired within each stage of the product lifecycle, the results can be further split into the areas of acquisition, possession, consumption, maintenance and disposal features. These are presented below.

1. Acquisition
    a. A system which allows the transfer of food bank excess
    b. Provided at a price I can pay
    c. A free trial period
    d. Easy to use
2. Possession
    a. Better distributes the current Christchurch food bank supply
    b. Allows the sharing of undesirable products
    c. A faster form of communication
3. Consumption
    a. Usability; the DMS is easy to use
    b. Credible; The interaction is trusted
    c. Involved; it is a system I feel I need
    d. Reciprocity; I trust the other party (donor or receiver)
4. Maintenance
    a. The design team are contactable when needed
    b. I am able to work with the other party away from the DMS
5. Disposal
    a. Allowing experience of the DMS first, without initial outlays, in order to assess the organisational fit

The results with regard to the research questions will be discussed in this section, in accordance with how each research question relates to the relevant areas of the well-being marketing model.

6.3.2 Acquiring DMS Technology

Satisfaction with the purchase of a technological system follows that the consumer (or user) experiences satisfaction with the availability, quality, price, services and the method of purchase (Lee et al., 2002; Sirgy & Lee, 2008).

6.3.2.1 Research Question One

Is the proposed DMS a feasible solution to each party in the building of a strategic relationship?

- **a.** NO: Could the DMS be applied to another user group?
- **b.** How important is the relationship (between the DMS users) to each party in solving the issues of food removal/distribution?

The interview process showed three clear options for a DMS system to be suitable for food banks. Through representing these options to the respondents in the focus group, the agreed option was a DMS between food banks to trade excesses. This lines up with the process stated by Durani et al., 1998; identifying what the customers need, generating all the potential solutions to this need, and making a decision about which option provides the most value. Through exploring the needs of the food bank in an open-ended interview, and representing this at a later date, the potential users of the system were able to select and agree which type of system is feasible.

While the DMS was not feasible for the supermarket user group, it was able to be applied in a different format to food banks. Inter-food bank relationships are important to build because they allow shared resources, and reduce food bank waste through redistributing supply. This importance allowed the prospective DMS application to shift to a 'food bank as the donor and receiver' type of model. Pursuing other DMS applications (with users other than supermarkets) could still prove to be a viable source of food bank supply, but is outside the scope of this study.

6.3.2.2 Research Question Two

How able is each party to embark on new software?

a. What are the environmental, organisational, decision-based and psycho-sociological issues considered in the process of acquiring a new technology?

The four main areas of organisational processes which need to be considered are environmental, organisational, decision-based and psycho-sociological (Fink, 1998). These are the fundamental areas a food bank will consider before making the decision, or impact the technology's success in implementation.

6.3.2.2.1 Environmental

The main environmental concern is the dis-union between the food banks who participate in the Food Bank Forum, and those who do not. "Cowboys in the market" steal supply from other food banks and cut out the ability to provide for people. Food bank supply relationships operate informally, and there is nothing to prevent another food bank from connecting with the supplier (or a decision maker in the organisation) and gaining the supply.

In this manner, the DMS, and the relationship which the DMS seeks to create, serves not only the supermarket and food bank, but also the food bank sector within the locality. As the food banks seek to work together more, and plan to work together, the technology inherently changes the way they operate, and draws together more their combined resources. This creates a better platform with which to reach and serve the community.

This is in line with Eweje (2008), who states that collaborative partnerships achieve focus in terms of CSR, and actually serve to shape the non-profits through collaboration and information sharing. It also draws upon the key well-being marketing principle of doing no harm to any party within the product lifecycle (Sirgy & Lee, 2008). Through cooperation the DMS is able to strengthen and develop

further the inter-food bank relationships and allow them to pool together their resources, whether they increase or not as a direct result of the DMS and greater meet the needs within the community.

6.3.2.2.2 Organisational

The uncertain organisation of food banks in general was confirmed in both stages of the research. The warehouse space "is on a knife's edge...every couple of months we are not sure". In terms of supply "we say yes to everything...even if people don't use it...because it's so good to get donations"- this food bank relies mainly on the purchase of food. All of the resources within food banks are limited and susceptible to variability. At times this variability reduces their effectiveness.

These areas combine to show the opportunity for the DMS to be able to share the total resources of the Christchurch Food Bank Supply and enable them "to maximise the amount of food given to us". Through opening up efficient food bank trade, the DMS would reduce the need of increasing food bank supply through enabling efficiencies with the current supply.

Food banks operate with scarce resources, as they rely on the donations by other people and businesses in serving their core operations. This is not only financial and raw materials, but includes labour, equipment and building/premises. The DMS, in order to provide satisfaction to the food bank, needs to accommodate and acknowledge this, that there is more to a food bank than merely food. Within New Zealand, "collaborative relationships are often neglected due to the misguided approach that money is the answer the non-profit is looking for" (Eweje, 2008). The DMS needs to accommodate other types of donations, as well as food, to encourage continued use of the system by all of the users.

In terms of the in-house technological abilities, all food banks are well placed. "We use technology every day in our organisation...we are capable of using it...we have just implemented a new database to help us be more efficient." Technology is used

on a daily basis, to varying degrees, and all managers involved in the focus group stage use computers. This barrier, arising from the literature, is not as prevalent as first thought and only one of the food banks interviewed do not use technology.

6.3.2.2.3 Decision Based

The research confirmed that the technology decision would in fact be made by one person. However, this person is not the user. While each of the users who participated in the focus group were able to agree on the 'ideal DMS', this would need to be communicated to the decision-maker, especially regarding paying for the technology. "It would need to be communicated in terms of how much value it provides to justify the cost...I can't make those decisions" (it is the role of the manager of the organisation the food bank stems out of). The advantage for the manager is that by using the free trial the benefits would be clear to see.

The literature states that there needs to be synergy between the potential new ICT "meeting the need within the organisation while also being within their financial reach" (Finn et al., 2006). This is an equal concern; having the financial ability to purchase the ICT which will bring efficiencies and solve an issue. The DMS needs to account for the fact that the user, the person who works within the social sector more and knows the issue to a greater depth, is not the decision maker. The DMS needs to be communicated to the person within the organisation who holds the financial resources, and who is able to make the final call.

6.3.2.2.4 Psycho-Sociological

In terms of the organisational culture as it relates to I.T., it is the operational managers who form the user groups. While they are unable to make the implementation decision themselves, the provision of a free trial enables them to use the system, interact with its features and functions, and clearly communicate both the value-for-effort and value-for-costs to the decision-makers. Because the

main users of the system comprise of one person from each organisation, the culture towards I.T. (with respect to other employees) is not important in this user group.

6.3.2.3Arriving at Satisfaction with Acquisition

This study, through both the interview process and focus groups, uncovered the features necessary for food banks to experience satisfaction with acquisition, and these are summarised in the following figure.

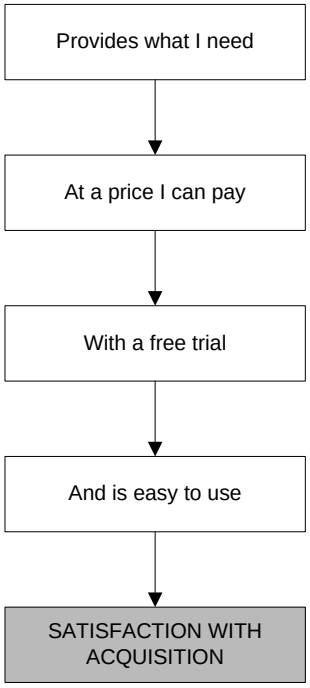

Figure 2 - Arriving at Acquisition Satisfaction

The ordering of this diagram is important to the food bank. Primarily, the DMS needs to provide what the food bank manager needs in order for it to be a viable option. But this is within the financial ability of the organisation, and they have a limited financial resource upon which to draw for new purchases. A free trial and experience with the software is important, but only if the DMS is within their organisational ability to purchase.

There are two services which are essential for the food bank to arrive at satisfaction with acquisition. These are a free trial and a price policy based on use. A free trial was agreed upon as the best way to "show" the potential users how much value it is

able to provide them with. While it does need to be easy to use, the free trial option allows interaction with the system, and it is clear to the user and decider in the food bank whether value is actually being delivered to them through continued use.
The pricing strategy is another important consideration at the acquisition phase. The organisation, in assessing the feasibility of a technology solution, needs to consider the costs and benefits, and the value for effort being delivered. For food banks, resources are scarce, and while it was acknowledged that charges for DMS use would not determine participation (through not selecting that option), they are important as there are limited resources available to the food bank. Each respondent agreed that the best method for pricing would be "charges based on use", but within a limit of what they are able to pay. This limit varies based on the individual food bank.

This is where the free trial option works in conjunction with the pricing strategy. Through being able to use the DMS in the early phases while assessing the feasibility before any commitment is made, the system could be used in a way that 'predicts' the charges for each of the users. Charges would still be generated, while written-off during this time, and the managers would be able to see the value being delivered, the projected charges being generated during this 'free-use' time, and determine whether the DMS is delivering the expected value.

In this manner, other funding avenues will be explored by the developers (such as government grants and seed investors) but it is expected that a small fee will need to be charged to the food bank to cover costs of development and implementation. While each food bank agreed that pay-per-use is the best method, further exploration needs to be undertaken. This is to address who would pay (the donor or the receiver), how the charges would be charged (monthly statement or per-use) and a model including the total pricing strategy.

6.3.3 Possessing DMS Technology

Satisfaction with possession of the DMS is purely the positive feeling which arises as a result of owning the product (Lee et al., 2002; Sirgy & Lee, 2008). Use aside, owning the DMS should leave the manager and user in a state of satisfaction.

6.3.3.1 Research Question Three

> What are the perceived barriers and benefits associated with possessing the DMS to each party?

6.3.3.1.1 Barrier One: Loss of Supply

The focus group uncovered the risk of poaching/stealing supply and the impact this has on a food bank. This could result from both other food banks who are unaware that the organisations they are approaching already supply a food bank, or a change in procedure which results in food not being donated, or going to a different user (for example, a "Date-Place" which is an outlet selling dated or expired goods). The proposed DMS allows food bank users to share their combined resources. This means the smaller food banks who struggle with accessing supply can receive from the excess of another.

While the proposed DMS could not totally prevent these scenarios, protection could be offered through the DMS making 'Christchurch food bank supply' available to all food banks through the share of excesses. Currently, a food bank manager will communicate to suppliers that donations received will be shared among other food banks, and a few suppliers (for example Frucor, a beverage producer who also loan trucks to FB5) have stated that they will continue working with these food banks for that reason. Through automating this process, the DMS allows for a greater ability to share food bank supply, and a 'buffer' in terms of additional supply which side-steps any losses.

