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Online versus Traditional Grocery Shopping Stressors

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Abstract - Research has shown that grocery shopping is the most stressful form of shopping and it is an activity that most individuals perform on a regular basis. Grocery shopping via the Internet has the potential to reduce a number of stressors associated with grocery shopping. This research confirms that shopping over the Internet reduces these stressors but creates a new list of potential stressors for customers. This study concludes with solutions an online store can implement to reduce potential stressors for customers.

Keywords: E-commerce, Usability, Stress, Online grocery shopping.

1 Introduction

With the introduction of the Internet and the development of online shopping during the 1990s, individuals were offered the opportunity to purchase their weekly groceries online. Behavioural and consumer research has proven that the weekly grocery-shopping trip is one of the most stressful shopping experiences that an individual has to undergo [1]. By providing access to the grocery shopping process online, consumers are now more able to shop at their convenience and in an environment which is more comfortable for them [2]. With the ubiquitous nature of the Internet providing the possibility of purchasing items in an environment that is familiar to the user, there is the possibility of reducing shopping-related stress.

The initial hype and hysteria of using the Internet for shopping during the 1990s led to the promise that traditional shopping was set to change forever, releasing the consumer from the stressors associated with traditional shopping. However, it is still to be determined whether, in reality, online grocery stores are a true alternative to traditional shopping.

It can be argued that grocery shopping is fundamentally different to any other typical shopping experience by its nature, in both traditional and online contexts. A typical grocery shopping trip involves selecting and purchasing multiple products with multiple quantities, while other shopping typically involves purchasing one or a few individual items. When this concept is applied to the Internet, website design techniques can be used on grocery systems to support users as they follow this pattern. For online grocery systems to be used by individuals to complete their shopping, the sites have to be, amongst other factors, usable. However, there is little in the grocery domain to suggest whether the online version of grocery shopping has greater usability, less stress and is of greater benefit to customers than traditional means.

When designed well, the basic experience that a user gains from using an online grocery system should not be unlike that of a traditional shop. Browsing allows customers to explore the web site and purchase goods in a manner that is similar to in a traditional supermarket by viewing virtual aisles to narrow down the products that are available. Online systems also have the advantage of a search facility, which most users associate with the Internet, and allow a user to locate a product by typing in some descriptors such as the name, brand or type of good. With both methods, lists of results are displayed for the consumer to purchase a product. This paper will consider whether the experience of using an online grocery store minimizes stressors.

2 Understanding grocery shopping

Traditional grocery stores have existed in their current form for more than 90 years. The first traditional grocery store, "Piggly Wiggly Store," was established in the United States by Charles Saunders in 1916. His idea was for a self-service, cash and carry grocery store [3]. Although this grocery store failed due to the US stock market crash of 1929, the idea for such stores was created. Following the crash three factors led to the initial success of supermarkets: (i) the growth of cities, (ii) a rising demand for food, and (iii) the spread of the automobile and refrigerator [3]. With these developments, the grocery store became a worldwide success.

Over the second half of the twentieth century, grocery stores have established themselves in the Australian retail sector, just like in the rest of the world. The first grocery stores in Australia appeared in the
1950s and have since risen to dominance, accounting for 61% of all food and grocery purchases in Australia in 1998-99 [ACNeilson, 1998, p. 37 cited in 4]. In 2003-04 ‘food and non-alcoholic beverages’ had the highest average household expenditure of $153 per week, representing 17% of total household expenditure on goods and services [5]. In the US annual grocery expenditure is around US$540 billion. Australia’s largest grocery store group, Coles Myer, had sales in their food and liquor division of AUS$19,255 million during 2005 [6]. These figures demonstrate that there is an enormous potential market for Business to Consumer (B2C) e-commerce in the online grocery area.

With expenditure in Australian grocery stores accounting for such a large percentage of household expenditure, numerous grocery stores have established themselves in the market. This provides consumers with the ability to select their preferred grocery company for regular grocery shopping visits. Since the introduction of the Internet, consumer choices have expanded further and they may now choose to conduct their regular grocery shopping using an online grocer through an online grocery system. This study aims to compare the stressors of the traditional store with its online counterpart.

