Designing to Support Spontaneous Purchase Decisions

Uncovering in situ social interaction while shopping

Naushin Malik

Abstract

The rich capabilities of mobile devices have made the devices appropriable in various contexts and for various uses. The emerging ways of social interaction with friends and family are opening new horizon for designers to interfere and improve the social activities of daily life. Shopping is indeed one of such activities where social interaction plays an important role. This work identifies design opportunities for a mobile application to fulfill the need of social interaction during shopping. An extensive investigation was carried out to uncover the role of social interaction in purchase decisions while shopping in a physical store. Based on the findings, a design idea is conceptualized and then evaluated. In this document, I report on the user investigations, design conception, prototypes, and finally the phase of evaluation.

1. Introduction

It's not a very long time when we get introduced to mobile phone, but in just 30 years it becomes an essential tool of our lives. Currently, almost half of the world population has mobile phones and this number is increasing day by day (International Telecommunications Union 2008). The reason why it is getting popular at rapid pace can be found in human need of social interaction (Baumeister and Leary, 1995). This need of social interaction compels us to maintain connection with the people we know, establish new connections and enhance our social circle. This interaction provides a sense of confidence and security to cope with various situations a person may face during daily activities (Gourash, 1978). Mobile phone has provided another way for instantaneous communication when face to face communication is not possible. Now one can stay connected with other people from anywhere, anytime and in any situation.

With the advancement in technology, mobile phones are now enriched with the power of computing, internet and location awareness, so new ways of social interaction are emerging in the mobile context. The popular concept of Social Networking Sites (SNS) from internet is getting warm acceptance in the world of mobile phones. More people are inclined in accessing SNS from their mobile than from their desktops (Favell Andy 2010). It can be said that now people can stay connected with large number of friends and acquaintances anytime and anywhere. One step further, mobile phones are now capable to find new contacts on the go, means no fear of loneliness in a new city, in a nightclub, in a shopping mall etc.,(aka-aki networks 2011). Such emerging developments in the field of social interaction and the capabilities of mobile phone are increasing opportunities to interfere and improve the activities of daily life.

Shopping is indeed one of such activities where social interaction plays an important role. It provides ways to have fun with friends and family, to share experiences and to strengthen the bond with others during shopping at a common place (Arnold and Reynolds, 2003). This desire of mingling can influence the choice of medium (e.g., physical store, catalog, e-commerce site or virtual store) as well as the schedule for shopping (Rohm and Swaminathan 2004). This socializing is not just for fun or building relationships but it helps people to reach on the final purchase decision. People seek for comments, advices and recommendations to decide what is good and what is bad before purchasing an item. Sometimes they just postpone

their purchases because they first want to ask advice from their friend or family (O'Hara and Perry 2003). It is not that they are unaware of their personal choice but just to have some assurance before making final decision. Even though, there can be various sources to get advice/recommendation about a product such as leaflets, salesman, reviews and rating, but people prefer to have advice from the person they know and trust (Sinha, R., and Swearingen, 2001). The choice of advisor varies with the nature of product, no one person can be identified as the source of all type of recommendations. So perhaps for doubt free shopping decision, one needs the right person at right time. Unfortunately, due to changing life styles, busy schedules, globalization etc., it is not possible always to get benefit from the company of required friend or family member and I guess we also do bore shopping. On internet, designers tried to address this issue by using SNS (ShopSocially 2011) and other means (FriendsShopper 2009) but what to do when a person need advice in physical store? As in order to get the tactile feeling people still prefer to shop in physical stores where they are able to touch, smell and experience the product.

The pervasive nature of mobile phone and advancement in its multimedia capabilities are opening up new ways to support social interaction in shopper's context (Cherubini et al 2009). The goal of this study is to formulate basic features of an interactive mobile shopping application grounded in an explorative investigation. Mainly, focus is to **investigate the role of social interaction in decision making while shopping in a physical store**.

The rest of the document builds up as: in Section 2, I report how others have been relating social interaction with the purchase decisions. The Section 3 is covering the details how I investigated the role of social interaction in purchase decisions. This section also reports the key findings of user study. These findings are then translated to a design implications and a prototype is conceptualized for the mobile application. Details of design and prototype are described in Section 4. In Section 5, I report the results of evaluation that was conducted through two focus group discussions. Finally, the document is concluded with a discussion on results, short comings and suggestion for future work.

