

Cost as a Barrier to Eating Fruit and Vegetables: A Service Design Approach

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Abstract

Service design is an emerging discipline that has enabled inspired service innovation in a variety of industries. This paper presents the application of three service design methods, *Service Blueprinting*, *Directed Story Telling* and *Photo Journaling*, alongside a quantitative *Cost Analysis* method. Methods were used to explore a societal issue. The research investigated the social issue of ‘cost as a barrier to eating 5+-A-Day’ for residents of an isolated rural community. Research methods were used to investigate food supply and access to food, from both the suppliers and residents’ perspectives. The findings show the positives and negatives of using service design methods within this context.

Keywords: Service design methods, nutrition, 5+-A-Day, expense, isolated rural community

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Introduction

Service design is an emerging design discipline that focuses on helping providers develop and deliver improved client experience, through combining traditional design skills with multidisciplinary research methods (C. Burns, Cottam, Vanstone, & Winhall, 2006; Mager, 2008). Discipline enthusiasts advocate that service designers are uniquely qualified to help solve complex problems (C. Burns, et al., 2006). This research project supports the emergence of the new service design discipline and builds on its body of knowledge. Since appearing as a concept in the early 1990s (Maffei, Mager, & Sangiorgi, 2005) a wide variety of service design projects have been implemented in different industries such as telecommunication, transport, retail, financial, health services and the public sectors (Rosted, Lau, Høgenhaven, & Johansen, 2007; Thackara, 2007). Service design projects have predominately been implemented within the context of companies or organisations to investigate or improve a particular service. Limited attention has been paid to the potential of using service design methods within social contexts. The purpose of this research project was to investigate the use of service design methods within a social problem.

A practical project that focussed on a social issue was used as a case study to explore the research question. The practical project selected was 'cost as a barrier to eating 5+-A-Day for isolated rural residents'. This paper documents the methods and results from the practical project. The paper also includes a summary of the observations and reflections on the practical project, forming the findings of the overarching research.

The Practical Project

New Zealand's food supply has been confirmed as being more than adequate to provide enough nutritious and safe food for all New Zealanders (Public Health Commission, 1993). Paradoxically some New Zealanders experience having insufficient food or going hungry as they have run out of food and are unable to afford more (Obesity Action Coalition & Te Hotu Manawa Māori, 2009). Addressing local food supply issues for specifically disadvantaged groups has been recommended as more important than examining and modifying national food supply (New South Wales Centre for Public Health Nutrition, 2003).

In 2006 pilot study McClellan clearly identified that cost was a barrier to eating healthy food in a South Taranaki (McClellan, 2006). This enquiry expands on McClellan's work by taking a more in-depth look into the cost barrier. The research described in this paper formed part of a larger, more comprehensive research project that investigated food security in an isolated rural community, initiated by the Health Promotion Unit from the Taranaki District Health Board. An isolated community in the South Taranaki region of New Zealand was selected as the location for the practical project. There were two reasons behind choosing an isolated community. Firstly, those who live in rural or remote areas have been identified as experiencing cost disadvantages due to their geographic location (New South Wales Centre for Public Health Nutrition, 2003; Obesity Action Coalition & Te Hotu Manawa Māori, 2009). Secondly, people who are socioeconomically disadvantaged and/or have low disposable incomes are more likely to experience cost as a barrier (New South Wales Centre for Public Health Nutrition, 2003). With just less than 900 residents the selected community was a small town, rural in nature and geographically isolated. A high number of residents

were in a low socio-economic income bracket, 83% of households living off incomes of \$30,000 or less (Statistics New Zealand, 2006).

The initial objective of the practical project was to determine how the average cost of purchasing 5--A-Day differed within an isolated rural community to an urban town. The second objective was to generate an understanding of fruit and vegetable availability, services and access within the rural community. Thirdly, in relation to the 5--A-Day initiative, the project sought to gather a record of participants' knowledge, thoughts and current fruit and vegetable nutrition. Finally, a qualitative understanding of the cost barrier was sought from the residents' perspective. The key objectives of which were to 1. Understand feelings, attitudes, behaviours and personal experiences related to fruit and vegetable access and 2. To enable participants to identify and describe any access barriers they perceive. Overall, the study was designed to present a brief summary of the how residing in a small isolated rural community can affect residents' access to fruit and vegetables.

Sample

Two shops were identified as the only fruit and vegetables suppliers in the community, a Mini Mart and a butcher. Both owner/operators were provided with information that explained the nature and intent of the study, they were happy to participate. A vegetable grower and the petrol service station were also identified as handling fresh produce, however both were excluded from the research. The grower did not directly supply the community and the petrol station had a sporadic supply of items such as lemons and onions.

