

Which aspects determine whether the shopping experience is perceived as enjoyable and why?

CONTEXTUAL INQUIRY



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INTRODUCTION

The aim of this research is to uncover what makes an individual perceive his or her shopping experience as enjoyable. The chosen environment for this research is the grocery store, which for many of our subjects (students around our age) is a daily environment. Our hope is to lay bare which elements of the grocery store experience drive the user's behaviour in positive and negative ways (Holtzblatt, K., & Beyer, H. (2017).

The contextual research method was chosen for this case because it allows the researcher to very closely relate themselves to the chosen participants and context. By being physically present during the grocery shopping experience it allows us, the researchers, to directly observe the user within our chosen environment, the grocery store. Granting the opportunity to collect concrete real-life data, which allows for the discovery of meaningful moments and tacit information by observation within context (Holtzblatt et Al, 2017).

The importance of this research lies in the elements of the joyful or negative experience of the shopping routine it can uncover and identify. When made aware of these elements future designs of grocery stores can be more closely fitted to its user's needs. It will allow future designers to design a more enjoyable shopping experience for the average grocery store customer.

Our research question is the following "Which aspects determine whether the shopping experience is perceived as enjoyable and why?".

Mostly focussing on quality of service, products & atmosphere. However due to the open ended nature of contextual inquiry the results are entirely unpredictable.

SETUP AND PILOT

PARTICIPANTS

Creating a demography forms the backbone of your study. For this research context of the grocery store we chose to recruit fellow students who frequently visit grocery stores around Eindhoven. Seeing as Eindhoven is a very diverse city, we tried to get a good amount of international students.

Kuniavsky (2003) suggests recruiting 5 to 8 subjects is enough for the first round of inquiry. 15-20 is a safer bet, however this depends on the time and resources that you as the researcher have available. Seeing as we were a team of 2 researchers (as opposed the team of 4 it should have been) we aimed to gather information about at least 5 subjects for our research.

5 participants were gathered, 2 females, 3 males. All within the age category of 20-50 years old. 4 of these were international students, 1 of these was natively dutch and of the working class. All of the participants currently live in Eindhoven.

The locations of our contextual inquiry were chosen by our participants, based on their personal preference of grocery store. This would allow us to observe them within their daily environments, without letting the researcher's personal bias of grocery store choice affect their behaviour.

PILOT STUDY

A pilot study was performed to test out the user research structure to gain an initial understanding of the data that might be collected and any problems the setup contained. This to gain experience within our chosen setup and improve upon any shortcomings found.

Before performing the pilot study a quick visual overview of requirements was formed by the researching team (figure 1A). The planned setup for the user test was to make use of a signed consent form, for proper researching ethics when involving life individuals. In this consent form a short introduction was given to the aim of the test and the context, to create awareness before asking the subjects to commit to our testing, together with a more detailed information sheet on the layout of the entire research (Appendix A). This consent form was used for each subject prior to participation (Appendix C).

The setup for the pilot study was to follow our subjects into their grocery store of choice, following within their own daily shopping environment and behaviour, while witnessing and questioning behaviours that unfolded supported by audio, video, photos and personal notes for later analysis. This would take anywhere from 15 minutes up to 45 minutes of observing the user within context. Holtzblatt et al (2017) describes context as "The principle of context says to go wherever the user is and see what they do as they do it" (page. 50).

Once the subject was done with their groceries the researcher would continue into a phase of interview. In which a list of questions and noticed behaviours during the observation were questioned in depth (Appendix B). Everything was observed and questioned without preconceptions as to not start the research with predetermined bias. However during the pilot research more of a focus was on the post behaviour interview, where questions in the direction of reason for choice branch, hygiene trust and time spent were asked.