2. Related Work

In marketing literature social influence is considered as part of environmental factors which affect the overall process of consumer decision making. This influence shapes the overall behavior of people, their selection of store, product or brand. Researchers have investigated how the different choices related to stores, products or brands are inherited from the people with whom the person is socializing (Kotler, 1996, and Dibb et al 1997).

This influence is more obvious for the products which have to be used in public (e.g. apparel) as compared to them which have to be used privately (e.g. shampoo or toothpaste) (Assael, 1981). However, Reinger et al. (1984) founds that agreement in choices is not due to publicly or privately use but it depends on the type of product and on the type of group/circle to which the individual is relating himself. Mainly, an individual wants to associate him with two types of groups; first group consists on people with whom s\he lives, socialize and has direct interaction e.g., family, peer, acquaintances, colleagues etc. Whereas the other group is one to which the individual aspires to join e.g., sports and entertainment figures. Moore et al.

(2002) studies the influence of mother on the brand choice of daughters in case of grocery products and for 60% products and brand their choice was matched. At the other end, Niedenthal et al. (1985) tried to understand that how desire of resembling with the ideal personality can influence the purchase decisions. Sometimes people perceived themselves part of a certain group, and this perception forces them to use similar brands that the group is using (Edson et al. 2003). Such influence of groups on the selection of product can be categorized in two dimensions, public or private consumption and luxury or necessity consumption. The influence varies depending upon the type of interaction a person has with the group, strong interaction effects the choices of private and necessity consumption, whereas weak and no interaction effects the selection of products for public consumption (Bearden and Etzel 1982). Childers and Rao (1992), further extends the findings of Bearden and Etzel (1982) to understand the difference between peer and family reference groups in terms of public and private necessities and luxuries consumptions.

Marketing literature confirms that people use others as source of information and inspiration to develop certain belief about a product selection. This influence is stronger from the people they closely interact and trust than others. Overall focus of marketing literature is to understand how people inherit and develop a certain belief and how these beliefs lead them to their ultimate choice. However, it does not mean that people always know in advance that what they should buy without any uncertainties and doubts. There are many factors due to which people are indecisive during shopping and defer their purchases e.g., unavailability of product, confusion in selection of appropriate product, insufficient information etc., (Andersen Consulting, 1996 and Huffman and Kahn, 1998).

O'Hara and Perry (2003) conducted a study to understand the situations in which people deferred their purchase decisions. One of the main reasons for deferral in purchases is the social and collaborative nature of shopping. People learn from the conversation and discussion they have with their friend and family members, look for advice, assurance and permission before finalizing a purchase. O'Hara and Perry (2003) have floated the idea of supporting social aspects of shopping through mobile technology by providing shop based services based on the notion of "tell-a-friend" or "send this story to a friend" models seen on web sites.

Cherubini et al (2009) tried to further investigate the moment of need when a shopper may look to interact socially by conducting a user study with 77 participants. According to the results, respondents prefer to use two types of channels to collect information about the product; first channel is online web pages and forums, and the second one is advice from friends or family members. The first channel of information is already well explored by designers as compared to the second one. Therefore, extensive investigations are needed to understand the relationship between nature of product to be bought and the need of advice from peers and family.

Boardman et al, (2009) developed and evaluated a mobile shopping application based on two main elements: an in-situ user experience and online, real-time social network support in decision making process. This application allows user to poll their Facebook friends in real-time about the product s/he is going to purchase. The feedback from friends is received in the form of polling result. This application provides a collective opinion from the group of friends

available on Facebook in the form of votes. This solution is not addressing the need of interaction in real time with a specific person based on the type of product. This application just provides a recommendation from peers without any discussion which the individual may needed to reduce uncertainties in decisions.

From the review of related work, it is evident that very little work has been done to understand the role of social interaction in decision making while shopping in a store. Further, there are very few attempts from designers to support this need of social interaction through mobile technology.

3. Uncovering Social Interaction during Shopping

Following the principles of user centered design, the potential users are involved at all stages of design process (Preece et al., 1994). Interview and focus group (Patton, 2002) helped in eliciting role of social interaction in decision making while shopping in a physical store. This was followed by analysis and creation of basic low-fi prototypes of the applications. A focus group was then arranged to evaluate whether people understand and like the proposed concept or not.

The field investigations attempted to understand the situations when people are indecisive about a product and look for some social support to make the decision. In order to investigate the behavioral aspects of human life, a mixed method approach is more beneficial than a single method one. Hence, I used a two-step process to conduct the user research by using qualitative techniques (Patton, 2002).