Ten rural residents and their families were recruited as participants to explore the issues around access to fruit and vegetables. Participants were recruited by word of mouth through the Community Health Centre and three education providers; the Primary School, the Play Centre and the Te Kōhanga Reo. Participants were recruited if they could identify with the following statement... '*Expense is a barrier to eating fruit and vegetables for our family*'. This small convenience sample was used due to time and cost constraints. The researchers acknowledge that the data collected from participants can only be viewed as exploratory in nature and may not be representative of the wider population. This small sample was appropriate as we do not intend to generalise and because the practical project was only used as a pro forma that explored how service design methods could be used within social issues.

Methods

A research plan was developed that included investigating both food supply and access to food, in order to understand how residing in a small isolated rural community can affect residents' access to fruit and vegetables. *Service Blueprinting* was used in combination with a qualitative *Cost Analysis* method to generate an understanding of fruit and vegetable supply. Qualitative data was gathered from the residents about their access to fresh fruit and vegetables through *Directed Storytelling* and *Photo Journals*.

Service Blueprinting was selected as an appropriate method for investigating the supply of fresh fruit and vegetables in the community, because key factors that influence food supply could be explored: the location of food suppliers; the availability of food within the stores; the quality and variety of food available; and the way that foods are identified and promoted. A Service Blueprint is a diagram of a service system, typically drawn as a flowchart, which has

been described as being useful for both innovation and improvement. Service processes are examined and gathered data is used to depict steps of a service, touch-points and evidence of service (Zeithaml, Bitner, & Gremler, 2009). Blueprints are created through observations of customer actions, employee actions, support processes and physical evidence (collected tangibles) (Bitner, Morgan, & Ostrom, 2007). Whilst typically used to investigate a service in a specified business, in this instance the Blueprint was used to generically represent all community services. The *Cost Analysis* method supplemented *Service Blueprinting* by investigating the cost of meeting the 5+-A-Day fruit and vegetable recommendations (two and three serves daily respectively) in the sixth week of winter during July 2009. Measurements were based on the international 5+-A-Day programme. The 'data picture' provided a snapshot of both availability and cost of fruit and vegetables during the most costly season.

Directed Storytelling and *Photo Journals* methods were selected as appropriate for exploring the community's access to fresh produce. The combination of methods was selected because sometimes what a participant says does not match what they do. The methods were deemed appropriate because narrative inquiries are described as being good for enabling researchers to gain a more thorough understanding of individuals' experiences (Anderson, 1990; R. Burns, 2000; Mattelmäki, 2005). *Directed Storytelling* is a method that can quickly reveal consistent patterns in people's situations by asking participants to narrate personal experiences (Everson, 2006). Reported advantages include how researchers can quickly get to the core of an experience and do so without big financial investments (Everson, 2006). A *Photo Journal* is a self-documentary technique that allows participants to personally portray their experience in response to a series of questions. A *Photo Journal* is described as a suitable research technique for documenting experiences, allowing participants to 'narrate' these experiences without researchers being present. It is also touted as being useful for gathering residential language and the privacy of this technique makes it less invasive (Mattelmäki, 2005).

Data Collection

Two researchers collected the *Service Blueprinting* data. The first member of the research team became an actor and performed the role of a customer. A second researcher shadowed the acting team member as they experienced the service. Observed information was recorded through note taking, photography and recording reflections after the service encounter. A rough draft of the service experience was quickly sketched and then used as a prompt for discussions with the service owner/operator. The process of gathering data for each component followed the same steps for each service provider. Data was then used to create a community service blueprint including details of all the available food supply services. The *Cost Analysis* data collection method used was consistent with that of Dresler-Hawke's (Dresler-Hawke, 2007) 'Fresh vs. processed fruit and vegetables' research.

Following recruitment researchers met with participants either in their own homes or at the community health centre to conduct the *Directed Storytelling* interviews. An opportunity was given to ask questions about the research and then participants signed consent forms. Participants recounted experiences in a focused interview, which followed an interview guide based on Everson's *Directed Storytelling* Protocol (Everson, 2006). The *Directed Storytelling* conversations were digitally recorded and notes were taken throughout. Audio recordings were transferred onto a computer. At the end of the *Directed Storytelling* participants were offered the opportunity to participate in the *Photo Journal* research. Half of the participants agreed to take part. The researcher checked that those participants knew how to use a disposable camera and talked briefly through the journal with them. Participants were asked

to photograph aspects of their individual experiences and annotate these images within a provided journal. Important words, themes or issues were extracted from the interviews and photo journals by writing them onto post-it notes and adhered to a whiteboard for eventual reordering into key concepts. Analysis focussed on identifying key words and concepts, exploring connections and patterns based on the data participants provide of their experiences.

Findings

The costs of meeting the 5+-A-Day recommendations in the rural community are represented in the table below.

Table 1. Average costs of 5+-A-Day, daily per person and weekly for a family of four.