Interviews conducted with major online grocery stores revealed that for one store, of their 200,000 registered customers, only 100,000 had ever made a purchase. 30,000 of these customers had only ever placed one order [7]. Although the percentage of registered customers who have made a purchase is high, Hicks [8] claimed that the registration process was the first hurdle in online ordering, with studies revealing high dropout rates during the registration process. To date, no figures on this phenomenon have been located for online grocery stores. Another possible explanation is that the online grocery stores are not usable and users fell stressed during the registration process and thus do not continue using the system.

Completed orders at online grocery stores have an average order size of 54 items [9]. While a user may struggle with an e-commerce website when placing an order for a single item, it is unlikely that users will be willing to repeat the process 54 times if they get stressed as the system is difficult to use or is time-consuming. This figure suggests that usability is of prime importance for online grocery stores.

A study [10] on the state of online grocery shopping in Helsinki, Finland, found that the average user is most often a woman, 35-46 years old living in a household with children. 73% of customers were women, 88% were under 45 years old and most users had high incomes. A similar pattern for Australian online grocery shoppers was identified through interviews conducted as part of this study, with interviews of online stores in Australia indicating that over 80% of their registered customers were women [9].

The development of the Internet has introduced a new shopping medium for consumers. The Internet initially created a great deal of hype and hysteria, but as this has subsided the real issues of e-commerce have arisen. One major issue that has been identified is the usability of e-commerce websites, as shown in previous studies [10, 11]. If an online store is unusable then customers are unlikely to make a purchase [12]. With usability being a prime concern for online stores, the field of usability testing has come into prominence, particularly the various techniques for conducting usability testing. These techniques range from informal processes, such as expert review, to formal user testing in usability laboratories. Bennunan Fisch [13] stated that there are two clear usability goals when dealing with e-commerce websites: a clear path to products and transparency of the ordering process.

3 Grocery shopping stressors

As previously stated research has shown that grocery shopping is the most stressful form of shopping [1]. This is due to a range of factors including the need to attend a busy store and the transport of a large quantity of items, which may be difficult for some groups of the population. Online grocery shopping removes these stressors, as ordering can be completed in the user’s home and the transport is completed by the store. Despite these benefits, one study suggests that just over 3% of the total grocery sales in Australia occurred online in 2002 [14]. It has been suggested that poor usability is creating other stressors, and this may be a contributing factor to the low usage. This study seeks to identify and provide recommendations for minimizing such usability problems, thus reducing the stress of shopping for groceries online.

Geuens et al. [15, p. 244] believe that, compared to other forms of shopping, "grocery shopping has more negative associations. It is a necessity, and even though some consumers experience it as relaxing, it remains something you cannot avoid, something you have to do." A list of positive and negative associations related to traditional grocery shopping was developed. Of the fifteen negative associations, only one is apparent when using an online supermarket. This negative association is the possibility of out-of-stock products. The negative factors that are removed when purchasing groceries online are: waiting in lines; decayed products; melting products; crowds of people; elderly people. Annoying music; no parking spaces; badly manoeuvrable trolleys; bringing back trolleys on rainy days; narrow aisles; unfriendly personnel; ignorant personnel; and stress before closing hour. An online grocery system may have
a different set of negative connotations and/or stressors when users become familiar with the technology, such as the loss of the trolley contents or issues with delivery.

A study conducted by Ahuja et al. [16], in the US, on the current use of the Internet and its future use by both students (n=190) and non-students (n=75) presented the following figures about grocery shopping online. They found that 6.9% of students and 6.8% of non-students were purchasing their groceries online, with 18.6% of students and 9.6% of non-students having future intentions to purchase groceries online. The major reasons that they stated for purchasing products online were: convenience (28% for students, 31% for non-students); saves time (23% for students, 27% for non-students); and better prices (25% for students, 23% for non-students). The major reasons that they did not purchase products online were: privacy/security (28% for students, 31% for non-students); customer service (22% for students, 28% for non-students); lack of interaction (15% for students, 9% for non-students); and high prices including high shipping and handling costs (15% for students, 10% for non-students). One factor identified by some of the respondents that was especially relevant to the nature of groceries was an inability to touch and feel the product (4% of both samples). The population was classified into students and non-students based on Phelps et al.'s [17] article, which stated that students were more likely to know how to use the Internet and had less privacy concerns when working online.