3.1. Interviews

Interview was the first method used to unfold the understanding about the role of social interaction in purchase decisions. The general interview guides approach (Patton, 2002) was used for interviews. An interview guide was developed in order to use for all interviews. This guide was tested in a pilot study (van Teijlingen & Hundley, 2001) before starting the actual study.

The interview guide was developed with open-ended and flexible questions. These questions were shaped to explore shopping activity in general by asking how often they go for shopping or how they plan their shopping trip and in particular by inquiring the process of making decision about the purchase of specific product (See Appendix 1). Interview guide does not compel researcher to strictly follow the list of questions but make it possible for him to elaborate within the guided framework. This guided elaboration ensures that same set of questions are asked from all respondents with the flexibility of an informal conversation (Patton, 2002).

3.1.1 Pilot Study

Once preliminary interview guide was ready, a pilot study was conducted to found out the usefulness of interview guide in discovering the role of social interaction in purchase decision, to discover problems in understanding the questions and finally to estimate the time needed for each interview.

Due to universal nature of shopping activity, participant for the pilot study was selected without following any special criteria. A female international student from Umeå University was contacted through email and after her consent a face to face interview was conducted at her home. She belongs to Bangladesh, is single and her age is 32 years. The interview was recorded using the Sound Recorder application available in Microsoft Windows 7® operating system, after getting permission from the interviewee. The interview lasted for almost 45 minutes and overall it was successful in learning about the role of social interaction in purchase decisions. However, it was noticed that some questions were difficult to understand and needed more explanation. Further, few questions were leading to similar response which in turns affecting the interest of participant in the interview.

The findings were used to improve the interview guide. Few questions were rephrased, reconstructed and rearranged to overcome the issues in comprehension and losing interest of respondents (See Appendix 2). The purchases are categorized in different types; a) grocery shopping includes purchases for food, beverages and different routine household items, b) consumer electronics is covering shopping for computer, iPad, mobile phone and other household and kitchen appliances, c) Personal shopping includes items for personal use e.g., hair and body care products and c) last category covers the purchases related to apparel, footwear and other accessories.

The data collected about the shopping and purchase decision behavior was combined with main study data and analyzed collectively.

3.1.2 Main Study

Shopping can be considered as an activity which is performed by many individuals worldwide. Therefore, it was decided that study should not be restricted to a certain demographic or geographic group. However, due to limited time and resources it was not possible to go for a large sample size with maximum variation sampling strategy (Patton, 2002). Hence, it was decided to select 10 participants (equal number of male and female) with some varying demographic and geographic characteristics. Details are given below in Table 1 and Table 2. The age of participants is between 18 to 43 years, mainly because of two reasons; one is that people of this age are usually more inclined towards the new technologies such as smart phones; secondly, people of such age group are considered more independent in their decisions. Therefore, it would be interesting to see how social interaction may play a role in their decisions while shopping. During this study, it was found that people become more careful in later age and comparatively relied more on others while making a shopping decision

Participants (Male)	Age	Country	Occupation	Marital Status	Children
MP1[1]	18	Saudi Arabia	Student	Single	No
MP2	24	Azerbaijan	Student (Umeå University)	Single	No
MP3	30	UK	Pharmacist	Single	No
MP4	37	Pakistan	Doctor	Married	No
MP5	42	Pakistan	Architecture	Married	Yes (3)

Table 1: Male participants

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[1] MP: Male Participant

as in the young age. The participants were selected from different geographical background in order to understand the influence of culture on the need of social interaction while shopping. According to the result of this study, cultural background does not have any significant influence on the need of social interaction while shopping. It can be said that having social interaction during shopping to reach on a decision is not limited to any specific culture or ethnic background but it's a global phenomenon. Another factor which was considered while selecting the participants for this study was to have them from different profession. It was necessary to understand the effect of finances on the need of social interaction during shopping. The focus was on middle income people and extremes (very poor and very rich) were not included just to avoid the effects of extreme external factors on money at hand for shopping. It is found that money or budget is not an only factor to interact with people before reaching at purchase decision but in case of expensive items people get more careful and seek a reliable advice more vigorously. I also tried to select participant belonged to different marital statuses. It is to understand the change in behavior due to responsibilities they have to take care of. Interestingly, married participants especially with children are more careful while making purchase decision as compared to single participants. Further, there are more occasion as well as people in the life of married participants when and to whom they involved in interaction to reach on final purchase decision. Gender difference is also important in behavioral studies, so in this study I have selected participants from both genders in equal numbers. As such need of social interaction while shopping cannot be associated to any specific gender however, females were generally found more involved in seeking advice reaching on final purchase decision as compared to the male participants of this study.