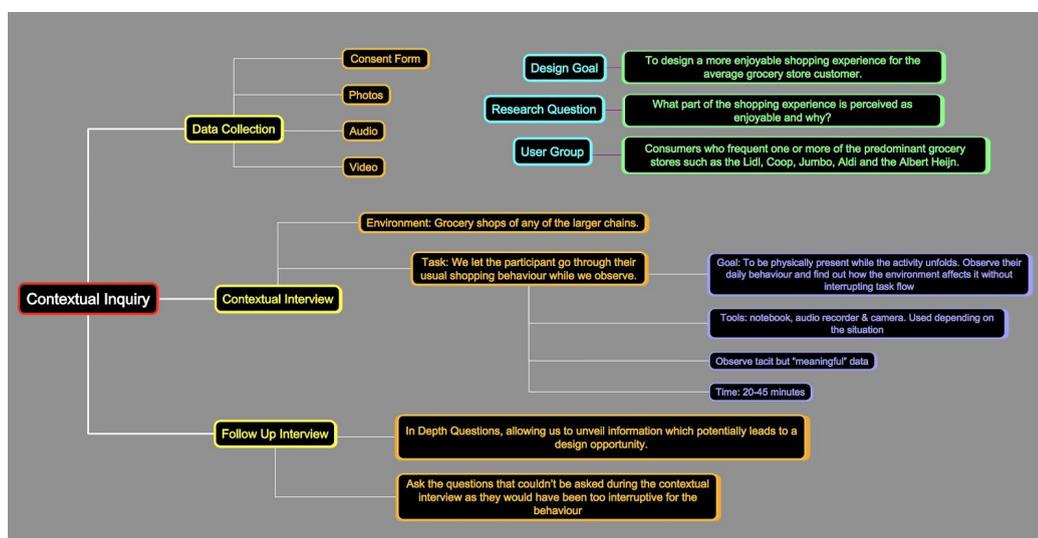


Figure 1A: Plan of Approach

PILOT REFLECTION

The plan was to make use of audio, video, photos and personal notes during the contextual inquiry/observation phase. However it was quickly evident that while following, observing and interviewing a participant its close to impossible to also focus on creating so many different kinds of usable media recordings. Especially considering that in cases only one researcher could be present for the process. The choice was made for future research to only make use of video recordings (when possible) during the shopping process and audio recordings during the interview.

From experience during the pilot and feedback given by coaches we realized that too much of our attention and focus as researchers was put on the post behaviour interview with our preset convictions and questions. When in fact the unexpected and tacit behaviour shown during the actual shopping was much more interesting and meaningful. We believe our mistake was made because of our inexperience with this method, most methods we had run into before were built upon predefined lines of questioning. Once pointed out the decision was made to investigate more closely what type of questioning is effective within the contextual inquiry method, which is when we reacquainted ourselves with the master/apprentice model as described by Holtzblatt et al (2017). The decision was made to focus more on questioning the user's behaviour they were seen performing in the grocery store instead of our predefined questions . More in a way of learning a craft from someone who is proficient at it as a novice ourselves. By choosing to only focus on the video recording during the observations for our final user testing we hoped this would allow us to focus more on the users performance.

FINAL STUDY

SETUP

The setup of the final study largely stayed similar to the pilot study with the exception of what was discussed within the reflection sub chapter. Which summarized entails that the decision was made to only videotape the contextual behaviour and combine this with audio recordings during the interview when possible. This combined with a larger focus on what is observed during the contextual behaviour phase with less of a focus on the predefined questionnaire. Allowing for new insights and more of a master/apprentice approach to the line of questioning. Making it easier for the participants to share concrete information with the researchers. Another change that was made was the method of data analysis post-collection. During the pilot testing the focus lay solely on the individual statements and quotes, however for the final user test the method applied to data analysis was the following (As continuously instructed and given positive feedback on by Lenneke during course workshop using MindMaple software over physical paper for usability)

During the video recording phase the shopping behaviour of participants was observed and significant aspects were highlighted and noted down, such as moments of indecision and other notables.

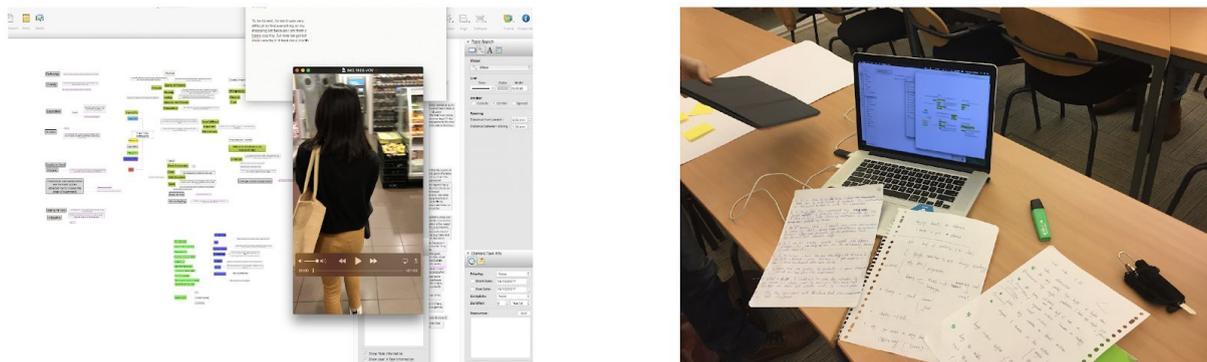


Figure 1B: Process

Then the participants were labeled with different colors, observing and collecting important aspects through the gathered data (video, audio and interviews). These were then codified into different descriptive terms that can be easily recognized. For example Diversity & Location.

The arrangement of the acquired codes was executed in order to get refined themes. The software Mindmaple was used by the researchers to visualize these themes, this helped with the

finding of logical relationships such as similarities or differences between the defined codes. As can be seen in figure 1B.

PARTICIPANTS

The number of participants used for the final user test is 7, five of which were students from TU/e (three foreign students and two Dutch students). The two remaining are local family members with different occupations. These were colour coded for future data analysis (figure 2). Five of these within the age category of 18-30 years old, two from 45-60 years old. The research was performed in their grocery stores of choice, being Lidl, Albert Heijn and the Jumbo.