6.3.3.1.2 Barrier Two: Undesirable Products

Stemming from the literature review, a projected risk was that participation in a DMS might cause a sudden and large increase in supply which would strain a food banks operation (Lipsky & Thibodeau, 1988). The focus groups revealed that a greater barrier to the food bank is a perceived risk of sudden or large increases in "items we don't like to promote" (for their health content, or alcohol) or "items we know people don't use...and have to dump".

The purpose of a food bank is "to give people a hand-up, not a hand-out". Because of this, managers try, where possible, to offer a balanced range of items to their clients and some goods (such as alcohol or energy drinks) are not even stocked. They do have 'some' of these items, and sudden increases in these goods will strain other resources as "some are just dumped...and we have to pay for that". By sharing these items with other food banks when they do come in, they are able to move these items faster and may avoid some dumping fees.

It is predicted that the primary donors will be the large food banks, and the primary receivers will be the smaller food banks (although it could be the reverse). This means that the smaller food banks will ultimately have a lower tolerance of these items, and would not take many from the larger food bank. Running the DMS as a 'shopping' type of system, where the food bank can 'order' items to collect will prevent them from becoming inundated with these items and only getting those which they need.

6.3.3.1.3 Barrier Three: Risky Goods

One disadvantage of a food bank's fundamental operations, receiving surplus which is often dated or impaired, is the health risk which sometimes follows. These can arise after complaint and be unknown at the time of donation, or can be inherent with the donated goods as a known risk. One barrier to the food bank is an increase in these items which may impair the health of the final user. The only way around this is to either remove the item from stock and dispose of it, or inform the recipient

at the time they receive their parcel and advise them to use judgement on whether they use it or not.

The DMS allows instant communication between the donor and the recipient. One way it could mitigate this risk is by logging all previous donations as 'history' rather than deleting them from the system. In this way the donor could view and access the history and add notes or warnings to the donations, allowing those who have 'accepted' the food instant communication on the nature of the product and known risks. The system would act like a memory and only contact those people who had received the good and not the entire list of users.

6.3.3.2Arriving at Satisfaction with Possession

Each of these risks, arising from the research process, can be overcome by each of the potential benefits the respondents saw in a DMS. The areas they saw as most important in the provision of a DMS were:

- Better distributing their current food supply
- Sharing undesirable products with other food banks, and thus reducing their personal stock of these items
- Faster communication of risks arising within food bank supply

Each of these three perceived benefits are able to be delivered in a DMS which operates between food banks and shares food bank supply. They allow the food bank to share food, particularly items which have a tolerable limit and open the lines of communication between the users. These three risks and benefits are summarised in the following table, and show how the DMS can provide satisfaction with possession to food bank managers.

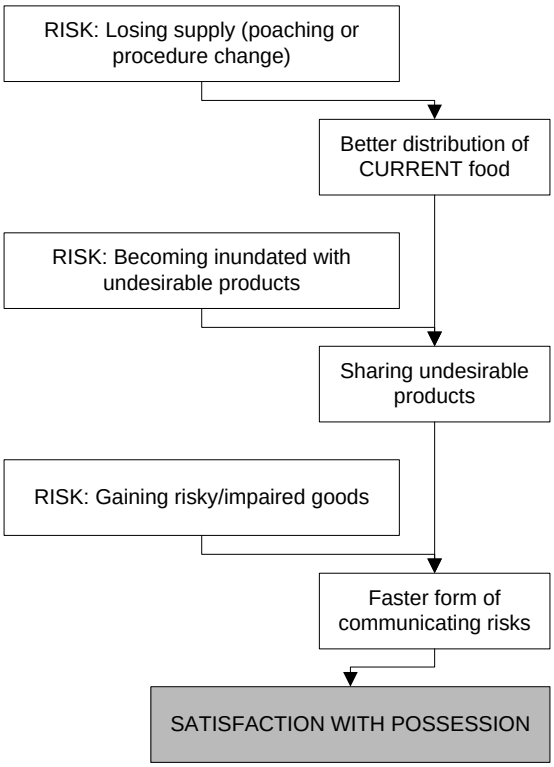

Figure 3 - Arriving at Possession Satisfaction

6.3.4 Consuming DMS Technology

Satisfaction with consumption is the positive feelings which arise from the use of the new product (Lee et al., 2002; Sirgy & Lee, 2008). This satisfaction arises as a result of interaction with the features, functions and services associated with a new product.

6.3.4.1 Research Question Four

What form should the proposed DMS take, in terms of core, actual and augmented product offerings?

a. What web-based specifications of the DMS are needed by each party?

As discussed earlier, there are three levels often used in product design; the core, actual and augmented product. The participants agreed that they would prefer a DMS which has the properties shown in Figure Four.

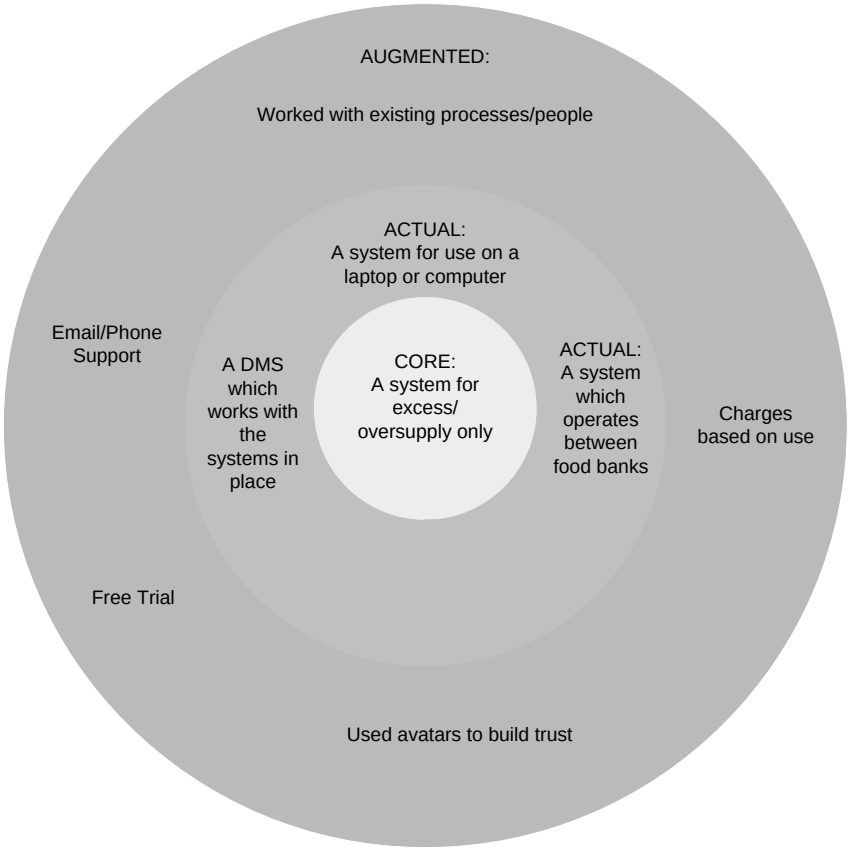

Figure 4 - The desired product levels of the DMS

The core product, which the focus group respondents all agreed on, is a DMS which allows them to trade surpluses with other food banks. While one respondent had earlier stated that such a system would be "not necessarily essential", at a later stage when discussing potential features, this respondent stated that this was in fact the preferred option for a DMS. In this regard, the primary benefit being received is the trading of food surpluses which arise due to peculiar and infrequent donations. These peculiar donations often consume valuable storage space and efficient removal of these to other food banks and agencies allows them to continue accepting other donations without compromising on storage ability.

The actual product preferred by the respondents was an online system for use on a laptop or office computer. When faced with the options (an online web-page for use on a laptop or computer, a mobile application (app), or both), one respondent used her mobile (a Nokia which is at least seven years old) as an example of why an app would not work for them. The respondents use technology in their organisations,

however they are slower to upgrade their mobiles and have no ability to use apps. In other areas of the focus group the managers acknowledged that “the younger managers coming after them would have different technology needs”, and this was a consideration when selecting other specifications. But when it came to the use of the proposed DMS, the only viable option at this point in time is the online web-page.

In this sense, the actual product is an intangible online software system which users login and use in a similar fashion to email or Facebook. The implications of this mean that the main user group will be the manager/office person of the food bank. Each of the food banks visited in the interview stage had one office person overseeing the contact with donors and the management. It will be this person, therefore, who interacts with the system and would either check for donations or load donations (if a larger food bank forwarding excess goods).

The remaining six features form the augmented product desired by the users. With respect to the initial phases of implementation the users would prefer to be supported by a free trial phase and email/phone support. These two features of the product allow the users to experience the DMS in their own operations before they commit financial resources. Through this they are able to see the value of using the system through experience rather than communication. This allows them to know before they purchase how much value they are being provided with and allows for a greater level of satisfaction to be reached at the acquisition/possession stages.

With regard to trust, all respondents agreed that the use of avatars was the most appropriate method. They unanimously agreed that contracts supporting system use “was going too far”. They then emphasised that the feature at this level was “designed to build the trust” and while contracts “would protect us from cowboys in the system, a simpler and informal way would be better”. Avatars have been selected because the respondents have agreed that trust with the people you are interacting with is more important to them than protection from the few who might abuse the system. They value trust in relationships higher than protection.

With respect to on-going support from the design team, the respondents preferred communication as needed. Each of the respondents felt technologically capable, provided the DMS was in a straight forward manner. Each respondent uses technology in their operations, from email and researching, through to databases, and felt that an online system format should be easy enough for them to use without on-going support.

In terms of the charges and fees associated with the proposed DMS, the preferred option was charges which are based on use. While charges associated with use of the DMS would not exclude all participants from use, there is a limit to their financial resource, and ability to pay for system use would strongly depend on the value which is being provided to the food bank and their ability to pay. The respondents were able to agree that charges should be based on use, as this option allows for the individuality of each of the food banks and acknowledges that their needs, and resulting system use, are going to differ.

6.3.4.2Arriving at Satisfaction with Consumption

Kim & Fesenmaier (2011) split software design into six main areas, informative, usability, credibility, inspiration, involvement and reciprocity (discussed in the literature review). These areas were latently expressed in the focus group. While not explicitly asked, the respondents naturally brought up four of these areas when talking about software, usability, credibility, involvement and reciprocity. These are presented in the following figure.