All participants were contacted through email in last week of April 2011 and after having received their consent, interviews were scheduled in the first week of May 2011. For all local participants a face to face interview was conducted at their homes whereas the rest of them were interviewed using Skype video call feature. All interviews were recorded using the Sound Recorder application available in Microsoft Windows 7® operating system, after getting permission from the participants. The interviews lasted from 30 to 45 min, with an average duration of 34 min.

Participants (Female)	Age	Country	Occupation	Marital Status	Children
FP1[2]	23	Sweden	Student (Umeå University)	In Relationship	No
FP2	29	Vietnam	Student (Umeå University)	Single	No
FP3	28	Sweden	Personal Assistant	Single	No
FP4	36	Pakistan	Product Manager	Married	Yes (1) NB[3]
FP5	43	Pakistan	House Wife	Married	Yes (4)
FP6[4]	32	Bangladesh	Student (Umeå University)	Single	No

Table 2: Female participants

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[2] FP: Female Participant
[3] NB: Newly Born
[4] FP6: Participant of Pilot Study

3.2. Focus Group

In order to further develop the understanding emerged from the interviews, a focus group (Patton, 2002) discussion was conducted. Focus group is considered as a good way to get "*quality data in social context where people can consider their own views in the context of others*" (Patton, 2002). This mutual development of ideas reduces the chance of getting false or extreme views.

The focus group discussion was conducted in the second week of May 2011 at Umeå University. The focus group had 8 participants with 5 male and 3 female. All participants were students of Umeå University with age between 24–30 years. The session was lasted for one and half hour. The session was started with a brief introduction about the purpose of study and findings of first phase i.e. interviews, followed by an open discussion (see Figure 1). Detailed notes were taken by a fellow student who was helping in conducting the session.
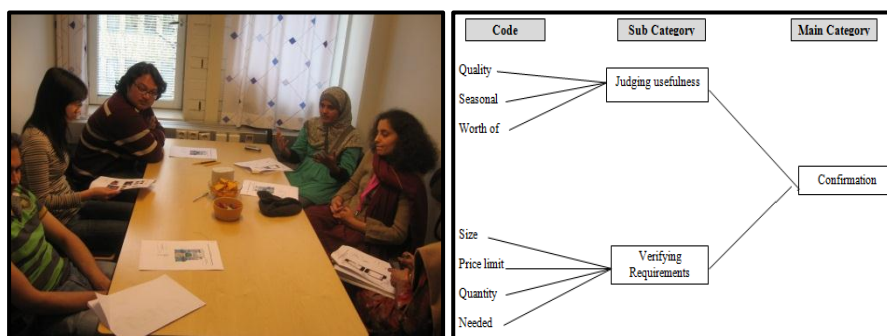
Figure 1: Focus group discussion and content analysis

3.3. Analysis of Data

The interviews were generally focused on how social interaction plays a role in decision making while shopping in a physical store. After completing the interviews, the analysis phase was started by looking for themes and categories in the data. Due to flexible nature of interview the whole interview was used as unit of analysis. After having gone through the recording of interviews several times, themes were developed using inductive content analysis and the constant comparative method (Zhang and Wildemut, 2009). Coding was done using open coding process by marking important concept in the data. These codes were then combined in sub categories which were then converted to the main categories (see Figure 1 or Appendix 4). Similar kind of procedure is used to develop affinity diagram in contextual design approach (Beyer and Holtzblatt, 1999). During this process data was looked for quotes that were related to the selected themes and marked for the documentation. The findings developed from the focus group discussion were combined with this analysis to further refine the emerged patterns and themes.

3.4. Key Findings

This section reports the key findings about the themes emerged from the analysis of data collected in the pilot and the main study. These themes are based on the categories developed from the salient features the behaviors of participants regarding the role of social interaction in making purchase decision.

3.4.1 Need of Support for Selecting Alternate Product for Out of Stock Situation

This theme was emerged from the questions related to groceries (daily routine food and household items) shopping. Generally all participants mentioned that grocery shopping is a routine thing and no special planning is done for this before going to the store. Only two participants told that they create some sort of shopping list before leaving the house. The rest stated that they just know what is needed. As an immediate response, everyone mentioned that they had specific choices for product and always purchase grocery items without any second thought or any need of discussion.