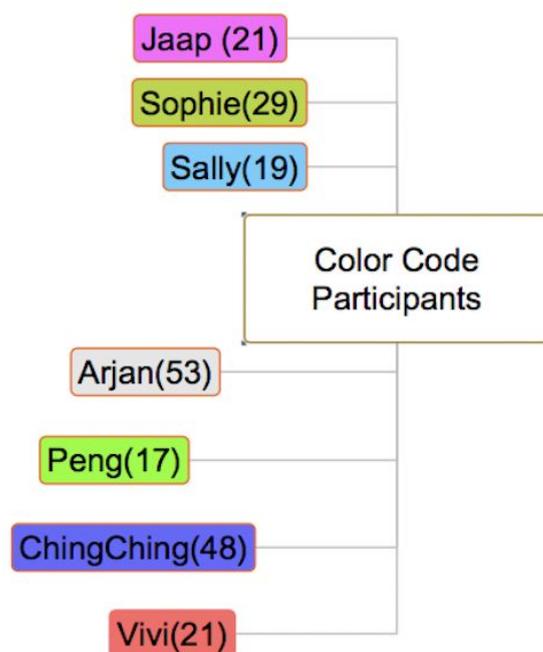


Figure 2A: Colour Coding Participants

FINDINGS

To answer the research question “Which aspects determine whether the shopping experience is perceived as enjoyable and why?” The participants were colour coded (figure 2) and each of their significant remarks/findings was given a code in the shape of a general descriptor such as duration, hygiene, presentation and trust. The researchers collected all of the codes, which were divided into themes. They then reviewed which themes generated the largest amount of coded user data. 5 main themes were created: Quality of Service, Max Duration Enjoyment, Products, International Friendly & Setup/Marketing. These were then transcribed into our software, where we linked the direct quotes from the context to the 5 themes (figure 2B).

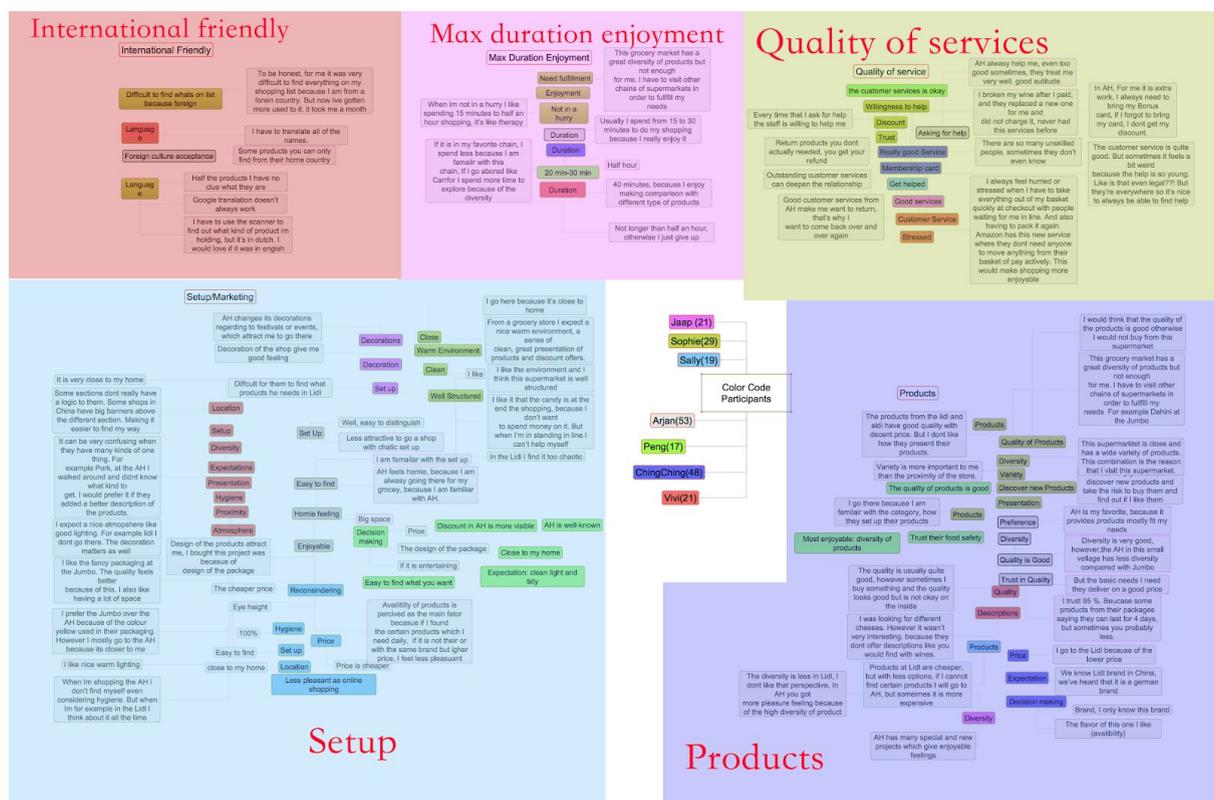


Figure 2B: Theme clustering

Conclusions were drawn based on the visualization from the coding and theming, they addressed the most discussed themes that were perceived as aspects of the enjoyable experience. This can be seen in the data visualization above as the biggest clusters. Which are setup, products and quality of service.