The two major benefits of shopping online have been identified as the stores are always open, and people can shop from home [18]. Participants in the Ramus and Nielsen study stated that shopping from home was less stressful that going to a grocery store when it was busy.

4 Methodology

There is no single definition of usability. For the purposes of this research, if something is said to be usable it: has ease of use, is easy to learn, efficient, visually pleasing, and quick and effective. [19-21]. Preece [19 p. 6] explains that, in a practical sense, "usability is concerned with developing computer systems to support rapid learning, high skill retention, and low error rates". According to the ISO 9241-11 [22] standard, usability is the "extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use." If a system is usable then it is believed that a user will not be as stressed when using the system and their responses will be of a positive nature.

Preece et al. [23] categorized usability evaluation methods into four broad approaches:

1. "quick and dirty" evaluation;
2. usability testing;
3. field studies; and
4. predictive evaluation.

Usability testing was used in this research to observe the interaction of participants with the chosen online grocery system. On completion of the usability testing, participants completed a post-test questionnaire, which recorded participant perceptions whilst ordering the products. The concept of the testing methodology is taken from the classical approach for conducting a controlled experiment [24]. Rubin identifies a range of standard criteria that are essential when employing a true experimental design.

The method of the usability testing is based on scientific research [24], where controlled experiments are conducted and the outcomes recorded. These results are then examined to identify trends in the data. For this study 'Camtasia Studio Recorder' was used to record the participants' interaction with the system. For this study, SPSS was used as the tool to examine the data.

During the test participants completed two stages each one-week apart.

Stage 1

- The background/screening questionnaire;
- A tutorial on the use of an online grocery system, which was different but comparable to the test site;
- The purchase of Shopping List A (containing ten products with the quantity of one);
- The post-test questionnaire;
- The purchase of Shopping List B (containing twenty products with varying quantities, total of thirty items);
- The post-test questionnaire.

Stage 2

- The purchase of Shopping List C (containing fifty products with varying quantities, total of seventy-five items); and
- The post-test questionnaire.

Each participant was required to complete a post-test questionnaire, including Likert scale and open-ended responses, at the conclusion of each round of tests on the online grocery system. This information was used to gain overall feedback into participants' perceptions of ordering products online and conduct a comparison of their views across the three shopping lists. The results from the questionnaires are discussed in section 5.
The recommended usability testing group sample size varies amongst the experts in the field, and is dependent on the type of study that is being conducted. Qualitative testing sample size recommendations range from five [25] to up to twelve participants [24]. However, for the use of quantitative tests Nielsen recommends testing be conducted with about 20 users. The discrepancies between experts indicate that there is no agreed size for usability testing groups.

For this study a sample size of 54 participants was chosen, consisting of three classifications of user groups: beginner, intermediate and advanced users of e-commerce websites [26]. Each of these groups consisted of 18 participants to give statistical significant results [27 p.24]. Each participant was required to complete a background/screening questionnaire to determine which user group they belonged to. This questionnaire is based on previous studies about users of websites.

5 Results

Online grocery system usage styles and attitudes varied, with some testers preferring shopping for groceries online compared with traditional means. This was shown with a number of participants stating that is was faster and that they were going to recommend it to family and friends. However, there was no correlation to suggest that age, gender or experience impacted upon how users felt about using the systems. This result was different to previous studies, which stated that experience and age is an influencing factor when using such systems.