> *I don't want to waste time so I just pick what I use to. (MP3)*

However, further discussion with them, revealed some interesting behaviors related to the out of stock items. Female participants told that they know alternate options if specific brand or item is out of stock. However, for male participants this is a difficult decision to make so they usually need to consult with the family for alternate options.

> *I only go for that brand which my mother asked me to bring, if it is not there I can't decide the alternative one alone, so either I will leave the store without purchase or call mama for options (MP1)*

As another participant says:

> *I always forget that which alternate brand can also be purchased if the preferred one is unavailable, and also about the required quantity. (MP4)*

3.4.2 Need of Support for Selecting the Best Suited Product among Many

Women are in general more conscious about their looks so pay more attention to this aspect while purchasing apparel, footwear, cosmetic or other fashion accessories. All female participants mentioned that discussion before making the final decision is important in many situations. Due to variety of styles, cuts, color schemes and accessories, it is sometimes become essential to find out that how well the item is going with the personality and image of the individual. However, all of them said categorically that not all friends or all family members can be trusted for such advice.

> *You can't judge that whether the dress is enhancing your look or it is exposing your bad parts (FP4)*

Another participant added:

> *I don't have confidence to select things alone. (FP2)*

One of the female participants says:

> *I am very conscious how a dress is looking at me especially due to my thighs, so I always need a second opinion. I don't believe on sales girls as they never say anything bad. I only trust my sister,… even more than my boyfriend. (FP1)*

The response from male participants was different, apart from two; all others mentioned that they usually purchase specific brands and styles so there is no need of any discussion with others. However, one participant told that he sometimes asks advice from his wife about color

and quality of stuff. Another participant thinks that friends are not reliable source for such advices so only female family members can help.

> *no way, friends always make fun of you...I only discuss with my sister or mother. I have more trust on stranger female than my friend. (MP1)*

In some situation people need little assurance about certain aspects of product e.g., quality. Two male participants mentioned that they sometimes discuss the quality of stuff or usefulness of item with their friends before purchasing. Generally participants seek help from friends or family in judging the worth of product in terms of price and quality.

Almost all male participants mentioned that they usually select particular style or from few colors only, so in order to bring some change in their wardrobe they might need help.

3.4.3 Need of Support for Selecting the Most Reliable and Useful Product among Many

Everyone wants to acquire best product especially related to consumer electronics (computer, cell phone, kitchen and home appliances etc.). Such purchases are usually for longer period of time so decisions are made carefully. All participants told that they pay extra care while purchasing such items. Female participants indicated less confidence in unilateral decision so all of them said that they always take either a friend or family member with them for such purchases. Only one participant mentioned about collecting some information from internet and colleagues prior visiting to the store with her family.

> *For gadgets, I always ask from my boyfriend, but for kitchen appliances I only trust on my mom. (FP1)*

Another participant responds as:

> *I collect information from my colleagues and friends but shop with either my husband or brother. (FP4)*

There was some diversity in the behavior of male participants. Most of them mentioned that they collect information from multiple channels like internet, friends, family members, sales man etc. However they believed that friends and family members are more reliable source of information as they do not have any commercial interests. So when there is any confusion they prefer to talk with the friend who they perceive as an expert for that product.

> *It's a risky decision so I do proper homework and sometimes make a decision also before going to store. In store, I reevaluate my decision by seeking information from salesperson about available alternatives. If there is any confusion, I postponed my purchase in order to discuss it with my friend (MP3)*

Another participant describes as:

> *My knowledge is pretty good about these things like laptop, mobile so I would go with my own judgment. But for unknown items, I ask help from my friends as I don't believe on internet reviews" (MP2)*

One male participant told that he never thought of shopping consumer electronics alone.

I always take (---)[5] with me, I feel he is expert of everything. (MP5)

At the other hand, one participant has mentioned internet as only and best source of information for selecting a product for purchase

3.4.4 Need of Confirmation for Selecting Product for Other People
One reason to do shopping for other people is to purchase gifts. Usually people believed that selecting gift is not a problem as they well aware about the need and choice of a close friend or family member. However, in order to select best and unique item sometimes help is required.