Setup/Marketing. From among the observed participants one predominant trend was very noticeable. It seemed that a large common aspect that impacts the joy of a shopping experience is presentation. Where the packaging, placement and lighting were of great effect on the enjoyment of purchasing, exploration of produce & trust in hygiene. To quote one of our users "I expect a nice atmosphere, like good lighting, for example in Lidl. I don't go there, the decoration matters as well". When asked about why he wouldn't things as lighting and product placement came up to be defining factors.



Figure 8: Setup/Presentation

Products. Another dominant trend was that customers felt happier shopping in shops that had a greater diversity of products. However some also experienced confusion on top of this. As often there are many choices with limited descriptions. Especially for internationals this is an issue. For example one of our users said "I was looking for different cheeses, however it was not very interesting because they don't offer descriptions like you would find with wines" This shows how the produce is less engaging because of a lack of presentation.

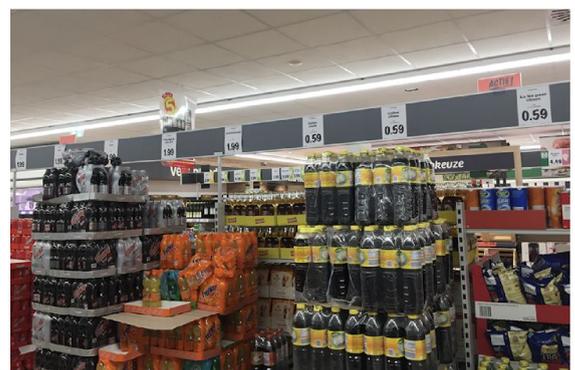


Figure 9: Products/Diversity

Quality of Service, Another noticeable aspect was how the customers/participants deeply appreciate the nature of the service provided in shops. Willingness to help, trust and the ability to ask for help all came forward often in the conversations with the subjects as pleasing aspects. One of the quotes we gathered on this was “Good customer services from AH makes me want to return, that's why i want to come back over and over again.”



Figure 10: Quality of Service

Another themes that proved interesting and surprising to us even though it don't show up within the larger themes was the international friendly. Eindhoven has a diverse population of citizens, including a large amount of internationals. We found that grocery stores currently don't cater that well to this part of the population. Our international subjects giving us exclamations such as “Half of the products I have no clue of what they are” while shopping in the albert heijn or “Google translation doesn't always work” when shopping in the Lidl. This shows us that even across different branches there is a boundary for internationals to be able to effectively do their shopping.

DISCUSSION

The implications of our findings should be a heightened awareness for future designers to further appeal to the user's wishes in grocery stores when it comes to presentation of produce, quality of available service and a clear setup of goods. In turn creating a more pleasurable experience.

As observed there are some changes to be made in the descriptions of diverse products in grocery stores. We feel that the more subtle things, such as presentation and using the correct type of lighting, are often underestimated when it comes to the effect these have on the customer's enjoyment of the shopping experience and ultimately the amount of visitors for a grocery store.

Furthermore the readily availability of help in stores is a large aspect of customer satisfaction. Some of the environments in which the subjects were observed had what seemed the right amount of available help. However many did not, where the customer had to go out of their way to find help, or sometimes were even made to feel slightly uncomfortable when low quality help was provided. A last implication of our user research is that across grocery shop branches a more international friendly design of packaging could and should be used to lower the threshold for internationals do effectively do their shopping at those locations, decreasing the amount of perceived stress and increasing the amount of joy during shopping. This as well is something that should be taken into account when designing a grocery shopping experience.

LIMITATIONS

The aim of the study was described as finding out what aspects make one perceive his or her shopping experience as enjoyable. We do feel that we have in fact laid bare some aspects that may decide whether one's shopping experience is perceived as enjoyable or not. However the research remains very limited seeing as we're trying to draw conclusions for the entire population of people who shop at dutch grocery stores, yet our sample size only consists of a small convenience sample of 7 people from our direct environment. This due to time limits by being only a group of 2 researchers. However that still means that any sort of findings we've come across can only be presented as a hint towards the truth. For a future study to have any sort of concrete relevance the sample size would have to be increased by a lot, 7 simply isn't large enough to come even remotely close enough to the population sample needed. Yet it does give us a clear idea of which direction a full scale research would go in. In an ideal situation we would have liked to have the manpower to be able to video record our conversations with the participants while we were observing and questioning their behaviour in context. This would allow us to unveil more tacit information during the contextual behaviour and after during the post processing/analysis phase of the research. given Our current research usually only had one of us present, disabling our ability to record as much as we would like to. This combined with a larger sample size would have given us more confidence in our findings.

