DESIGN FOR TRUST – ONLINE GROCERY SHOPPING

Amela Karahasanović[1], Kristoffer T. Holm and Aria Nejad[2]
[1]*SINTEF Digital, Forskingsveien 1, 0373 Oslo, Norway*
[2]*Department of Informatics, University of Oslo, Gaustadalléen 23 B, 0373, Oslo, Norway*

ABSTRACT

This paper presents our ongoing research into trust and the risks related to online grocery shopping. More specifically, we investigate how to increase customer trust when buying perishable products online. Online grocery shopping is an increasing trend in many countries, and several studies on trust have been conducted in the context of online grocery shopping. However, knowledge of how to improve trust and reduce risks is rather limited in this context. Through design, prototyping and user studies, we explore if and how a variety of user feedback mechanics such as ratings, comments and presence help build trust. Several concepts and prototypes were evaluated through group interviews and usability testing. Based on our results, we proposed trust-related design guidelines for online grocery shopping applications. Our results might be useful to both researchers investigating trust in the context of online shopping and to the practitioners designing applications and services in this area.

KEYWORDS

Trust, Risk, Interaction Design, Service Design, Online Grocery Shopping

1. INTRODUCTION

Buying groceries online differs from other types of online shopping because of the perishability and variability of the products. People may hesitate to shop for perishable groceries online because of the perceived risk of receiving products that do not meet their expectations (Mortimer et al., 2016). An online survey based on responses from 60 countries showed that one quarter of respondents reported buying groceries online, whereas more than half (55%) were considering doing it in the future (Nielsen, 2015).

Exploring different strategies for increasing trust in online grocery shopping is therefore becoming increasingly important. Providing more information about the products and use of feedback mechanism have both been suggested as a means for increasing trust in online shopping (Harridge-March, 2006; Nepomuceno et al., 2015). Bhatnagar and his colleagues (2000) found that some products, such as more expensive electronics or products that require touch and feel are experienced as more risky. Fruit and vegetables, for example, are experienced as more risky because one wants to examine their freshness. Although some of the new online grocery services (e.g., Vigo and Amazon Go) use mechanisms for increasing trust, such as ratings, little has been known about the effects of these mechanisms. This research investigates trust and the perceived risks of online grocery shopping.

2. DESIGN

We applied an iterative design process consisting of four phases. Figure 1 presents our activities in the double diamond proposed by the British Design Council (BDC, 2007). A Norwegian grocery retailer wanted to introduce an online-based crowdsourcing service where neighbours were able to do each other's grocery shopping (Cartpooling) and were interested in trust issues related to this and similar services.
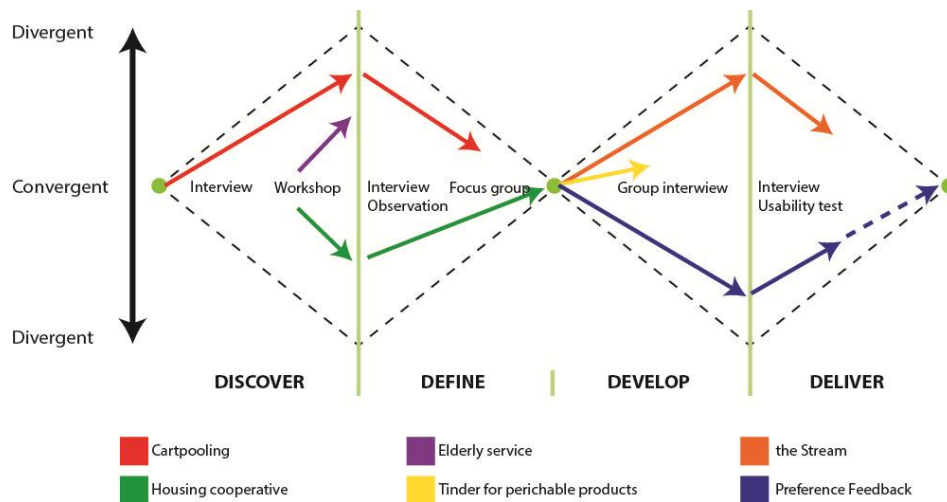
Figure 1. Design process and its activities

At the first meeting with the company, we identified the following stakeholders: employees, managers, designers, developers, current and potential customers and neighbours. During the *Discover* phase, we first conducted interviews with five customers to explore trust and motivation related to the proposed service. The customers were recruited by the company. Three of them were men and two women, they were between 44 and 67 years and in different live situations. Some were single, some lived in households with small children, and some lived with teenagers. In some neighborhoods, the neighbors knew each other very well, whereas in other they were more or less strangers to each other. Thematic analysis was used for analysis of the interviews. The interviews revealed that the participants felt uncomfortable about bothering others because, as they said, "we don't know each other well". They were also worried about the quality of the delivered products. As one participant put it:

> *"When others collect groceries for me, I'm a bit sceptical that they might choose some products that I have not chosen for myself... I have had some avocado deliveries where the avocado was brown on the inside".*

After the interviews, we conducted a *future workshop* (Vidal, 2006) with eight participants (services developers, managers and designers) divided into two groups, which explored not only the cartpooling solution but also the broader idea of online services. The participant of this workshop were either the employees of the company or consultants working for the company. Information about the participants' background was collected before the workshop so that we could assure that both groups are multidisciplinary. Both groups worked separately, and then presented their ideas in a plenary session. The first idea (*Housing cooperative*) was a service offered by a housing cooperative that would hire someone to collect groceries for the online orders. The second one (*Elderly service*) was collaboration with home care services, where volunteers visiting the elderly would also collect their groceries. Both groups pointed out importance of the competence of the person that collects the groceries and difficulties related to giving negative feedback.

Based on the results of both interviews and workshops we decided to further develop the *Housing cooperative* service. During the *Define* phase, we observed an employee collecting online groceries during his working day. This was followed by a semi-structured interview, in which we asked more details about his work. Further, we conducted an interview with a housing cooperative leader, and a focus group with 11 potential customers. Recurring themes during the *Discover* and *Define* phases were: i) reducing product risk by giving feedback about the products, and ii) increasing trust by making sure that the groceries ordered followed personal preferences.

3. PROTOTYPES AND EVALUATION

One of the ideas suggested during the workshop and the focus group was that feedback and presence might help increase trust. We therefore decided to prototype a related functionality. During the *Develop* phase, we developed three prototypes: i) the *Stream* – a video-based service showing the process of collecting the actual groceries from the store before being delivered to customers (Figure 2), ii) *Tinder for perishable products* – a service in which photos are used for accepting or rejecting a product, and iii) *Preference feedback* – a service enabling customers to give feedback by leaving comments about perishable products either during the order or after delivery.

The *Stream* is a video-based service. When the employee enters the fruit and vegetable department, his head camera is turned on, and the process of collecting the groceries is recorded. When the groceries are ready for delivery, the customers will receive an sms with a link to a video of the collection process (Figure 2). The customers can watch the video to look for the products he wants, when he wants (Figure 3). If the customer is not satisfied with the product selected, he can write a comment, and the product will be replaced before delivery.

Figure 2. The Stream service. SMS from the online grocery store. The text (originally in Norwegian) is "Groceries have been collected, do you want to see them?"
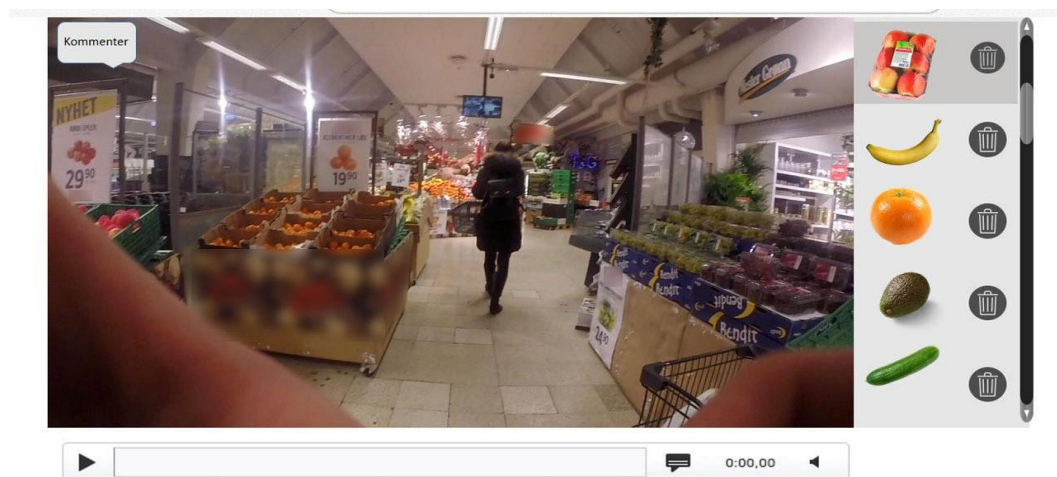

Figure 3. The Stream service. Screenshot of the video on the web page

All three prototypes were evaluated by a group consisting of five stakeholders (executive and non-executive employees and one designer). We first presented the prototypes and then conducted a group interview, asking questions related to trust, advantages and disadvantages of the prototypes and obtaining suggestions for improvements. Our questions related to trust and product risk were based on previous studies in the area (Lu et al, 2010; Jacoby et al., 1972). The data were transcribed and analysed by deductive thematic analysis. The *Stream* was considered the most interesting, but also the most time-consuming. *Preference feedback* was considered to both increase an employee's knowledge of a customer and increase customer trust. *Tinder for perishable products* was considered inefficient, but possibly useful for special orders, such catering and cakes.