> *I know my mother choice very well but I don't believe in giving same sort of things always. For unique gift I discussed with my friend and seek their advice also if I never shop that item before. (FP4)*

As another participant says:

> *...but at the same time I like to explore different ideas so for this help is definitely required from friends. (MP2)*

Another difficult situation related to gift purchases is when gift is for the opposite gender. According to the participants of this study, selection of right item for spouse/partner is not an easy thing due to ever changing styles and fashions. Therefore, they prefer to consult with some friend before making the final purchase.

> *I always take my female friends or colleagues with me to select gift for my wife. It's too difficult to differentiate what is in fashion and what is not. (MP5)*

Sometimes, gifts are purchased collectively and expenses are shared. In this case extensive discussion is required to reach on an agreement on price, type and look of the product. One female participant told that:

> *...for my mother, usually me and my sister combine amount to purchase some expensive item. (FP4)*

Second reason for shopping for other people can be identified as shopping on the behalf of others i.e. surrogate shopping. General impression for such shopping is that it is very difficult and confusing to make purchase decision on behalf of other people. All participants mentioned that they prefer to contact the concern person before finalizing the purchase. One participant mentioned that I only purchased for others when they provide me link of that item from an online catalog.

> *...this demand is usually when I go out of country,....if you want me to bring something, search on internet and send me the link of your choice from online catalogs. (MP4)*

Another participant responds about this as:

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[5] Name of friend is removed.

I love explore things so keep visiting shops and sales exhibition, due to this I always have lists from my sisters and mother, but reaching on decision for them is not easy without talking to them...but explaining style and pattern on phone is horrible. (FP4)

One female participant complained that due to fashion and ever changing trends it is even getting difficult to shop for children as they are also very choosy.

It is getting difficult to select something for my teen age daughter, so I usually avoid purchasing for her alone. (FP5)

One male participant raised a different concern; he faced difficulty in remembering correct sizes of his children.

... but the problem is that I usually purchase wrong size or similar colors so almost always I have to revisit store to exchange them. (MP5)

To summarize, generally all participants want to have confirmation from the concerned person before purchasing on his/her behalf.

3.4.5. Need of Confirmation for Selecting Product for Mutual Use

Products are not always purchased for personal or individual use, but they are shared with others, usually with family but sometimes with friends also. One male participant told that he always purchase PlayStation games with the consent of his brother because they played together.

My brother is always with me in game decision, last game I purchased in my visit of Canada and for this I also called him. (MP1)

Regarding question about other entertainment sources like movies, almost all participants mentioned that they rarely purchased them but download free from internet. However, they told that if movie has to be watched with friends or family than consent of all is important in its selection.

One female participant mentioned that she prefer to select grocery items based on family choice in spite of her wish to avail discounts.

Sometimes I pick the alternate brand or item to avail discount deals, but not without my husband agreement as you know eventually it has to be used at home and family choice matters. (FP5)

All participants told in response of question about discount deals that they share such information with others and also sometimes purchase on behalf of them.

...it's an unannounced deal between us that we have to share information about discounts offer...and also dividing the deal items within each other's, you know it really helps in saving. (FP2)

Two female participants told that they sometimes contact with friends or family from store to discuss and to get their agreement on availing group discount offers.

4. Designing to Support the Purchase Decisions

Due to the pervasive nature and rich multimedia capabilities, mobile phone can be used to support the need of interaction with other people in order to reach at a decision. The understandings developed from the user study helped in formulating design implications for the mobile application which might be able to support the need of social interaction for purchase decisions.

4.1 Design Implications

4.1.1 Connectivity
One way to reach at better decision the shopper needs to connect to the right person on whom s\he trust. The advisor varies based on the type of product or nature of shopping (collective or individual). Therefore, it cannot be said that any available friend can satisfy the need of interaction required before the final purchase decision.

4.1.2 Interactive Communication
Discussion about a product not only needs an active participation from both sides but it should also be occurred at the same time. Shopper may not be able to wait longer for the response about the inquiry s\he send to friend/family. Therefore, interaction between the shopper and advisor should be dynamic, synchronous and two sided.

4.1.3 Mutual Awareness
In order to participate in the discussion about the product effectively the advisor needs to know complete detail about the product under consideration. It might not be possible to give a solid advice if the person on other side is unaware about the available options, specification and looks of the product. It implies that the level of awareness should be similar at both sides for a productive interaction.

4.1.4 Fun and Relaxation
Shopping is not a task which one has to perform. It is an activity of fun, leisure and socializing. It implies that technology mediated socializing should not affect the fun and entertaining nature of shopping. Therefore, the mobile application should not only easy in use but also a way of having same kind of fun which people may have when shopping with friends in real.