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APPENDIX

APPENDIX A: INFORMATION SHEET

What is the purpose and aim of the research?

The goal of this research is to find out what makes one perceive his or her shopping experience as enjoyable. By studying the behaviour of selected participants within the environment of the grocery store and asking select questions when behaviours are observed. The aim is to find out which elements drive the user's behaviour. Which aspects are perceived as positive and which as negative?

What does it entail and what information is being collected?

This research project requires researcher follow participant while she or he is doing grocery shopping. The participant will be video recorded during the entire grocery shopping. After that an interview will be performed and also being recorded. Participants will be asking questions regarding to the significant acts which marked by the researcher during the grocery shopping. All these collected data will be analyzed by the researchers.

What are its intended results?

The participants should be feeling comfortable during the video recording while doing grocery shopping. Being open and honest for the questions during the interview. The primary data should be collected at an environment that both researcher and participants feel comfortable and relax. The data will be analysed and visualized by the researcher regarding to the proper structures. The conclusion will be drawn with validity and reliability.

What is its relevance/benefits to the participants?

The findings of this research report will provide insights or potentially contribute a design solution (product or service) for designers who would like redesign or improve the shopping experience.

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APPENDIX B: QUESTIONNAIRE

QUESTIONS RESPONSES 3

About your shopping experience

Some general questions to find out what you value about your grocery store experience and why

1. What was the main reason for you to visit this chain of supermarket?

Long answer text

2. What do you think about the diversity of products at this supermarket?

Long answer text

3. What do you expect when you visit a grocery store?

Long answer text

4. How much time do you usually want to spend shopping?

Long answer text

5. How easy or hard is it for you to find what's on your grocery list?

Long answer text

6. How do you feel about the quality of the products that you get here?

Long answer text

7. How much do you trust the hygiene of this grocery store?

Long answer text

QUESTIONS RESPONSES 3

8. Why do you feel more attracted to this store over others?

Long answer text

9. How do you feel about the way they've set up the different food sections?

Long answer text

10. How do you feel when you walk around in this store?

Long answer text

11. How do you feel asking for help and why?

Long answer text

12. How hard is it to find help when you need it?

Long answer text

13. What do you find enjoyable when you're doing your grocery shopping?

Long answer text

APPENDIX C: CONSENT FORMS



Yiwen Shen, Niels Rots.
Title: Student
email: nr@asaro.nl
shenyiwen.cn@gmail.com

University of Technology of Eindhoven, 05 October 2017

Informed consent

The purpose of this user test is to observe the user's behaviour in a grocery store. This user test is for the course "Contextual Research Design" in the Industrial Design department of TU/e. The information given now is limited but you will be informed and you will be able to ask any question about the project after the test.

You are not obligated to answer questions of students. When you want to be pulled out from this research, you can tell the researcher. All information will be processed confidentially, unless you give permission to use it publicly.

- I will give permission for using my video's and pictures for this research. My data will be processed anonymously.

I will **not** give permission for using my video's and pictures for this research. My data will be processed anonymously. I will not be seen or heard in any video.

I fully understand the 'informed consent' and it is my will to take part of this research. I understand that my permission is not damaging my legal rights due to negligence or other legal faults of others concerning this study.

Date:

Name of the participant: qingqiang

Signature of the participant: 姜琴

Date:

Name of the student:

Signature of the student:

Yiwen Shen, Niels Rots.

Title: Student

email: nr@asaro.nl
shenyiwen.cn@gmail.com

University of Technology of Eindhoven, 05 October 2017

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Date:

Name of the participant: *Japhia K. Oboir*

Signature of the participant: *Japhia K. Oboir*

Date:

Name of the student:

Signature of the student:

Yiwen Shen, Niels Rots.

Title: Student

email: nr@asaro.nl
shenyiwen.cn@gmail.com

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Date:

Name of the participant:

Signature of the participant:

Yiwen Shen
[Signature]

Date:

Name of the student:

Signature of the student:

Yiwen Shen, Niels Rots.
Title: Student
email: nr@asaro.nl
shenyiwen.cn@gmail.com

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Date:

Name of the participant:

Ariah Kooijema

Signature of the participant:



Date:

Name of the student:

Signature of the student:

Yiwen Shen, Niels Rots.
Title: Student
email: nr@asaro.nl
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Date:

Name of the participant:

Den Gian

Signature of the participant:

Den Gian

Date:

Name of the student:

Signature of the student:

Yiwen Shen, Niels Rots.

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I fully understand the 'informed consent' and it is my will to take part of this research. I understand that my permission is not damaging my legal rights due to negligence or other legal faults of others concerning this study.