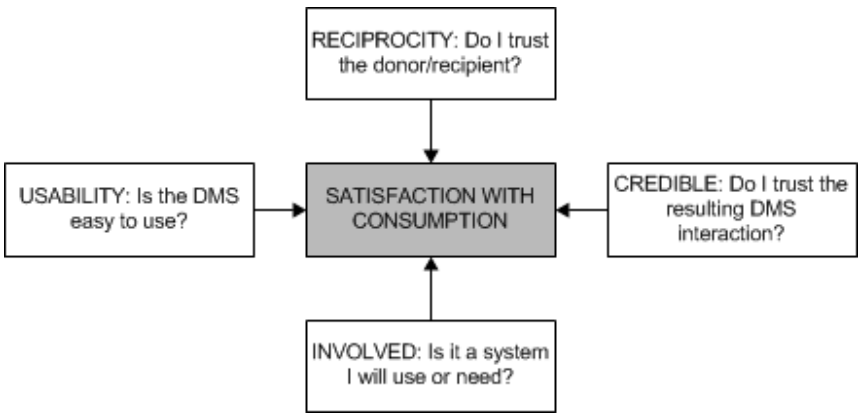

Figure 5 - Arriving at Consumption Satisfaction

6.3.4.2.1 DMS Usability

From the interviews it was clear that the system needed to be easy for this group of users to implement it, and this was confirmed in the focus group. In response to whether the designers should offer a free trial, assisted implementation or informative work-shops, one person in particular was very concerned. Her response was “aren’t you going to make it easy for us to use? We need training?”

The only way the proposed DMS will be successful in its implementation is if it is easy to use. These managers, some of which work on a volunteer basis, do not have the time to be learning complex systems or struggling with illogical layouts. They need a DMS which is easy to operate and uncluttered.

6.3.4.2.2 DMS Credibility

The second thing the users need to know at this stage is, whether the system is credible. Do the users trust the people that are providing the system to do a good job and provide them with value? This was particularly evident while answering questions about charges. Each respondent was initially quiet and surprised that the design team might ask for money in return for use of the DMS. One respondent initially stated “I wouldn’t ask (the people above me) for anything”. On probing by the other members she retracted and stated she would “need to know what it looked like, what it did” so that it could be communicated upwards.

The initial shock to this question revealed a lack of trust when people are asking for money or resources from a food bank. While they can see (as far as possible without use) that a DMS would provide them with value, they are really cautious when it comes to money and do not like talking about it. Even size doesn’t really change this- “you are bigger, you have more money than someone like us, but it’s inaccessible”. The food banks need to be able to trust the system and trust the designers that they aren’t making a profit out of their (scarce) resources, and perhaps the DMS being launched out of a non-profit organisation would help with this trust.

6.3.4.2.3 Involvement with the DMS

Involvement with the DMS is important to the food banks. They need to use it and feel empowered and encouraged to continue to use it. They have opted to have a pricing strategy based on their use and this is a clear indicator of that. In order for them to experience value, no matter how small the costs may be, they need to keep using it. The pricing strategy is a clear communicator to the design team and shows whether the system is being used repeatedly (and therefore successful) or not. From there it can be assessed as to whether changes or modifications should be made.

6.3.4.2.4 Reciprocity within the DMS

When using any online system it is important to trust the people at the other end that are providing you with some good or service. For the food bank users, they need to trust the people who are donating or receiving the excess; that they will turn up at the specified time and collect the goods, keep their end of the agreement, and use it within their communities (i.e. not for personal use). In the consideration of trust, all the respondents agreed that contracts accompanying system use "was too far". "Each has enough contracts of their own" and felt they would be cold and impersonal.

Each preferred the option of avatars (small pictures of the people you are transacting with) as a way to build the relationship and foster trust. In the interview phase it became clear that in any periods where the system was unavailable an alternative form of communication would be sought. Avatars allow the users to see a representation of the other user and allow them to feel like they know them. It is a personal way to deliver trust to a generation of managers who are "hands-on and face-to-face with people as much as possible".

6.3.5 Maintaining DMS Technology

Satisfaction with maintenance is the satisfaction which arises as a result of having a product repaired or serviced (Lee et al., 2002; Sirgy & Lee, 2008). As discussed in the

literature review, there are two types of software maintenance; preventative and reactive. Regardless of the stance, failures are unavoidable, and this section addresses the level of perseverance with DMS use which can be expected.

6.3.5.1Research Question Five

How important is it that the system of goods donation and acceptance does not fail?

- **a.** How detrimental would DMS outages be?
- **b.** What is the organisational ability to respond/adapt to both minor and long term system outages?
- **c.** How can modified specifications/needs be communicated to the design team to avoid core needs not being met?

6.3.5.1.1 Building a Relationship through a DMS

The purpose of the DMS technology is building mutually beneficial relationships in the exchange of food bank supply- linking together an organisation that need to pass on resources and an organisation that needs resources. The focus for Research Questions 5a and b, therefore, is relationships. In terms of maintenance, the users will experience less dissatisfaction during potential system outages if the relationship is built and they feel comfortable transacting with each other aside from the technology.

Avatars help with this, as previously discussed, as they allow the food bank managers to see the people they are working with and build the trust which is needed in the relationship. The second component of this is the stated desire to use the DMS "to work with the systems already in place- the people and organisations I already work with". In this manner, the users would feel comfortable using another medium to communicate by because it is what they do already, and they already have all the information necessary.

This does not, however, mean that the design team are able to exploit this with unrealistic delays and downtimes whilst remedying a bug. In order for satisfaction to be reached the DMS needs to be returned to a useable state as quickly as possible to avoid unfulfilled needs. Because the food banks are able to work around down-times, they may easily revert to these methods after failures and a state of "unfulfilled value".

6.3.5.1.2 Communication with the Design Team

Throughout the interviews it became clear that each food bank (aside from the pilot organisation and one other) was competent and able when it comes to technology. Each organisation used technology on a daily basis to record and monitors the frequency with which clients were receiving parcels and use this to screen clients when they call for a parcel. Each manager also stated they were confident with technology and felt they used it well in their organisation. This was confirmed in the focus group when the respondents unanimously turned down the assisted implementation offered to them and supported "design team contact as needed".

Throughout maintenance and support, and answering Research Question 5c, the most important factor for the food bank managers is that when the design team need to be reached they are easily contactable. The fundamental purpose of the DMS is building a relationship which is mutually beneficial, and therefore the relationship can function aside from the technology. Each of the respondents confirmed this, but when assessing satisfaction with maintenance, the design team need to act upon these requests and fix the bugs which arise to enable satisfaction to be reached.

6.3.5.2 Arriving at Satisfaction with Maintenance

While the maintenance stance taken for this project is based upon best practice methods, there are two important components of the maintenance of the DMS system which have been discussed here, building and continuing a relationship

between the users and communication with the design team. Both of these factors combine to leave the potential users in a state of satisfaction with maintenance.

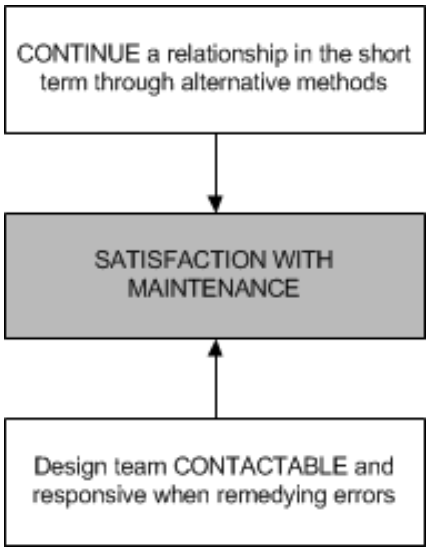

Figure 6 - The Process of Satisfaction with Maintenance

6.3.6 Disposing DMS Technology

Satisfaction with disposal is the satisfaction which arises as a result of the disposability of goods (Lee et al., 2002; Sirgy & Lee, 2008). The primary determiner of whether the DMS continues to meet the needs of the food banks is whether it continues to "maximise the amount of food and be given to us more opportunities to do it". The main indicator of value for the food bank is value-for-effort.

6.3.6.1 Research Question Six

> How would each organisation determine whether or not the system was continuing to be suitable in meeting their needs?

6.3.6.1.1 Value-for-Effort

The nature of food bank supply is time dependent, and often resources which are made available to them are not long term avenues of supply. The suppliers vary and there is no guarantee that a current supplier will remain in contact. For this reason,

the manager of the food bank is going to be continually weighing up whether the DMS in place is worth their effort and they are receiving value-for-effort. The value to them may be seen through either an increase in their supply, or a more efficient way of receiving that same supply (which could be seen through time efficiencies).

The value for effort is enhanced further through the proposed DMS being used by the same person within the organisation (for example the manager) continually. Regardless of who the supplier is, or which food bank in particular, the interaction with the DMS will be the same. In this manner, changes within the personnel of the food bank have minimal impact on the success of DMS implementation. Through fewer staff members interacting with the DMS, the likelihood of staff-based errors arising decreases in the long term.

The desired basis for charges is a per-use policy and this would provide the food bank manager with an exit strategy. The time to build the system into their operations will be low as the system is available online, each food bank already use and have a computer or laptop, and the use will be simple. The use-based charges would mean the food bank is paying for their actual 'use of the system'. There is no initial outlay to consider as for a monthly, biannual or annual subscription, and the transactions are with people they already work with. These two factors combine to allow the food bank an exit, and remove the obligation to continue persevering with the system should it be in their best interests to discontinue system use.

7 Research Summary

This research study incorporated well-being marketing techniques in order to assist the development a DMS which, in providing satisfaction to some of the users, did no harm to any of the other potential users at any stage of the product lifecycle. At each stage of the lifecycle, literature theories and concepts, and interview and focus group responses were used to design features and specifications which were desired and meaningful for the core users; food bank managers. Through interviewing and focus group techniques, a DMS was designed which facilitated the communication and transfer of goods between food banks.

7.1 Interview Results

The interview results showed that, while a DMS was impractical for New Zealand supermarkets, there were three clear futures for it within the food bank industry;

1. A DMS which operates between food banks and other, smaller food outlets (such as convenience stores or dairies).
2. A DMS which operates between food banks and their current and/or potential suppliers, of which there is a loose agreement.
3. A DMS which operates between food banks and other food banks for the transfer of excess donations (either in a warehouse model, or under status-quo management).

The interview allowed insights to be gained of both supermarket and food bank managers' respective work environments, and how a prospective decision would be made. Study importance was placed on the perceived barriers and benefits derived through the interviews as these have the ability to fundamentally drive an acquisition decision. In order for the proposed DMS to be considered, these barriers in particular need to be known and addressed in communication to ensure satisfaction is arrived at without any disproportionate risks accruing to other parties.

7.2 Focus Group Results

Through formulating a focus group script based on the results of the interview and the insights gained, it became clear that option three was the best application of a DMS, and in terms of the core, actual and augmented product levels, the following specifications should be provided;

- Core
    - A system which connects food banks and allows them to trade excess supply
- Actual
    - An online system able to be used on a laptop or computer
- Augmented offerings
    - A free trial period
    - Supported by email or phone
    - Avatars to build trust
    - Design team communication as needed
    - Charges based on use.