4.2 Conceptual Prototype

The identified design implications are then converted into low-fi paper prototype. The intention is not to create a commercial workable product, but just to formulate basic features of the mobile application to support need of social interaction during shopping.

This design idea is based on two main assumptions; first assumption is that the store is equipped with wireless internet and shoppers have free access to use it. Second assumption is that all products are tagged with 2D high capacity color barcodes that are readable through Microsoft's mobile-tagging application "TagReader". These barcodes are linked to the online information system of the store. This system contains all details related to the product

including in stock colors and sizes. The mobile application can access this system and share the details with others using internet.
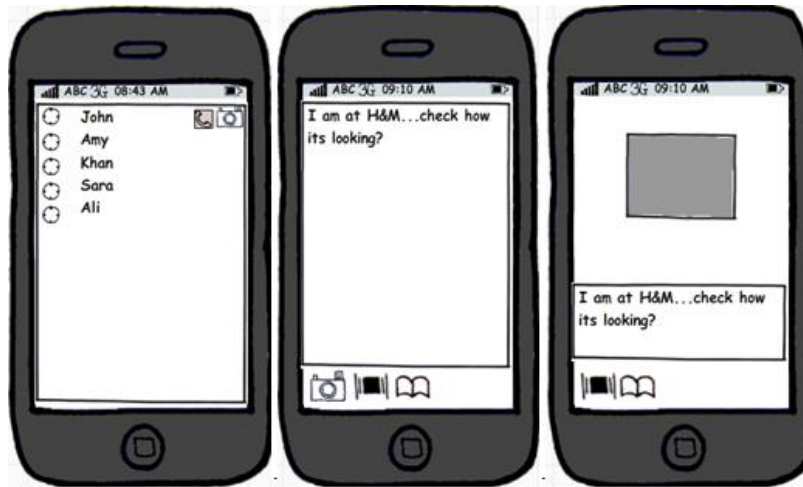

Figure 2: Design Mockups

The application provides a list of friends to select the person whose opinion is required for the particular product (see Figure 2 or Appendix 3). The shopper can initiate interactive communication with the selected person using video capabilities of mobile phone. On initiation of conversation a message regarding the location of shopper is automatically shared with the friend. In addition to this shopper can send the additional details about the product by reading the associated tag through the camera of mobile phone. The friend on other side will be able to see all information through a web page of the information system of the store. The conversation between the two sides is like a face to face, real time conversation with high speed video transmission from both sides.

For the list of friends three different options are considered. First is based on social networking site (e.g. Facebook); shopper is able to see his currently online Facebook friends and can initiate conversation with anyone of them. The advisor will be using Facebook in order to participate in this conversation. It is supposed here that the chatting feature of Facebook is able to support synchronous video transmission also.

The second option is that instead of SNS, friends list is populated from instant messaging (IM) softwares like Skype. Similar to the first option, shopper can initiate conversation with any of his/her friend and share the detail of product in the same way.

In both these options, the friend on other side must be on SNS or on IM application. But sometimes it is not necessary that the required person is available on these applications or have account on SNS or IM applications. Further, generally parents are not added as friend in SNS (West et al, 2009). Therefore the third option is based on using phone contacts as the list of friends. This implies that shopper can now initiate conversation with any of his/her mobile contact who has smart mobile phone (any operating system based) with the same application installed on it. Other features like sending detail information about product, context information and video enabled conversation are same like the first two options.

5. Evaluation of Conceptual Prototype

In order to evaluate the overall concept and the design explained in previous section, two focus groups discussions were conducted in Umeå during the second week of May 2011. The following section outlines the procedure, results and learning from this evaluation phase.

5.1 Evaluation Procedure

The basic aim of focus group discussions was to find out whether people understand and like the suggested design concept or not. This evaluation was not aimed to find shortcomings in user interface or the layout of application. Two separate focus groups were conducted with 4 participants each. The same participants as used in the focus group of user study were contacted again and requested to participate in the evaluation phase. As these participants are well aware about the background of design idea so in better position to judge and evaluate the conceptual prototype than anyone else. First focus group was consisted on 4 students (3 male and 1 female) from the Master's Program of HCI whereas second focus group also had 4 students (2 male and 2 female) from other disciplines of Umeå University. This division was done to receive feedback from both perspectives; layman as well as people related to design field.