Date:

Name of the participant: *Jally Waverma*

Signature of the participant: *[Signature]*

Date:

Name of the student:

Signature of the student:

Yiwen Shen, Niels Rots.

Title: Student

email: nr@asaro.nl
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Date:

Name of the participant:

Signature of the participant:

Date:

Name of the student:

Signature of the student:

APPENDIX D: RAW VIDEOS FROM CONTEXTUAL RESEARCH

(<https://drive.google.com/drive/folders/1B1YprjghpoKzzWcueOm5R8Kl5BGrJes>)

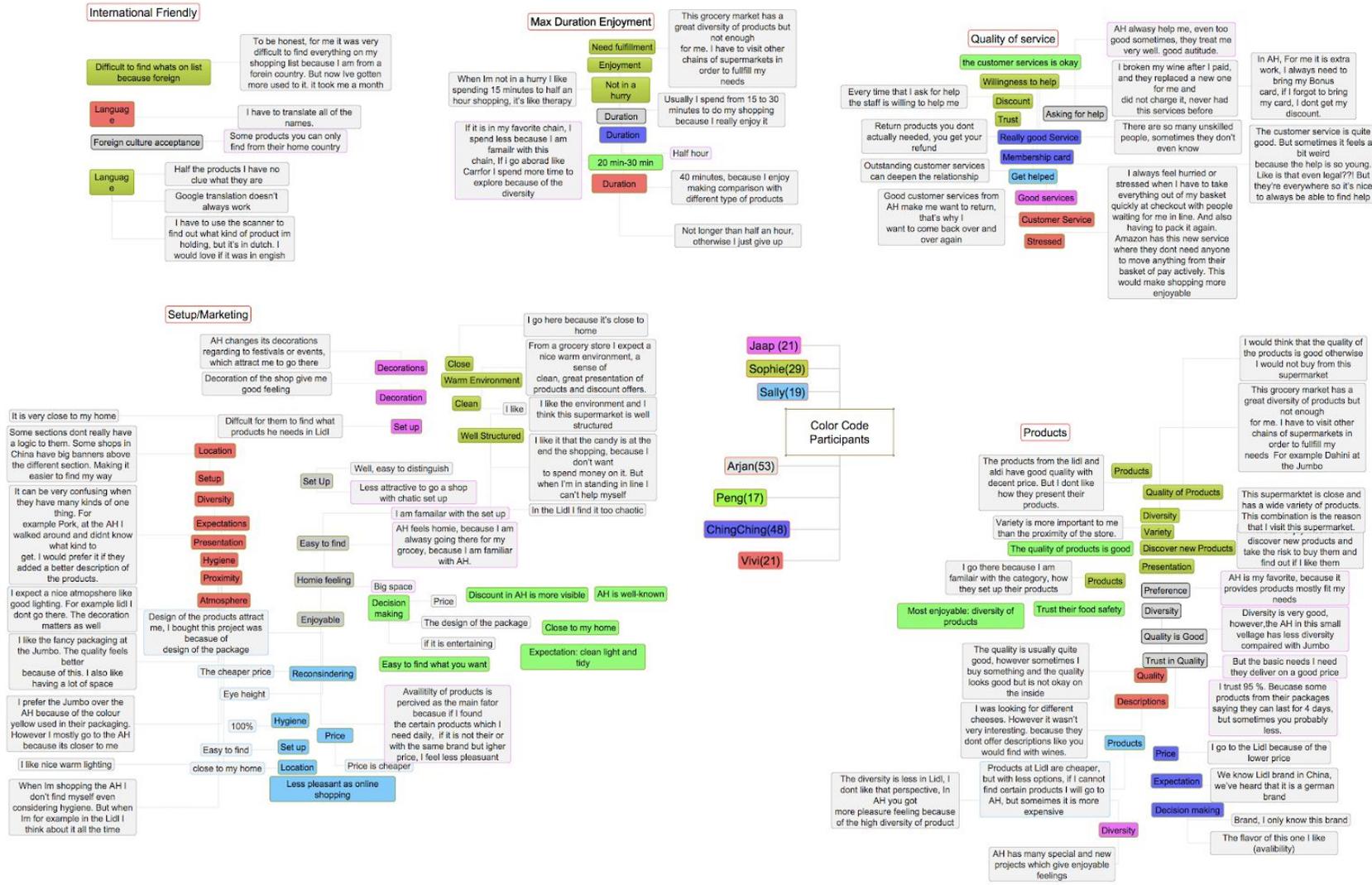
APPENDIX E: RAW AUDIO RECORDINGS

(<https://drive.google.com/drive/folders/1GfoHhnO6m7odgMySrhl57uavR71JcDB2>)

APPENDIX F: PHOTOS/STILLS DURING

(<https://drive.google.com/drive/folders/1cVKgAsZXacGdMzrZGqh61xjT3flQMpPE>)