7.2.1 The Product Lifecycle

In order to provide satisfaction within each stage of the well-being marketing model, these specifications can be reorganised as follows;

1. Acquisition
    a. A system which allows the transfer of food bank excess
    b. Provided at a price I can pay
    c. A free trial period
    d. Easy to use
2. Possession
    a. Better distributes the current Christchurch food bank supply
    b. Allows the sharing of undesirable products
    c. A faster form of communication
3. Consumption

    a. Usability; the DMS is easy to use
    b. Credible; The interaction is trusted
    c. Involved; it is a system I feel I need
    d. Reciprocity; I trust the other party (donor or receiver)
4. Maintenance
    a. The design team are contactable when needed
    b. I am able to work with the other party away from the DMS
5. Disposal
    a. Allowing experience of the DMS first, without initial outlays, in order to assess the organisational fit

Through the answering of the six research questions presented earlier, this study is able to offer guidance on the specifications of a DMS which facilitate the transfer of food bank excess in Christchurch. While not explicit in the research questions, the well-being marketing thrust of this research study was able to identify the key areas within the product lifecycle which need to be addressed in order that satisfaction may result at each stage. Discussion with expected key users has led to the understanding of what types of specifications need to be provided to leave the proposed DMS with the best chances of success after design and implementation.

The future for the proposed DMS now rests in the ability to take these recommended features and design a DMS in line with the needs and requirements of the core user group. While there has been question placed on the optimal method to charge the users, this is an area which could be explored in more detail through DMS development. Knowledge and understanding of the core needs and specifications of the users has been undertaken in line with well-being marketing. As the study moves now from a theoretical base to a practical base, in the design of an online system, a shift would be seen to a social entrepreneurship type of project, where some form of organisational entity would be created.

While resources are important, this 'potential organisation' would not be financially driven, and decisions made on finances would follow an investigation into all the potential avenues for resources including sponsorship and grants. In line with social

entrepreneurship, rather than an assumption that the expected users can pay for the DMS, there is an expectation that the DMS will add value to their organisation and provide transformative benefits (Martin & Osberg, 2007).

8 Conclusion

This research study assesses the needs and specifications of New Zealand supermarkets and food banks relative to the implementation of a donations management system. Through employing qualitative research methods to explore business practices, the product lifecycle of the proposed system has been explored with regards to well-being marketing.

As a result of this study the design team is able to incorporate the needs and specifications of each party into the deliverable aspects of the donations management system (including servicing and maintenance, application features and technical support). The overall goal of the project is that the system can be designed and implemented in a manner that neither party is disadvantaged by decisions made to benefit others. Reducing food waste and increasing food security within the community are tangential goals; they are not the primary purpose but may in fact result after successful implementation.

The target audience of this study are the application designers. They will be able to access this information and translate needs and specifications into a bundle of attributes which are meaningful and desired by the key actors. Readers will be able to gain insights into the operating environment of each organisation and what is needed to encourage adoption of a DMS.

8.1 Limitations

This study investigates the needs surrounding the adoption and use of a DMS. At the outset, it was important to select a potential user group, alongside food banks, as the prospective users. Supermarkets were chosen based on their size, market power, and ability to 'purchase' the DMS. While this decision needed to be made at the outset, the viability of supermarkets as a core user group was not confirmed, as expected. The scope of this study did not cover the feasibility of other user groups.

The second limitation is the need to know the pricing strategy which leaves no party in a disadvantaged position. The focus group respondents selected "pricing based on use". This method has the potential to jeopardise the use of the system, and thus the life of the system, in the process of recovering the costs of development and continued maintenance. Should the costs deter DMS use, then the pricing method is leaving the DMS in a disadvantaged state and jeopardising its useful life.

8.2 Future Research

The first avenue for future research is to explore the viability of other potential user groups, such as convenience stores and dairies, who may be able to work alongside food banks. These organisations, while still primarily focused on food, have different needs and requirements than a supermarket, and may prove to be a more suitable user group. While viable applications of the DMS are still applicable in the food bank sector, other potential users aside from supermarkets were not selected and could prove to be not only a useful source of supply for food banks, but a viable user group for an application of a DMS.

The second area for future research is presenting the DMS uncovered by this study to either the same, or different New Zealand food banks, to uncover whether it is viable for development and implementation. The purpose of this research would be to determine whether the DMS is suitable to achieve centralised food bank distribution and manage the total supply in a more efficient manner.

The third avenue for future research is further exploration of the case management fees, pricing structure, and the manner with which to charge the users without leaving any party disadvantaged. While the focus group respondents selected 'charges based on use', the outworking of this needs to have further consideration and research. Therefore, consideration needs to be applied to the 'DMS' as well as the needs of the user groups to ensure that the pricing strategy does not impair or disadvantage the useable life.

The final area for future research is the potential broadening of the DMS to incorporate either additional client services (such as budgeting and counselling) or build additional features into the DMS. Food is not the only focus of food bank operations (FB2, FB4 and FB5) and there are other services provided to those in need to empower them to make better decisions (such as budgeting advice, counselling or WINZ applications). Future research could determine if the DMS could be broadened to identify which outlets could help clients in a more rounded manner.

There is also an opportunity to support Brands Three and Four in the determination of which products are approaching their use-by dates. This opportunity would be something which helped managers identify the approaching dates in order to reduce the price of the item and sell it, thus aligning with the primary objective of a supermarket (selling goods for profit), or allowing automatic notification to go to the food bank for goods donation.

9 Appendices

9.1 Appendix One – Interview Script

“Thank you for taking the time to participate in this interview. “Before we begin I would like to explain a little of the background to this research.

A software package is being built for operation between food banks and supermarkets which facilitates the donations process. The main goal of the system is to redistribute food surplus to food banks, enabling people within the community to have better access to food and helping reduce the total amount of food wasted within the implementing supermarket.

“The system would allow supermarket managers to list a donation to be seen by local food banks. Food bank managers can see all donations within their area and accept those which are suitable (in size, location and time of pick up).

This research project seeks to uncover the needs that each organisation would have of such a system. “The system is in the early stages of being developed. The purpose of this research is to capture an assessment of how food surpluses impact supermarket organisations and how food banks access supply. After this understanding, the research will then focus in on what the requirements and specifications of a donations system are for each party. This will be used in the building of a system which is suitable for both the supermarket and food bank.

“This interview is centred on gaining these understandings. The information you provide about your organisation will be pooled with all other interviews to gain an insight into food surplus and food bank supply in the Christchurch area and what the user needs are for an online system. Could you first please read and sign the research consent form if you agree to participate in this project.
“Thank-you, we will now start the interview.”

SUPERMARKET INTERVIEW

I would like to begin the interview by asking you a few questions about the size of your organization and your use of technology

1. How many employees work in your organization?
2. What is your estimated inventory floor space?
3. What is the management structure in your organisation?
4. What types of software and systems do you currently use?
    a. Internet, Inventory management, Mobile applications/devices
    b. Of these, who is responsible for using them?
    c. Who decides whether a system is implemented?
5. Are you familiar with sales/transaction platforms such as TradeMe?
6. Would you be able to action a software trial without corporate permission?
    a. Do you think you could use a web-page application without impacting other software/servers mentioned earlier?

The questions now turn to food surplus – classified as products that have an inability to generate a profit and often called waste.

7. What types of surpluses or waste do you encounter in your store?
        i. Which food types or categories are the most frequent?
8. What are the major causes of this?
9. Do you have any way to estimate the amount of surplus per week/month?
    a. How much food would be considered as surplus per week?
        i. How much would you think was able to be redistributed?
        ii. How does this impact your operations? (Staffing, quality control)?
10. Do you track your total wastages; per week, per month, per year?
    a. YES: How often?
        i. How specific is your information (cost, size, type…)
        ii. Do you have to report this information to your franchise?
    b. NO: Would you like to be able to?
11. Does a software system track food waste?
        i. Who uses it
        ii. How automated is it- how much human input is there?
        iii. Are you able to highlight goods as they approach use-by or expiry dates?
            1. YES: are you able to reduce the price and sell cheaper?
            2. YES: How effective is this?

12. Can you tell me what you do with surplus goods?
    a. How much time or effort does it take?
    b. Can you suggest any areas for improvement?
    c. Where do you complete the write-off process (floor/office)?
        i. Does this work well for you?
        ii. What would be your preference?
13. Why do you use this method of removing your surplus goods?
    a. Only option/franchise/brand policy?
14. What would you look for in a new way of disposal?
    a. Easy to use or implement, Fast/er, able to use on the run, able to use with electronic devices (which ones?)
15. How important is time (the speed of write-off and removal) relative to other considerations?
16. What would you think of a process which was a little more involved, but allowed for social or environmental considerations?
17. How important are environmental/social concerns when considering removing surplus goods?
    a. What is the franchise policy on social donations?
18. If you were thinking about changing your process of removing surplus goods, how important would the impact on efficiency be compared to that change being the "right" thing to do?

19. Have you attempted a relationship of this nature with food banks before?
    a. No; why not?
       Forward to Q15
    b. Yes: Are you still operating in this manner?
        i. No; why not?
        ii. What would you suggest doing differently to ensure more positive results?
    c. How did it function for you?
        i. How frequent and large were the donations?
        ii. How effective was this in removing surplus goods?
        iii. How many food banks do you work with?
            1. Would you consider working with more?
            2. Under what conditions?

d. How did you communicate with the food bank?
    i. Was this method appropriate in terms of time, speed, access?
        1. No: what would you suggest as an alternative?
e. Was the relationship successful in terms of what you needed to achieve?
f. Has this experience made you reluctant in any way to pursue future affiliations with NZ food banks?

The software system described in the information sheet is a platform operational between food banks and supermarkets, similar to that of TradeMe and Ebay. Donations are listed by the supermarket, and viewed and accepted by the food bank. It allows and facilitates communication in an automated environment.

20. What would be the risks of a relationship of this nature with a food bank??
    a. trust in the other party, franchise concerns, losing sales through people turning to food banks, product safety
21. Can you see any benefits of building a relationship of this nature?
    a. a good public image, helping people, minimising waste, other
22. If you were aware of a software system to donate goods, what would be your process for determining whether you could use it?
    a. Is there anyone you would have to gain permission from, or are you able to make that decision?
23. In considering adopting an automated donations system, would it need to be integrated with other technology systems you already use?
    a. Yes; which systems?
    b. Would you prefer it to be integrated with inventory management systems?
24. Would it need to be compatible with different types of devices you use?
    a. YES: which ones?
    b. NO: How would you like to use it?
25. Do you see it as a system which management would need to operate (you, or department managers), or that anyone would be able to use?
26. Do you think it would take a lot of effort to implement this into operations?
    a. Would it take a lot of in modifying practices and behaviour?

The questions move now to those surrounding technology and your organisational ability to adopt new software systems.