We further developed the first two prototypes and conducted a usability evaluation with five customers followed by interviews focusing on trust. The participants provided several suggestions for improvements, such as combining the *Stream* and the *Preference feedback* services, adding a zoom function and extending the *Stream* into a virtual shopping space. Although both services reduced customers' experience of product risk, the participants found *Preference feedback* to be less demanding and more interesting for a broader audience.

4. CONCLUSIONS AND FUTURE WORK

The main objective of this research was to investigate how to increase customer trust when they buy perishable products online. Previous studies have identified risk and product risk as the most prominent perceived risks in online grocery shopping (Bhatnagar et al., 2000). Our results indicate that *social risk* is also important when buying groceries online. The participants felt uncomfortable rating the person who picked up the groceries for them, and proposed writing comments instead. Further, they felt that they were bothering others and that their privacy was exposed when neighbours delivered their groceries. This, of course, might be different in different countries and cultures.

We explored the usefulness of several feedback mechanisms as a means to increase the perceived ability of employees picking up groceries. The results of our evaluation of the *Stream* and *Preference feedback* prototypes showed that feedback provided by the customer can be used as a safeguard for improving the outcome of the risk-taking relationship (that high quality groceries are delivered), thus increasing the customers' perception of the employee's ability and trust. More details on the studies we conducted and the prototypes we developed can be found in (Holm & Nejad, 2017). Based on our results we propose the following design guidelines to increase trust in the context of online grocery shopping:

- **Provide detailed information about perishable products.** Detailed product information, high quality product pictures, streaming of the selection process and information about the expertise of the employees picking up the groceries might compensate for not being able to touch and smell the product.
- **Allow for open-ended questions and comments for customers feedback.** Instead of ratings, we recommend using open-ended questions and comments. This would reduce social risk and give more valuable information that can be used for future improvements.
- **Design for efficiency.** Most customers believe that online shopping can save time. Providing product details and asking for customer feedback has to be balanced with the need for efficiency, which, in turn, has to be balanced with the importance and sensitivity of the product one is buying.

In total, our studies involved 36 participants; 21 of these were customers or potential customers of the company we collaborated with, and 15 represented other stakeholders: executive and non-executive employees, designers, developers, an employee working in a grocery shop and a leader of housing cooperative. All the participants were from the Oslo region. As the results might be different for other regions and countries, we encourage other researchers to validate our findings in the context of other countries and cultures. Further, as trust and ability develop over time, we plan to conduct a longitudinal quantitative study with both the existing and potential customers of an online grocery store to investigate how different design solutions affect customer perceptions of product risk and trust over time. Our future work will include further development of our prototypes. In particular, we plan to include principles of universal design in the next iterations. This would remove the need for designing additional solutions for specific user groups.

ACKNOWLEDGEMENT

REFERENCES

BDC, 2007. British Design Council - 11 lessons: managing design in 11 global brands - A study of the design process. *Retrieved from http://www.designcouncil.org.uk/resources/report/11-lessons-managing-design-global-brands.*

Bhatnagar, A. et al., 2000. On risk, convenience, and Internet shopping behavior. *In Communications of the ACM,* Vol. 43, No. 11, pp 98-105.

Harridge-March, S., 2006. Can the building of trust overcome consumer perceived risk online? *In Marketing Intelligence & Planning*, Vol. 24, No. 7, pp 746-761.

Holm, K.T. and Nejad, A., 2017. *Building trust in online grocery shopping,* Department of Informatics, University of Oslo, MSc theses, Oslo.

Jacoby, J. and Kaplan, L.B, 1972. The components of perceived risk. *SV-Proceedings of the third annual conference of the association for consumer research,* Chicago, IL, pp. 382-393.

Lu, Y., 2010. From virtual community members to C2C e-commerce buyers: Trust in virtual communities and its effect on consumers' purchase intention, *In Electronic Commerce Research and Applications*, Vol. 9, No. 4, pp 346-360.

Mortimer, G. et al., 2016. Online grocery shopping: the impact of shopping frequency on perceived risk. *In The International Review of Retail, Distribution and Consumer Research*, Vol 26, No. 2, pp 202-223.

Nepomuceno, M. et al., 2014. How to reduce perceived risk when buying online: The interactions between intangibility, product knowledge, brand familiarity, privacy and security concerns. *In Journal of Retailing and Consumer Services,* Vol. 21, No. 4, pp 619-629.

Nielsen, 2015. *The future of grocery. E-commerce, digital, technology and changing shopping preferences around the world*, Nielsen Company.

Vidal, R.V.V., 2006. The Future Workshop: democratic problem solving. *In Economic Analysis Working Papers*, Vol. 5, No. 4, pp 1-25