APPENDIX G: INFINITY DIAGRAM





Discuss the value of qualitative field approaches for exploratory design

Tools solve problems, and to build the right tool, you need to know what the problem is (Kuniavsky, 2003). To understand what exactly the problem from a designer's point of view is, is almost impossible same as from a the user's point of view. This is because everyone has built their own mental models, they use different tools, terminology, and methods to solve their problems and create meaning to their life (Kuniavsky, 2003). In a qualitative research project, as researchers, it is always necessary to set up several user studies, immersing themselves in the user's life, observing their behaviors, collecting evidence and capturing moments what is valuable to them (Kuniavsky, 2003). By using these qualitative approaches it will not only guide researchers to approve their assumptions through a research project but also help them to discover new insights and findings, which were not predetermined in advance. The results are more likely reliable and detailed, this is because of researchers have participated in every step of the research process.

From my own experience, the most challenging task through this research project was trying not to let my own assumptions bias observations. As written by Holtzblatt, commit to challenging your assumptions, not validating them (Holtzblatt, Beyer, Holtzblatt & Beyer, 2017). In some of my user observation, I tried to predict user's behaviors based on my own assumption, which might lead less validity and reliability of the final results.

Another appreciated aspect of the qualitative research method is its flexibility. It creates a greater spontaneous interaction between the researcher and participant. Through our group's research, the participants were mostly asked "open-end" questions. With these "open-end" questions, participants were free to response in their own words. These responses tend to give more depths and more helpful than a simply "yes" or "no".

However, the qualitative method is time-consuming and demands always a considerable amount of preparatory work before the research can start. (-get permissions from both supermarket manager and participants. -the onsite observations and follow up interviews, etc.).

After the on-site observation, the follow-up interviews only last 20-30 minutes, which is less than as Holtzblatt suggested 90 minutes to 2 hours (Holtzblatt, Beyer, Holtzblatt & Beyer, 2017). Thus the gathered data was doubtful in the perspective of reliability.

To summarize the value of quantitative approaches for exploratory design: (despite the fact that it is time-consuming) it still helps a researcher to eliminate their assumptions, collect evidences, unexpected findings and finally contribute to potential solutions to the problem.

Good research practice for contextual inquiry

1. Make a good plan of approach.

First of all, it is recommendable to make a good plan or research proposal before the research project starts. In this predestined proposal, the research question should be determined; design goal and target group should be also clarified in the research team. The researchers need to be very specific and critical about what type of data they would like to collect, the duration of each activity and the amount of participants.

For the ethic purpose, the researchers should provide the selected participants a consent form, which describes -the purpose of the research project, -what information will be collected and -the usage of their information. It is wise to keep two copies, one for the researcher and another one for the participants.

2. Set up a pilot study phase

It is necessary to execute a pilot study before the final study. The aim of the pilot study is to test the research methods that will be used in this project and then identify all the details that need to be concentrated before the final study.

A pilot study involves primary data collection. The used methods in a contextual inquiry research are mainly participant observation and follow up interviews(Holtzblatt, Beyer, Holtzblatt & Beyer, 2017). It is important to keep in mind that observation and interviews can generate a huge amount of data, which is not always relevant to the following data analysis. It is therefore important to clarify what data needs to be collected.

The participant observation in this project was designed to follow a natural way, such as asking questions about their actions and thoughts, while recording and taking notes. It did not work well because it was difficult to stay focused on the actual observation, researcher did not know what to ask either which was obviously due to a lack of preparation.

The participant from this pilot study also felt like to be in a 'spotlight' in the supermarket. Executing this way of observation was unnatural and additionally the entire situation made the participant feeling nervous, especially by answering questions. The researcher decided to do the video recording from a distance without questioning.

The follow-up interview at a preferred place chosen by participant went smoother than the onsite observation. However, the mistake was made because the researcher took the role of master instead of an apprentice. Ideally, the researcher should build a correct relationship model in a contextual interview. As suggested by Holtzblatt, the ideal role for a researcher should be acting like an apprentice (Holtzblatt, Beyer, Holtzblatt & Beyer, 2017). This is because the participant is the only true expert (master) in his/her life. Researchers should not let their own assumption bias their observation, instead, immersing themselves in their participant's life, studying their behaviors and letting them teach their lives.

The results from the pilot study should be the input for the final study. However, the results from the pilot should be evaluated. Good research must generate credible data; a good pilot practice will help the research team to reflect whether the methods, which were used in the project, were useful and effective.

3. Final study

Data was collected through the methods which were evaluated and approved by the research team. The onsite video recording and follow up interviews with audio recording became the base of our research. Since there were only two students available to collect their data in this research project, the collected amount data was limited. Though the researchers were aware that in order to generate sufficient amounts of user data, it is suggested to recruit 15 -20 people (Kuniasky.2017).

The data was analyzed and visualized with a computer program called MindMaple, instead of printing all the quotes on sticky notes. I personally experienced that this application was very helpful to transcribe raw data into an affinity diagram structure.