	Fresh produce		Cheapest combination of fresh, frozen, canned or dried produce	
	<i>Individual Daily</i>	<i>Family Weekly</i>	<i>Individual Daily</i>	<i>Family Weekly</i>
Rural Mini-market	\$2.61	\$73.08	\$2.33	\$65.24
Urban Supermarket	\$2.18	\$57.68	\$1.80	\$50.40

Service Blueprinting findings showed that there were only two main food supply services in the community, both located on the main road, easily accessible to all. The Mini Mart stocked a wide variety of fruit and vegetables, whereas the butcher only stocked a range of staple vegetables. When the butchery was asked why they stocked vegetables the response indicated that they were filling a need. The butcher referred to the Mini Market as being an expensive and it was mentioned that locals had expressed the need for an alternative supplier. The primary service flow recorded within the community could be described as a relatively standard produce retail experience, where customers would enter, view the individual or bulk bagged items, then select, purchase and exit the stores. The stores appeared responsive to their customers needs, for instance the butcher was happy to break open a bag of potatoes and repack a few of these into a smaller bag. Discussions with the Mini Mart owner following service mapping exercise exposed more tailored service options, such as seasonal 'Soup Mix' bags and 'Christmas Mix' hampers. Owners were aware of the cost of produce in urban supermarkets being lower, however they felt they catered specifically for their local customers. Both owners claimed that their produce was fresher and that rather than having to buy bulk customers could buy as much as they needed - reducing cost by limiting waste from spoiling. It was interesting to note that produce that was due to perish was first reduced in cost for quick sale and then dumped. Staff described the quantity of dumped produce as large.

Two very memorable stories were recorded in the *Directed Storytelling* interviews. One mother told us about a time when she had not been able to afford enough mandarins for all of her children and how her littlest girl was upset when she discovered that she had missed out. A father told about a particular tough week when he couldn't afford a bag of carrots for his family, tears came to his eyes during this story. All participants shopped for groceries out of town. Nine of the ten participants said that any travel costs were negated through having additional reasons for their travel, such as picking up school children, work, etc. One participant used the community bus service to go shopping once a week in the nearby town (\$12 return). Several purchasing, transporting and storage issues affected this particular participant, due to not being able to afford a car, not being able to afford the running cost of refrigeration and having a total budget of \$70 per week for all groceries (household made up

of 1 adult and 3 secondary school aged children). In nine out of ten participants expressed that fruit and vegetables were important food items to include in their diet. Eight participants were aware of the 5+-A-Day recommendations. Three participants felt it was important to strive for five portions, the remaining participants either stated that a lower quantity was fine (between one to three portions) or commented on cost “not everyone can afford 5+-A-Day”. It is surprising that only one participant regularly ate five portions daily, for remaining participants the average consumption was two and a half portions per day.

There was a strong sense of a ‘gap’ in low price fresh produce services within the community recorded in the Interviews and *Photo Journals*. A strong aversion to the rural storeowners was also very apparent, as was a feeling that the services catered for only some of the community, ‘farmers’ and not ‘townies’. The excessive cost of a ‘\$6 Broccoli the size of a softball’ was frequently mentioned. Local produce (from the vegetable grower) was noted as sometimes being ‘almost twice the price in its own community’. Residents stated that local fruit and vegetables were sometimes not as fresh as urban produce. Many participants mentioned additional supply avenues such as; personal and community gardens, swapping produce with neighbours and ‘Fruit in Schools’. Several participants did not purchase fruit, instead relying on the ‘Fruit in Schools’ initiative for providing their children with fruit, leaving the adults going without.

Overarching Research Findings

The purpose of this research project was to investigate the use of service design methods within a social problem. The most successful technique explored was *Service Blueprinting*. Blueprinting is described as provided a common platform for everyone to review existing service process and facilitate innovative developments (Bitner, et al., 2007). The resulting blueprint provided a good platform for community lead discussion and innovation, because the blueprint highlighted the lack of service variety in the community – especially in services that cater for lower-socioeconomic groups. There were also several unexpected outcomes experienced while using *Service Blueprinting* including; the ease with which service owner/operator participants were recruited and the unrestricted access to business operations (surprising especially as the topic of ‘cost’ was potentially quite contentious). *Directed Storytelling* had mixed success. The true benefit of this research method was in the rapid analysis technique conducted after the interview, results were quickly recovered from the interview recordings without transcription. The *Directed Storytelling* supplied emotive stories about what it is like to experience cost as a barrier, which were useful in ensuring the food suppliers are aware of the gaps in services from the resident’s perspectives. Unfortunately several participants struggled with the technique, not being able to think of a story to tell and instead responded better to structured interview questions. Using *Photo Journals* in combination with Interviews should have enabled a better understand the participants’ experiences, however this was not the case. The *Photo Journals* were often returned incomplete and tended to lack new or insightful data. It is hard to assess the potential of this research method due to the poor result. However it may be a poor choice of method given that the participants mentioned that they simply didn’t have enough time to allocate towards journal completion. Overall using a service design approach to investigate ‘cost as a barrier to eating 5+-A-Day for isolated rural residents’ did generate insights into the barrier and as a result does have potential for further use within social contexts.

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