27. What issues do you think you would face in adopting new technology?

a. Brand/franchise considerations, able to make that decision, staff training/reluctance, doing the job better, technological compatibility, knowledge of how the system is actually improving my operations

28. Do you think you would be able to manage the transition process?
    a. How would you like to be supported in this by the design team?
        i. What types of support (sessions, meetings, regular appointments)
        ii. Would maintaining support and contact with the design team be important to you?
    b. How would you cope with any failures in the system?
        i. Call FB, adapt, cease
        ii. Would you persevere with the system use?
        iii. What if you tried to use it on a daily basis, how many simultaneous 'failure' days would you cope with?
    c. If you implemented this, what would happen if it either did not meet your needs, or did not meet your expectations?
        i. Would you persevere for want of doing the right thing?
        ii. Would you want to communicate this back to the design team?
    d. Under what circumstances do you think you would cease to use the system?
        i. Bad relationship/dealing with the other party? Bad staff use? Difficult transition? Bad rapport with the design team? A perception of no value for money?
29. Are there any areas of concern for you in the implementation of a system of this nature which I have not asked you about?

"Thank you for your time so far. For the next part of the research I will be forming focus groups to discuss specific key features for the proposed system. (Looking at a calendar), do you think you would be able to be available for a 2hr focus group in Feb? Of these possible dates, which ones would you be able to make? "Thank-you, I will be in contact later in the week, once all interviews have been completed and a suitable time for all participants has been found."

FOOD BANK INTERVIEW

1. How many employees do you have, paid and volunteer?
2. What is your estimated inventory floor space?
3. What is the management structure of your organisation?
4. What types of software and systems do you currently use?
    a. Internet, Inventory management, Mobile applications/devices
    b. Of these, who is responsible for using them?
5. Are you familiar with sales/transaction platforms such as TradeMe?
6. Who is responsible for implementing technology in your organization?
7. Do you use a software system track food supply or inventory?
        i. What types of system is it?
        ii. Who uses it?
        iii. How automated is it- how much human input is there?
        iv. If a system were available to help in accessing supply, would it need to be compatible with the software you already use?
8. What do you try to give recipients in each parcel??
    b. How successful are you in being able to keep to these?
    c. Are there certain goods which you find particularly hard to access?
    d. How well do you handle demand for parcels?
    e. What are your requirements/restrictions?
9. Can you describe to me how you access supply for redistribution?
    f. How much time or effort does it take?
    g. How do you communicate with them?
10. Does this system work well for you?
    h. Can you suggest any areas for improvement?
11. Are you aware of any other ways of accessing food bank supply?
    i. YES: What are they?
    j. YES: Why don't you use them?
12. Do you have any relationships with other food banks or charity organisations?
    k. How do these operate?
13. Do you know how the food bank "industry" operates within Christchurch?
    a. Do you feel the supply is evenly distributed throughout all food banks?
    b. Do you feel disadvantaged at all in how you get supply?
        i. Could you suggest any ways to allow for even distribution?

14. Do you access funding?
    l. Who from, how often?
15. Do you have any relationships with people/organisations who frequently donate goods?
    m. What is the average size/frequency of donations?
    n. Do you have any ability to request certain items?
    o. How often do they donate to you?
16. What is the most important consideration for you in accessing supply? (quality, continuity, frequency, variety, ease)
17. How do you handle oversupply, or an abundance of certain items?
    p. How able would you be to handle an increase in supply?
        i. Do you have a manageable limit in terms of storage, quality checks and internal processes?
18. Have you had a relationship of this nature with supermarkets before?
    q. No; Forward to Q15
    r. Yes: Are you still operating in this manner?
        i. No; why not?
        ii. In looking back, what would you suggest doing differently to ensure more positive results?
    s. How did it function for you?
        i. How frequent were the donations?
        ii. How large were they?
    t. How did you communicate with the supermarket?
        i. Was this method appropriate in terms of time, speed, access?
            1. No: what would you suggest as an alternative?
    u. Was the relationship successful in terms of what you needed to achieve?
    v. Has this experience made you reluctant in any way to pursue future affiliations with NZ supermarkets?

The software system described in the information sheet is a system operational between food banks and supermarkets, similar to that of TradeMe and Ebay. Donations are listed by the supermarket, and viewed and accepted by the food bank. It allows and facilitates communication in an automated environment.

19. Can you see any risks of a long term relationship with supermarkets?
    w. Trust, inappropriate stock (inedible goods), over-committing
20. Can you see any benefits of a long term relationship with supermarkets?

x. more frequent donations, strong relationships with a few supermarkets, variety, proximity

21. If you were aware of a software system to aid your access of supply, what would be your process for determining whether you could use it?
    y. Is there anyone you would have to gain permission from, or are you able to make that decision?
22. Would the system need to be integrated with other technology systems or devices you already use, such as those mentioned earlier?
    a. Yes; which systems?
    b. NO: How would you like to use it?
23. Who do you think would be the key users of the system? (All staff, you)
24. Do you think you would be able to implement this into your operations?
    a. Would it take a lot of effort in modifying practices and behaviour?
25. In considering adopting an automated donations system, would it need to be integrated with other technology systems you already use?
    a. Yes; which systems?
26. Would it need to be compatible with different types of devices you use?
    b. YES: which ones?
    c. NO: How would you like to use it?

27. What issues do you think you would face in adopting new technology?
    d. Brand/franchise considerations (if a FB chain, such as Salvation Army), ability to make that decision, staff training/reluctance, doing the job better, technological compatibility, knowledge of how the system is actually improving my operations
28. Do you think you would be able to manage the transition process?
    e. How would you like to be supported in this by the design team?
        i. What types of support (sessions, meetings, regular appointments)
        ii. Would maintaining support and contact with the design team be important to you?
    f. How would you cope with any failures in the system?
        i. Call SM, adapt, cease
        ii. Would you persevere with the system use?
        iii. What if you tried to use it on a daily basis, how many simultaneous 'failure' days would you cope with?

g. If you implemented this, what would happen if it either did not meet your needs, or did not meet your expectations?
    i. Would you persevere with the relationship for want of an increase in supply?
    ii. Would you want to communicate this back to the design team?
h. Under what circumstances do you think you would cease to use the system?
    i. Bad relationship/dealing with the other party? Bad staff use? Difficult transition? Bad rapport with the design team? A perception of little value for the amount of effort needed?

29. Are there any areas of concern for you in the implementation of a system of this nature which I have not asked you about?

"Thank you for your time so far. For the next part of the research I will be forming focus groups to discuss specific key features for the proposed system. (Looking at a calendar), do you think you would be able to be available for a 2hr focus group in Feb? Of these possible dates, which ones would you be able to make?

"Thank-you, I will be in contact later in the week, once all interviews have been completed and a suitable time for all participants has been found."

9.2 Appendix Two – Interview Emergent Themes

9.2.1 Supermarket Results

Current Software Systems	Types/Classifications of Waste
SM1- A dating system is present to warn the managers of all close dates, within 2 weeks	SM1- Their main type of surplus is waste; things which are unable to be used or eaten.
SM1- At any stage they know how much stock they have left, and when it is due to expire.	SM2- There are two types of waste every store will have an amount of; outdated stock and by product waste
SM1- Their software also tells them how much fresh food to prepare, and reduces fresh waste also, which is harder to redistribute.	SM2- There is also the controllable waste, which fluctuates, due to staff incompetence
SM1- SAP proposes orders for them	SM3- Dates are the biggest area for waste in this store

SM2- The inventory system has minimal human input (levels and figures) but can be overridden	SM4- the main type of waste they encounter here is damaged goods, and the main areas outside of this are the deli, bakery and butchery
SM2- Although it is a computerised system, staff still cause errors in levels	SM4 Produce and bakery are the main waste areas (and the by-products)
SM3- They have no system to identify dates	SM5- There is no clear date on (bakery and deli) but customers need it to be usable
SM3- They have a dollar based accounting system and an inventory SAP system based on live products in the store	SM5- Grocery waste is minimised in this store
SM3- They do not use inventory software for the deli/butchery/bakery as the goods are altered to sell	SM6- Expired stock is not an issue
SM4- The software shows a live inventory to know the stock they have at any one time.	SM6- Deli/produce/bakery/butchery are main waste areas
SM4- There are set levels and reorder points and for each order, the system will propose an order based on these and promotions	SM6- Most waste is fresh- fast turnaround needed
SAP proposes an order which managers can over-ride or can add to,	SM7- No department is more or less 'wasteful'
SM7- This store is 'deficient' in monitoring and tracking software	SM7- It is not worth distributing fresh produce
	SM5- Increased waste through transition phases
Initial Barriers/Considerations	**Process of Write-Off**
SM2- Donating goods is outside the normal course of business	SM1- The system tells them how much to order to fill the shelf. As it comes in the dates are entered. Each day the manager gets a 2 week report (expiring in next 2 weeks), to mark down and sell. There is no inventory, and thus no storage practices
SM2- Redefining the problem to ensure the people who need food get it (increase supply that way)	SM1- Aside from extra stock, which is kept of sale items and things which are expected to sell faster in a certain period, there is no inventory

SM3- Donations (and the cost of) is considered separate from waste (and the cost of)	SM2- Waste is given to a productive user where possible in this store
SM4- They won't set up or plan a business around donating a certain percentage, but don't mind donating the naturally occurring things	SM2- Currently, it is written off the system, taken to the sorting area, and either in the pig bins or rubbish bins
SM4- There is a desire to help other people	SM2- Some food is offered to customers at discounted rates, or for free.
SM5- TM motivated by "reducing waste"	SM3- The process is scanning out each good, it then is deemed waste and dumped. They track and monitor daily/weekly waste figures
SM6- The understanding of how their actions could impact/help those around them is needed	SM3- Goods are either classified as edible and sold, or inedible and waste
SM6- Supermarkets are currently a vehicle for customer donations	SM3- CLASSIFICATION: If the product is good to eat it is good to be sold. If it isn't it is a waste good and a loss to the company.
SM7- They would reduce-to-clear items less frequently for food bank purposes	SM3- Their waste is Not Fit For Human Consumption
SM7- Weigh up the total costs, total losses, for financial viability	SM4- It is shelved and the manager checks daily. As it is close to the date things are reduced to sell faster. Old goods are dumped unless set aside and safe to use and transport.
Techniques to Reduce Waste	SM5- As stock arrives, dates are entered, and managers get a 2 week printout daily.
SM1- Their current processes mitigate the majority of waste from dated goods	SM5- The goods are scanned, taken to a locked bin, and form there verified and sorted (dumped or to pigs) by one person
SM1- As long as procedures are being followed, we are able to reduce expired waste.	SM5- The current process is simple and effective
SM1- They are aware of the lines and categories which are slow selling and give these additional efforts while in stock.	SM5- Products are either NFHC or dumped
SM1- Their waste has decreased since the new processes have been implemented and would have been able to give more in past times	SM6- The goods are scanned, taken to the credit areas, and sorted (waste or pigs)