An affinity diagram structure usually takes 1 to 2 days to build (Holtzblatt, 2017). However, the Affinity diagram, in this project, was built within one day. Each of the participants was labeled with a different color. The quotes were noted down and was given a general descriptive term such as quality or service by the researchers (figure 1). All the raw data was being processed and then categorized to 5 themed groups as shown in figure 2. These themed groups were the main findings of our research. Having this affinity diagram structure allowed us to clearly visualize the most discussed elements which were being perceived as enjoyable in their shopping experience.



Figure 1 & 2. Coding & Structure

I think the findings from this practice research delivered a limited breadth and depth due to the fact that the acquired data is not all relevant and valuable to contribute to a potential design solution. The findings can only provide some insights for designers as sources of inspiration. However, this was the first time for the researcher to employ this method. Here I would like to sum up some experience from this research practice: -it is important for researcher to schedule their participants, -plan equipment and locations as early as possible, especially by using contextual inquiry method, -be specific on the research question, so the gathered data could be more relevant and valuable, -holding a critical attitude on findings is the key to get reliable conclusions.

Strengths and weaknesses of the three methods

A diary study can be a very effective method to uncover daily habits and behaviors of participants. In a diary study, participants are asked to keep capturing media data (video, audio clips or tangible objects) and log specific information about events being studied (Carter & Mankoff, 2005). Media data (so-called elicitation studies) can be collected easily and quickly, however, it still presents a subjective point of view (Carter & Mankoff, 2005). Besides that, the collected data might generate inaccurate recalls from the participants (Carter & Mankoff, 2005).

A diary study requires a higher-level commitment from participants than inquiry and cultural probes. Before the data collection starts, researchers also need to develop an instruction to support and monitor participants about what information they need to log. Ideally, it would be helpful for researchers to analyze gathered media data if participants could leave some comments or annotations. (Carter & Mankoff, 2005). However, I think it would be impossible for participants to write comments on every picture they took, especially during some outdoor activities.

Thus I conclude that a diary study seems to be a time-consuming method to generate credible data. (weakness)

Cultural probes are probably the most intuitive and interesting method of doing qualitative research. The sets of items in probes can be collected by the researchers or being received from their participants. The strength of this method allows participants to document their lives in their own context, with a minimum of interference from the researcher. This would provoke and inspire designers or researchers to consider their current environment in a new way, help them to reach a different perspective on their life (Gaver, Dunne, & Pacenti, 1999).

However, there are also some challenges by using probes. The participant is neither observed nor directly guided by the researchers during the daily collection of data. The risk is that a lack of commitment may lead to a limited amount of data that is difficult to analyze and does not provide useful input to the project. Therefore the gathered data is not always suggestive for a deep analysis (Gaver, Dunne, & Pacenti, 1999).

On the other hand, the researcher must be careful with gathering an appropriate amount of data. The length of the data collection period and the number of participants must all be taken into account in the creation of cultural probes. For example, some of the participants would probably feel fun to collect items and log information on a daily basis. Others would probably lose interest if the length of data collection period takes too long time.

Contextual inquiry helps the researcher to understand the real environment that participants live in; it reveals their needs within that environment (Kuniavsky, 2003). Comparing with probes and diary studies, this method requires that the researchers stay focused and being physically present all the time with the selected participants. At the same time observing their behaviors within the chosen environment. This allows researcher "discovers the exact situation in which these problems occur, what these problems entail, and how people solve them" (Kuniavsky, 2003). Thus the collected data seems to be more reliable and detailed compared with the other methods.

I think the contextual inquiry is the more difficult method compared with other research methods. It is not a simple onsite observation. It involves observing participants performing their tasks and talking with them about what they are doing. This can be experienced as uncomfortable for some participants, especially in a public place. It is also possible that participants don't understand the importance of the observing task performance in their context. They would probably perceive it as an interview or meeting, which might set incorrect expectations. In this circumstance, they might perform tasks differently or unnatural from what they usually would do.

Contextual inquiry also requires major preparations prior to the recruitment. Besides preparing the questionnaire and the need for recording equipment, it usually takes a lot of time to identify, plan and schedule participants. By the time the data collection is completed and the researchers are ready to analyze it, it might be possible that they running out of time due to the deadline. The reason is that this method generates a huge amount of data which the researchers all need to review and to be documented.

Each method has its own strengths and weaknesses.

On the aspect of data collection, cultural probes and diary studies requires the participants to collect data by themselves, which means that the researchers can spend more time on the data analysis. Though the collected data is probably not all as relevant to the research project. I would recommend using cultural probes if the researchers are seeking inspirational inputs but have limited time to collect user data by themselves.

On the aspect of data validity, the acquired data from contextual inquiry is more accurate than the other two methods. The major issue that needs to be taken into consideration is the time spanner for such a research project.

The diary study could be used if the research requires the researchers to study daily habits and behaviors of the participants.

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