<table>
<thead>
<tr>
<th>Issues and Stressors of grocery shopping</th>
<th>Traditional Grocery Store</th>
<th>Online Grocery Store</th>
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<tbody>
<tr>
<td>Need to attend a busy store</td>
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<td>The transport of a large quantity of items</td>
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<td>Waiting in lines</td>
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<td>Decayed products</td>
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<td>Melting products</td>
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<td>Crowds of people</td>
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<td>Elderly people</td>
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<td>Annoying music</td>
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<td>No parking spaces</td>
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<tr>
<td>Badly manoeuvrable trolleys</td>
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<td>Bringing back trolleys on rainy days</td>
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<td>Narrow aisles</td>
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<td>Unfriendly personnel</td>
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<td>Ignorant personnel</td>
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<td>Stress before closing hour</td>
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<tr>
<td>The possibility of out-of-stock products</td>
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<tr>
<td>Privacy/security concerns</td>
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<tr>
<td>Difficulty if finding products</td>
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<td>Issues with the building search mechanism</td>
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<td>Customer service</td>
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<td>Lack of interaction</td>
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<td>Inability to touch and feel the product</td>
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<td>Loss of the trolley contents</td>
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<td>Issues with delivery</td>
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<td>Issues with the company’s website</td>
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<tr>
<td>Issues with the consumers Internet connection</td>
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Table 1 (above) shows the issues and stressors when a customer interacts with both traditional and online grocery shopping environments. The results were obtained from participants’ feedback in the post-test questionnaire and from Geuens et al. [15] and Ahuja et al. [16].

An online grocery store can potentially reduce the stress of grocery shopping as customers can purchase the products from anywhere at any time which is convenient for example their home. The products are delivered to an address the customer gives the grocery company during a specified time frame. A customer does not have to deal with crowds or trolleys that are difficult to manoeuvre as everything is completed in an online environment.

However, there are a number of new stressors that a customer could possibly be faced with when purchasing their groceries through an online grocery store. Privacy and security concerns with the website can be minimized by using a recognized company. Issues with the navigation of the system can be reduced through the development of thoughtfully designed websites by the store. While there is no traditional customer service if the customer has an issue with using the site, help pages are generally available. A customer does not have the ability to touch or feel the product, which traditionally important when selecting fruit and vegetables, requiring the customer to trust the store in providing good-quality products. A customer could also have issues with the website or with their Internet connection, which may cause frustration and stress.

One issue that is common to both traditional and online grocery stores that can potentially cause stress to a customer is out-of-stock products.

6 Discussion and Conclusion

Overall there were several issues identified by participants across the participant groups and the three tests. Participants believed these issues had an impact on their experience using the online grocery system, and thus had negative associations leading to stressful situations. The participant comments included:

- The search facility has no error correction
- The participants did not know if a product was not on the shelf or if they had searched using incorrect terms. Previous research [28] found that an inability to find products was one major reason customers do not return to an online store.
- The shopping trolley – no display of number of items added, total cost or a receipt
- Problems with truncations and plurals

Some of the comments that were made by participants with little previous experience in shopping in an online environment were actually incorrect. These comments included:

- It would be difficult to use this system to find uncommon brands
  - The search facility provides users the ability to search for all products via the same mechanism. The linking is the same as traditional aisles in a grocery store. Therefore, it should be no more difficult to find an uncommon brand compared to a common one
- Quantity has to be changed from zero before adding a product
  - When the check box is clicked the quantity automatically changes to one

The overall negative comments presented above identify some serious concerns from the participants and are all possible stressors when shopping online. Addressing these concerns should be of high priority to online grocery system because users in all participant groups identified them, suggesting that experience using an online grocery system would not overcome these problems. These negative comments mainly identified specific problems, and were largely relating to issues associated with adding a product to the trolley. Many of these identified problems could be overcome with a relatively small investment from the online grocery system owner.

Some participants also gave a number of positive comments which were of a more general nature, with participants describing the system as ‘quick’, ‘easy to use’ and ‘will recommend this to others’. These insights have shown that the use of online grocery systems can reduce some of the stressors associated with grocery shopping. Realistic solutions an online store can implement to reduce potential stressors for customers include: a smart search facility with an integrated spellchecker; an intuitive shopping trolley system; clear presentation of product information and stock levels; and details information on the current order.

7 References