SM1- Reducing the price is very effective in removing the goods and nothing is left over as it all sells.	SM6- Computers and/or scanners are used
SM2- Selling the stock minimises the waste and what becomes unusable, and also works in a 'product trial' type of manner.	SM6- Fresh foods go to a productive means (NFHC)
SM1- Marking them down does mean the reduced ones sell before the regular ones, and could cause concern. But as there is no inventory, it isn't a huge problem	SM6- Any expired stock is dumped
SM1- People in this area of Christchurch look for bargains and value for money and the system is working really well.	SM6- The most important consideration for them in surplus goods is removing the waste
SM1- They are able to reduce their waste through selling it before it becomes a loss. They still lose an amount of profit, but less than not selling it.	SM7- Surplus items are taken to the sorting area; predominantly waste or pig man, sometimes food bank
SM2- As dates are approaching they reduce the price and sell them	SM7- They plan based on shrinkage (3% waste)
SM2- Some goods are known to be better after the dates (cheeses) and customers know this	**Process of Removal**
SM3- Checking and rotating is a daily process for department managers	SM1- No contact is needed for how they currently function in this with the pig man
SM3- They reduce to clear things as they approach their dates but sell or donate nothing over its date	SM2- The pig farmers come and collect it at regular times and days, no communication needed
SM3- Their size enables them turnover advantages in terms of sales and removing stock	SM5- The pig man comes in at regular times and days without communication
SM3- They reduce their waste further through reducing the lines of products to 2 or 3 types/choices	SM5- The pig man provides additional services (cleaning)
SM4- There is a built in credit system with the suppliers and thus, they are not supposed to on-sell and reduce the price of any damaged or dated goods	SM5- Currently work together to achieve goals

SM4- They acknowledge that the people who normally buy the reduced fresh food items do not normally buy full price; 2 groups of customers	SM6- The pig man collects at regular times, days
They are able to buy more than they would normally, and sell it on	SM6- No contact is needed
SM6- Known lines and categories are checked more frequently	SM6- There current system of removal is working well
SM6- Some products are modified (sold frozen)	SM7- Food is credited, so the gains between dumping/donating are minimal
SM6- Some products have been coded "high risk", for extra attention	**Current Food Bank Relationship**
Staffing Issues	SM1- The food bank collects on a regular basis, no calling necessary.
SM1- One person sorts everything and everyone completes the write-off.	SM1- Nothing fresh is given to the food bank, as it is collected weekly and would have to last 6 days
SM1- Their system relies on staff discretion about when to mark items down and how much by, but at the end of the day, it gets the products out of the shop and into the buyers' hands.	SM1- They have a long term relationship with one food bank
SM1- They still rely on human input, but the majority of areas for error have been minimised.	SM2- They work with a food bank who collect goods donated by customers.
SM1- One person sorts and classifies, one person would use the system, unless a preapproval function (at point of write-off).	SM2- The food bank comes regularly, no communication needed
SM2- It is up to the staff to rotate and know their stock	SM2- They facilitate food purchases, in a partnership role, but do not donate anything
SM2- The system needs to be able to be used by everybody to reduce resistance	SM3- They donate boxes, items for events and vouchers to organisations to buy what they need
SM3- They are reliant on staff to check and remove dated goods	SM3- In their current system, the people who do come, come regularly
SM4- Staff incompetence is the biggest cause of wasted goods and expired goods	SM3- They support organisations, but in terms of donating high quality products or vouchers

SM4- There is quite a bit of waste at different times (given earlier statements) due to staff issues, handling, and negligence.	SM4- Currently, the food bank comes in at regular and reoccurring times
SM4- Staff are expected to undertake daily date checks and know their departmental stock	SM4- Limited damaged goods are being forwarded on to the food bank
SM4- There is one manager who oversees stock levels in the fresh departments	SM4- TM is quite willing to hand these goods onto food banks and work in there more
SM5- The manager decides at what times and amounts to reduce stock to sell	SM4- There is more being wasted that is able to be distributed to the Food bank than what currently is
SM5- They are able to identify staff/departments who may not be performing	SM4- TM is prepared to take the extra time to ensure everything that can be donated is (EQ)
SM5- Most of the team would use the system	SM4- There is an existing food bank relationship with a specified food bank
SM5- Managers discretion over what gets marked down at what times which could vary	SM5- Managers choice over how much to work with a FB
SM6- Managers check stock and dates, and rotate/reduce	SM5- There is a connection to a (specified) food bank, but its usage is minimal
SM4- after it is taken of the SAP it is the managers decision as to whether this is donated or not	SM6- Mutual gains relationships are needed
Benefits of a Food Bank Relationship	SM6- They are affiliated with a food bank, but this is not outside national appeals or in daily operations
SM2- The benefits are helping the community and public image	SM6- The food bank collects the bags customers donate (no communication)
SM3- It is important to this SM to support their community	SM7- 3% of all waste could be used (given, they don't track or monitor it)
SM3- The local community is repeatedly used by this manager. They are the closest in terms of impacts and sales	SM7- They currently work with a food bank who takes old bread
	SM7- Preformed food bank relationship
Risks of a Food Bank	SM7- They come regularly, no contact needed

Relationship	
SM2- Some food could be donated, but the primary barrier is the food safety programme	
SM2- The food safety risk of harming someone and hurting the organisation (or producer) is the biggest barrier	**Software Issues**
SM2- TM is reluctant to work with food banks because of reasons to do with "rat bags" (FB3) who don't need a parcel, but go to a food bank so that money can be spent elsewhere.	SM1- Software is implemented at the franchise level.
SM3- Security is the biggest risk, and ensuring the recipients are trustworthy in terms of what they take	SM2- Implementation process; 1=improvement, and whether it is significant, 2=weigh the costs and benefits, 3=group level decision, 4=testing, software, after sale service available, 5=decision
SM3- Image is also another risk, and having the public see people taking things from the bins	SM2- Is it worth the change and the resulting temporary problems which might arise?
SM3- There is also the risk of impairing future sales through donating goods which can be sold	SM3- Software is head office imposed and tailored for their store
SM3- “The last thing we want to be known for is giving away products that are compromised". Black and white, it is sellable or it is not.	SM6- There is tolerated variability in terms of implementing a system
SM3- TM points out the balance of giving a good away is a good you can’t sell, doing the right thing and impacting the ability to generate a profit and survive in the market.	SM6- Group level software decisions removes their risk (corporate decide for me)
SM3- A risk is that food banks will just turn up, rather than be notified, and fight for the goods.	SM6- A device which supported existing practices and processes = good
SM3- Maintaining the integrity of the supply chain is important	SM6- Is the transition phase worth it (value)?
SM4- The risk is harming people down the line through donating goods to people who can't maintain safety standards	SM7- They can choose to implement software
SM5- Anything new needs to maintain the	SM7- Group implementation is preferred at

security standards already in place.	times
SM6- Food safety is the biggest risk	**System Requirements**
SM6- Accountability is another risk	SM1- Long term relationship with one food bank, system would need to support the existing relationship.
SM6- A fear of staff destruction for personal gain	SM2- Speed (in write-off and removal) is less important than compromising the system in place
SM6- Personal gains is the second risk (on-selling)	SM2- To overcome the risks, an agreement would be needed to protect the supermarket and food bank, and ensure that all parties have the same knowledge
SM6- Easier/less risk to dump it	SM2- The challenge is to communicate clearly the potential benefits and how the system improves their operations
SM7- Main risk is health and safety programme	SM2- A scenario analysis is needed, of all the potential problems which could arise, and how these could impair other systems in place
SM7- Secondary risk is FB anticipating and 'demanding' donations	SM2- A system which allows the manager to know who he has helped (in anonymous terms)
	SM3- A need for an anonymous system, or one with one food bank receiving (an area based system, using the Food Bank Forum areas
	SM3- TM points out this software would be for the "not regular things". Or the things which come up intermittently and don't need someone to come in at these times and days all the time
	SM4- There is an existing food bank relationship with a specified food bank and this would need to be built into the system. How would a FB-FB system work in cooperation with this?
	SM4- There is a need to ensure that negligence on the part of the receiver wouldn't compromise the safety of the product (user of the food banks safety)

SM5- Current communication is as needed
SM6- The integrity of the people involved needs to be intact
SM6- Is there a trade between additional checking ($) and write off of more goods ($)
SM6- Anything new would need to exceed the current value provided by the pig farmer
SM7- Feature; tracking donations and waste
SM7- Feature; allowing accuracy in figures
SM7- Feature of agreement; turn up as asked to
SM7- A primary condition is easy to use (determines success)

9.2.2 Food Bank Results

Operation and Resources	Initial Considerations
FB1- He has the supply to match, in Christchurch, the Salvation Army parcels nation-wide	FB1- It might be interesting to get facts on the food poverty in Christchurch before and after them.
FB1- He trebles Auckland supply in Christchurch without impairing distribution (what he is able to do with supply)	FB1- There is a reluctance to give up what they have (other food banks and supply) but the ease is worth it for those who do
FB1- He works with over 200 agencies and churches; accesses supply, breaks it down, and gets it out	FB2- Everything is being delivered fairly (according to the need of each party and how much supply they need to deal with the insecurities within the communities.
FB1- The operation costs $200,000; $103,000 in rent, 1 minimum waged employee (not the manager, not full time) (21,840).	FB2- Ensure the additional effort is worth it in terms of the value given
FB1- They are in the process of opening a larger scale distribution centre, serving Timaru, Ashburton, West Coast and Kaikoura	FB2- Focus is the software as a means for the relationship to work

FB1- They have trucks for collecting and also vans and Escargo's for deliveries (to recipients)	FB2- Maintaining current relationships is important
FB1- This FB is operating a distribution style of organisation	FB2- The benefit of connecting and learning from the other people using it about things live inventory management and supply chains and things
FB2- The food bank (food store) is one portion of their operations	FB2- The benefits are getting the food they need, not stealing someone else's supply, and being able to deploy resources to need
FB2- They get some funding (not for food) and money donations as well	FB2- The main barrier and benefit is collaboration- no one person with final say
FB3- They do not want dependency on the FB, they offer choices but keep some goods hidden	FB2- The prior condition is that someone knows computers and setting up systems- if not there, more effort from design team
FB5- They access funding, but because of the umbrella of organisations housed, it is hard to say what goes where	FB2- The risk that people could manipulate it through liking or preferring one group over another
FB5- They are building new offices to house everything under one roof	FB2- They fear having standards imposed on them from other food banks
Operational Focus	FB2- Trial and removing risk through pre-adoption use is important
FB2- "Resources we are freely given and we freely give away as well"	FB2- You wouldn't need a big warehouse if everyone did their job
FB2- Helping people is more than just food and this is not their primary focus	FB3- There may be a reluctance to change due to a fear of losing supply
FB2- Their focus is in empowering people to make better informed decisions	FB3- There may be a willingness to change due to a perceived benefit of protecting supply
FB2- Their resources are shared amongst their operations	FB5- Christchurch FB supply is not in terms of being even, but in terms of being adequate to the needs.
FB5- Food banks operate from the waste of others and not the other way around (businesses empowering others) and the whole redefining of corporate philanthropy (from literature).	FB5- If it worked and it added value to them then they would want to use it

FB5- The focus of their operation is considering the supplier needs as much as/more than their own	FB5- Non-profit organisations operate within this short term, lifestyle where the things that they get on one day might actually stop,
FB1- "I am giving you a source and a means to do what you need to do"- he has the resources.	FB5- Achieving something they are not achieving right now, and they can't possibly achieve it without the system in place.
Supply Considerations	FB5- In the pre-trial, if it was instigated by the other side of the relationship then it would be something which they would use.
FB1- The most important concern for him is how the food leaves his premises	FB5- Increasing the supply of things they store and straining the duties of the one driver
FB2- Increasing the supply through new avenues, and not simply poaching other peoples supply	FB5- Suppliers and their perceptions of value are considered before their own value
FB2- Dated goods are harder to redistribute and use, and strain operations	FB5- There is the fear the transition phase would lose suppliers through human error
FB2- Empowering people to spend what they do have better	FB5- There needs to be value seen for the effort which is used in changing
FB2- In collecting supply, they link in driving with other duties and personal trips they have to make	FB5- They have the capacity to keep goods removing the fear of being over committed
FB2- The biggest risk is "stepping on another food banks toes"- there are groups who have come in and cut out the supply for others.	FB5- They need to know its ease and use before they commit
FB2- The important consideration in supply is range/variety, and more regularly	FB5- Value is seen through having more supply or getting it in a better way
FB2- The quality of the food and closeness to the date is important (impacts staffing)	**Accessing Supply**
FB2- The risk that the suppliers are going to lose their sales	FB1- He has 25 suppliers (named Goodman and Fielder, Quality Bakers, Couplands, Griffins, Progressives, Quality Tyres, Watties and Meadow Mushrooms at different times).
FB2- The variety and health aspect of the food is the next consideration (providing healthy options)	FB1- His access of supply is dependent on him

FB2- There is a balance between providing things they won't have to buy, and advocating a desirable lifestyle	FB1- Packaging is a huge advantage, and allows things to be used past their sell by date
FB2- There is a fear that should they reject donations they will lose supply	FB1- Food banks could get as much supply as they wanted from him if they were willing, could avoid all their supply issues, but are choosing not to.
FB3- Making sure that the things you are giving, the people have the means to use them and it isn't something which will just sit there until they can use it (complimentary products)	FB1- This FB gets corporate level supply, from distributors/wholesalers/producers at large quantity bulk lots (11-60 pallets)
FB3- Quantity is the most important consideration for them as their size is very limited.	FB2- In a time where the demand has increased (EQ) there has been matching supply increases
FB3- The funding they are able to get allows them to fill the holes in their supply and purchase the food they need to give to people.	FB2- The supermarkets they have been working with are long term, over ten years, and the supply there has increased throughout that time
FB3- They don't say no for fear of cutting an avenue to supply	FB2- Their supply comes from other churches, excess over-supply (majority), people dropping things in, 2 food bins and what they purchase)
FB4- Their biggest issue at the moment is staff to complete key tasks (splitting items)	FB2- There is a group of products they supply (whether donated or purchased) and the rest is used as available
FB5- They have the risk that if they say no to someone, they will remove future supply	FB2- They feel at times disadvantaged in their supply because of their size and organisation
Supplier Considerations	FB2- They have a FB pig, where the fresh waste is fed on there, and they eat it as a community
FB1- His relationships are dependent on certain people that he works with, and someone else could come along and change this	FB2- They present a desire to buy more themselves (control over variety, quality and quantity)
FB1- "It took 9.5 years" to get supply from Quality Bakers, and this demonstrates the lack of trust they have in the food bank	FB2- They work with children too, and increasing their knowledge of health and 'green bug'.

FB1- Contracts are present to protect the suppliers and the food bank, and acknowledge the receiving of impaired goods (dates or other) (sharing within liability)	FB3- 0800 reduced the food bank supply
FB1- He adds value to the suppliers by protecting them through agreements and contracts others don't offer	FB3- The food bank is very small and often use office areas for storage
FB1- He is able to request items from his suppliers	FB3- They can vary what they offer due to purchases and funding for food
FB1- His suppliers fear on-selling and shrinkage, and he has needed to develop transparent policies to work with this	FB3- They get their supply from church donations, individuals, excesses (redistributed) and purchase $200 a week
FB1- His suppliers want centralised distribution (someone to come in and take the lot)	FB3- They have a few standard items which they always give like meat and cans, but most of it depends on what they have and what they can get access to at the time.
FB1- His suppliers won't work with small food banks- the supply is too large and time consuming	FB3- They have that clear limit on supply so even for the things that keep on a shelf, if it is something they don't need every day they try not to keep it as it is taking up room.
FB1- The importance for the suppliers is removing the waste as fast and easily as possible	FB4- Mostly they know things are coming but sometimes they don't (everything is delivered)
FB1- The producers know the dates and lives better than on sellers (SM) and are able to give more away close to the date	FB4- The bulk of their supply is churches, there are a few food organisations which often give them fresh things and items which need to be used within a certain time frame.
FB1- This is the decision process of most of the organisations and the food bank needs to provide some sort of protection for them in light of food safety	FB4- Their current system (of accessing supply) works well for them
FB2- The relationships they do have are not very stabilised or formal and depend on certain employees and the decisions they are making.	FB4- Their supply is from churches, Wool Ladies Trust and money from the Phillip Brown Fund

FB3- Contracts or agreements are needed to open up and match needs of the giving and receiving food bank	FB4- They use cash and get things done themselves (special hampers) rather than purchasing them
FB3- The lack of a willingness to have relationships from suppliers supports FB1	FB4- What they do now is quite easy for them and accommodates having variations in staff and times and people doing whatever they do.
FB3- There are no real strategic relationships and attempts at this have failed	FB5- And they just call in on regular days and at regular times and empty the bins. There is no need for communication and there is no need for contact with anyone and it operates in a self-explanatory manner.
FB5- Supplier relationship is wider and bigger than just taking away the things people don't need anymore.	FB5- Customers can donate and the brown bags where the customers are aware of what type of things they should be buying and what can store and ways that their finances can be deployed
FB5- They make sure things happen when they need to, with their suppliers	FB5- All donations are donor instigated, nothing is requested
FB5- Adding Value and meeting the needs of each party is crucial	FB5- Half of their supply is purchased, half is donated
Internal Processes	FB5- Purchasing relationships allows them to access new supply (donations from the outlets)
FB1- He can use his resource (trucks) to distribute excess fresh produce, or parcels in intense times (EQ)	FB5- There is no real limit to what they can take as their processes are well defined
FB1- He drives all day, 6.30-11.20	FB5- They are able to use social services in the growing of produce
FB1- He has a huge capacity to be able to stock things	FB5- They have a few long term relationships, a few who donate infrequently, then the 'out of the blue' callers.
FB1- His process is receiving the goods, breaking them into parcels, and giving them to churches/organisations to distribute.	FB5- This food bank has a large storage capacity and an ability to maintain food safety standards
FB1- Nothing goes out in bulk, and often not even with the brand showing	**Staffing Issues**

FB1- Procedures and protocol are followed to protect his suppliers (which are different to how other food banks operate	FB1- 5 volunteers operate the repacking process
FB1- Storage of items is as minimal as possible, compared to getting the food out there	FB2- They have to balance their time between the food bank and everything else
FB1- The only thing limiting getting things out there is drivers and deliverers	FB3- Two people oversee the food bank, one if the main person is not around. So there would be 2 potential users of a system.
FB1- This FB needs to be accountable with their supply, where it goes, how much goes where, and all their restrictions	FB4- Their church is dwindling and this impacts staffing and donations received
FB2- So the daily process would be looking at the stock to uncover what is there and bringing it out into the food bank and making it available to people	FB4- There is five FB staff and they are open 2 hours a day (one person on each day).
FB2- They have increased their storage to be able to accept more and purchase less	FB4- There is one on-staff coordinator every day, and the role and duties vary
FB4- They offer extra help and become more 'lenient' at more intense times of the year (e.g. school going back)	FB5- There is one person facilitating the food bank and communicating with suppliers
FB5- Donated goods are taken first to the warehouse for sorting and storage	**Donation History**
FB5- The process is clearly harder at the points where things are broken down into what they need and where it is shelved and this is all very labour intensive	FB3- They do around 30 parcels a month
	FB4- They do around 6 parcels a day (120 a month)
Recipient Issues	FB5- We do about 30-35 parcels a day, so multiply that by 5 days, and 4 weeks (600-700)
FB1- Clients look at dates and quality and use this to get additional parcels	**Food Bank Relationships**
FB1- Clients look at trends in Christchurch and use this to get additional parcels	FB1- He can redistribute (to FBs) on supplier terms and not his
FB2- For people food is a variable cost	FB1- He is restricted in giving out bulk supply, and it

(considered last; literature)	is limited to parcels only
FB2- Things are getting harder for the people who are in need	FB1- There is an undercurrent of hate towards him, but when people see how it operates and how successful it is, they change their opinions quickly
FB3- This area are known for not having much skill so they tend toward the things which don't need a lot of effort and education in use like pre-prepared baby food.	FB1- They (other food banks) can simply turn up, collect the parcels, and give them to their clients.
FB4- People pry on things in the community and use these to try and get more food	FB2- The food bank forum is an open discussion if issues and solutions, and industry-wide matters, allowing them to each serve different regional areas
Recipient Processes	FB2- they need to know and understand not only their capacities when they accept donations, but their on-givers capacity
FB1- He has the supply to be able to offer additional parcels, protect the supplier, without jeopardising others	FB2- They redistribute local first, and then use it in groups they know have struggles and financial pressure
FB1- His donations are city-wide, and does not link in with zoning of the other food banks	FB2- This would be another impact of the FB Forum- being transparent with each other about the concerns and risks that they as a whole are facing.
FB1- Their standards are able to be relaxed in terms of how many parcels they can give to individuals, but this is at the expense of where their supply goes (it is given to you to give to the community, do this as much as you want, but don't give it away in bulk)	FB3- City Mission drop in excesses far above what they ever need or could distribute in parcels
FB1- They allow six parcels in a short amount of time. This is lenient in terms of what the other food banks are giving out.	FB3- There is no warning from the City Mission, they turn up and unload
FB3- They all (FBF) serve different areas of the community	FB3- They have to look at what they can take and pass the rest onto other people.
FB4- Proof of address and reason for food shortage is needed before any parcels are given	FB3- They redistribute things to not only other food banks but people who deal with food and people in need.

FB4- The general theme is they are becoming stricter, but the EQ has forced them to be more open and lenient at this time	FB5- In times of over-supply or goods they don't need much of they are able to redistribute this to other food banks
FB4- Their parcel contents standard is similar to all of the others	FB5- Some goods are handed on, most are stored
FB4- They don't need a lot of supply and they are able to handle parcel demand in their area	**System Features**
FB4- They give standard parcels and it varies for people within the family size	FB2- A system where they knew where to send people for the greatest level of help and support.
FB4- They have a zone of where they accept the addresses of recipients	FB2- A system which allowed for a fairer distribution and prevented someone having their "own empire" of supply.
FB4- They have the funding to be able to donate money as well for certain purchases	FB2- Instant contact with people who can come in and take their allocation.
FB5- Recipients get standard parcels based on family size, and are able to choose how much fresh produce they take	FB2- "For individuals you could actually have listed on a web page goods needed so that everyone could see saying this food bank is short of this particular food product "
Current Software/Issues	FB2- "If you developed it as part of a collaborative initiative with say the food bank forum and a network of supermarkets they could have ownership of a project and perhaps have the resources to fund IT development of it going forward"
FB2- There is a manager for each department (3) and a general manager. Would need to be accepted by general and department manager	FB2- "You can have a food bank body that kind of allows new organisations coming in to actually be examined to see whether they are actually robust and professional and everything else, so there is a bit of security there I guess"
FB2- There would be 3-4 users, but at different levels	FB2- A feature which was the same every time- mistakes couldn't mess the system up
FB2- They have no inventory software but they rely on the knowledge of what they have and keep an eye on it.	FB2- A knowledge system where they can refer people on to organisations and services to help them better

FB2- they use technology and have just implemented a client database	FB2- A system of collective people who need food and have food to allow consistency
FB3- There is one decision-maker	FB2- A system which had one person overseeing (neutral) or sharing the co-ordination
FB3- They have a computer, but it is used as minimally as possible.	FB2- An ability to deploy the food into the areas where it is needed most is wanted
FB4- Their staff are "computer illiterate"	FB2- Being able to pick out from the total stock what you needed instead of taking whatever you got would be an advantage here.
FB4- There are no computers or technology systems in place at all.	FB2- Communication depends on if it is an evolving system or fully set up.
FB4- There is no technology used here	FB2- Feedback on what the best things to use to work with different groups are
FB4- They have the issue of one person implementing it and being the only user	FB2- Inventory link- their inventory to mine
FB5- Computers are used daily as part of operations	FB2- Privacy risks of sharing information about clients
FB5- One person uses the computer and communicates with suppliers	FB2- Something which allowed more structure in their relationships would be beneficial/valued
FB5- The technology would be approved by one manager and used by another	FB2- There is an opportunity to systemise the process of redistribution (drive around till it's all gone)
FB5- There is no inventory software present	FB3- Possibly, a system which could be used infrequently with the computer
	FB3- Something to allow them to be able to have the same supply without the need to purchase as much as they are and save money and be able to deploy that in other areas.
	FB3- Something which could prevent their becoming inundated with things they can't use would add value to them
	FB3- There is a need, as they are so small, to have a heads up when large amount of weird things come in

FB3- They also suggest a system which shows all the people not only food banks that deal with food and that they can pass things onto and get that instant communication with.
FB4- They see technology being beneficial if it could catch people 'double dipping'.
FB5- An anonymous/distribution system might empower them to say no
FB5- It needs to function simply and be able to be used
FB5- Something where you could get notified through inactivity or not being an active user of the system, outside of a computer (e.g. mobile)
FB5- The distributor role of having the knowledge of the things they will break down and hand on to others
FB5- The random, sporadic calls are the hardest to deal with and something to fill in the blanks would be of value
FB3- Empowering the manager to be able to choose the things they want and the things they don't and knowing that they can stipulate the amount without cutting down an avenue of supply.

9.3 Appendix Three – Focus Group Script

"As you are aware, today we are here to discuss features of a donations management system. From the interviews conducted earlier with food banks and supermarkets, it appears that the most value in such a system may not directly involve supermarkets, but rather other organisations and food banks that are part of the goods-forwarding process. The aim of this focus group is to determine the best way to apply the DMS system and the features needed for you to have value for the effort needed to implement a system.

INTRODUCTORY QUESTION: "I'd like to see a show of hands to start with. How many people here use Facebook? Trademe? Excel? Let's start with the FaceBook users…" Imagine this software product has a personality. Please describe it to me. Is it introvert, extrovert, spontaneous, nasty...Now for the Excel users…TradeMe Users….

PART ONE: ***(Broad questions to determine the nature and significance of supply issues and considerations in food banks).*** You have just had a phone call from Watties, and they inform you that they have a donation of 5 pallets of Baked Beans that they would like to donate to you. Can you explain to me how you would deal with this situation?

Now, you have access to an instant form of communication through the web. How do you think you would be able to deal with this situation now, if the web based system could function anyway you would like it to?

One of your ***regular suppliers*** has just called you. They inform you that this week, instead of their regular donation of 50 loaves of bread, it is going to be triple (150). How would you deal with this situation?

Now, you have access to an instant form of communication through the web. How do you think you would be able to deal with this situation now, if the web based system could function anyway you would like it to?

Now, you have received calls from 7 different suppliers, all with donations for you which need to be collected tomorrow. How would this situation impact you?

Now, you have access to an instant form of communication through the web. How do you think you would be able to deal with this situation now, if the web based system could function anyway you would like it to?

Can you think of any other disrupting supply issues or scenarios that I have not asked you about, that you have either faced or are concerned you might face?

How would the availability of an online web-based system positively influence this?

I would like you to think about how you access, retrieve and deal with supply in your food bank. What is the most disrupting thing that can happen in this process? (Large donations, infrequent donations, supplier timings, driver issues, other)

What is the biggest risk or place of error? How could this be handled?

Is there any way using technology might be able to solve this? How?

Leave it open at first, and use these examples as prompts

Managing Inventory
Managing ad-hoc donations from suppliers
Allowing other food banks and agencies to receive excess
Knowing when/how much excess I will receive from other food banks
Monitoring food parcel recipients
Communicating to the public about our needs
Communicating with suppliers about where their donations are going
Managing bulk donations
Other

As you are aware from the interviews, the research project you are participating in is investigating the needs and requirements of an online system between food banks and suppliers. 'Suppliers' could mean anything from wholesalers, distributors, producers, supermarkets or even other food banks.

What would you think of an online Donations Management System (DMS) which connected you to your suppliers and aided the way you communicated with them? ***Leave question open at first to capture those initial thoughts/considerations/risks***. (Do you have any concerns, queries, worries? Are you excited, happy about this? Would you be worried about using technology more?)

For the next part we will discuss the other features an electronic system could give you. I would like to ask the group to split in half and form two smaller groups.

What I would like to discuss with you now is, if there was an online DMS available to you, what would be the main function or purpose you would like this to achieve? The following is a list of the potential main functions an electronic system could achieve. ***(First question)*** Of these, which one is the most important to you and would provide you with the most value? ***(Following this, the second question)*** Of the remaining options, which 1 or 2 would allow you additional value, but are not necessarily 'essential'? ***(Then finally the third question)*** Would any of these be fairly unnecessary in your eyes?

A system that provides traceability of goods & parcels
A system that manages FB clients (to stop people over-consuming)
A that manages food bank clients/recipients
A system that invites ad-hoc donations from retailers
A system that manages FB inventory
A system between you and your main suppliers to facilitate communication
A system that works with bulk providers to manage large donations
A system that lets FBs trade food surpluses
A system which communicates your needs to suppliers

Think about the operation of your food bank and all the jobs and things you do every day. If there was an electronic system available to you what are all the ancillary things it could do for you? For example, in receiving goods, it could allow you driver mapping when you're picking the goods up. Or, what information could/should it tell you about the goods you get? There are no right or wrong answers, brainstorm all the possibilities.

Write these in the large column on the left. ***The following are examples if they need prompting.***

Contracts to with system administrators, or contracts with suppliers/food banks?
Avatars to ID individual system users (trust)
Transaction feedback
Communication (like chat/text) outside of transactions
Used as an 'app' on a Smartphone/cell
If "computer illiterate", are they comfortable using cell phone?
Health aspects/condition of the food donation
Info on quality or sell by date, package type and brand
Driver mapping of all the locations to visit
A system that links into my inventory
A free trial period

Now, with the list of features, go through individually and rate each one with a 1=essential, 2=nice to have, 3=unimportant. Write these in the right hand column.

Now, swap pieces of paper with the other group. Go through and rate their features in the same manner; 1=essential, 2=nice to have, 3=unimportant. ***I will give them A3 size papers, or bigger if I can get it from the book shop, and give each group a different colour of vivid (i.e. one group gets black markers and the other group gets green). I thought this would be the most efficient way to get everyone to rate all the features and I will go through later and delete any redundancies).***

For the final part of the focus group I would like you to think about the DMS as a product you are interested in implementing. As you may know, a product includes not only the tangible features or things it does for you, but also the intangible services it can provide to you to make your life a little easier.

I have a list of options the designers could provide to you to support and facilitate your use of the system. These options are not all based around the technology itself, but other things which arose in the interviews which were important considerations.

On each card are three options. I would like you to, as a group, choose the option which suits you best and stick this onto the green 'summary cards'. Leave the others on the card.

System Features	**Option 1**	**Option 2**	**Option 3**
In accessing supply through a DMS, I would prefer working with...	A few suppliers	Any Supplier	Food Bank Distributor
If I was using a technologically based system of donations	Online system for use on Computer	Mobile device and computer	Mobile device

management I would prefer...			
I could see using a web-based Donations Management System for…	All donations (both in receiving and giving out oversupply)	Large/peculiar donations	Oversupply only
In the initial phase of using the DMS, I would prefer:	Free Trial Period with phone support	Off-Site Trial	On-site Information Sessions and Assisted Implementation
With respect to the overall food distribution system	All food supply should be loaded onto the DMS system first to then be 'shopped' by the FBs	All supply should be loaded onto the DMS system first to then be allocated to the FB	A DMS could help with the food distribution systems already in place
In building trust between users, I would prefer	A contract to exist between all users of the DMS	A 'Chat' function to be embedded in the DMS	Small pictures (avatars) being associated with each user so we can see who we are transacting with
With respect to Maintenance, we prefer	Communication with designers as needed	Designers to call us Regularly	Designers to visit regularly
If there were costs associated with DMS use…	We could not participate in using the system	Costs should be based on a stable, monthly charge	The system should be user-pays

Concluding Questions

CONCLUDING QUESTIONS: (Back in a full group) Let's assume your FB implements an electronic DMS and for some reason it was unavailable/didn't work when you tried to use it. What do you see as being the most likely consequences? What are the "worst-case scenario" types of consequences?

When considering a relationship of this nature, are there any other important considerations you would like to make, or any experiences you would like to share?

"Thank-you for your participation, if you have opted to have an aggregate of today's results sent to you, it is estimated this will be done within the next 2-4 weeks. Your feedback,

participation and response are greatly appreciated, and this project would not be possible without your assistance. As a token of my gratitude I have a small gift for each one of you if you would like to take them on your way out. Please feel free to join me in a complimentary morning/afternoon tea. Thanks again for your assistance."

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