Both sessions were conducted in the second week of May 2011 in Umeå University. Each session lasted for one and half hour. In start of each session a PowerPoint presentation was given to explain the scenario and concept in detail (see Figure 2 and Appendix 3). All participants were provided this presentation on paper also with pencil for detail examination and discussion. The discussion was documented on notebook by a fellow student who was helping in the conduction of these sessions.
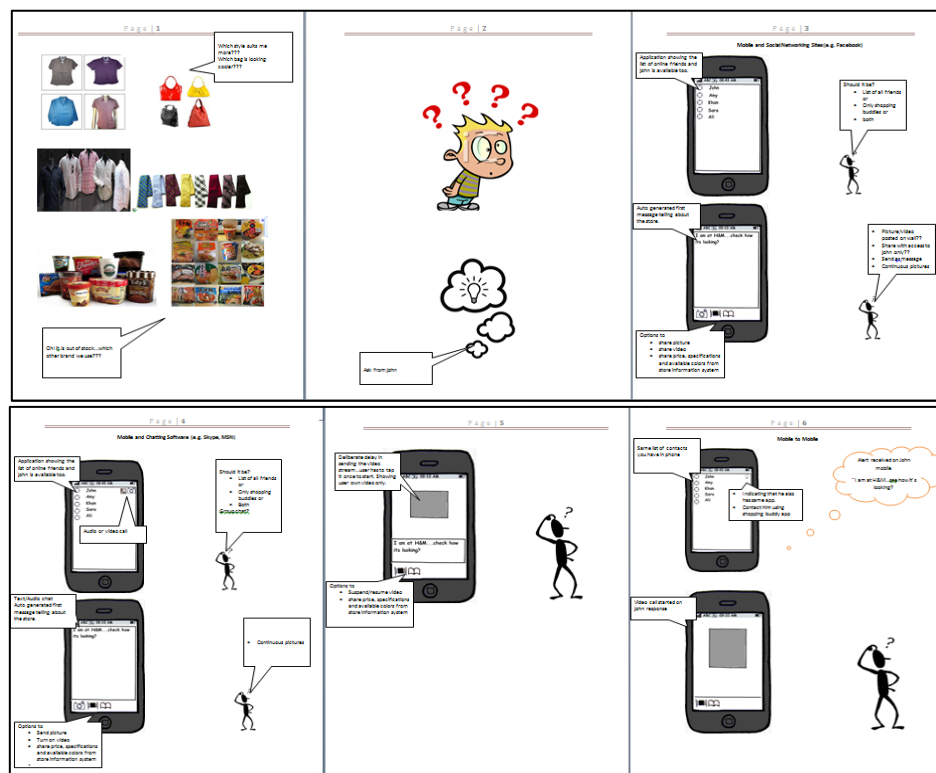

Figure 3: Focus group presentation for evaluation

5.2 Results from Focus Groups

This section reports the important findings of the evaluation phase.

5.2.1 Results – Focus Group 1

The first focus group discussion was with the students of Master's Program of HCI. Overall they all liked the concept and showed a keen interest in its future implications.

Regarding the three different options for friend list, two participants were in favor of combining all three ways of accessing friends in a single list so that user is able to select any advisor according to the situation and need. However, one participant wanted to investigate it further based on geographic and demographic characteristics of shopper. He speculated that children may want to use IM application like Skype more, but SNS is more popular in young people whereas middle aged people usually like to be in touch with friends/family through their mobile only. This suggestion implies that application might be classified based on the age group of shopper with the assumption that the advisor also belongs to the same age group as of shopper. However, this is not in accordance with the findings of user study where age and relationship of advisor cannot be predictable, it varies based on the type of product and nature of shopping.

All participants were in favor of having some filtration and grouping mechanism to keep the list of friends short and organized. We discussed about searching issues in long list of friends also. The idea developed during this discussion was that application should learn from the behavior of user and remember the advisor based on the context and product type. For example, if user has contacted to a person A for discussion during apparel shopping than next time for apparel shopping the person A should be on top of the list automatically or may be in case of grocery shopping, spouse is connected automatically without doing any steps.

One concern was raised about the controlling of video and audio transmission. The participants suggest that there should be quick and easy way to stop and resume audio/video transmission with the same person during the conversation.

5.2.2 Results – Focus Group 2

The second focus group discussion was conducted with the students belonging to general disciplines of Master's program in Umeå University. In general, the participants of this group had also appreciated the concept. They gave some good suggestions for further improvement and at the same time they have raised some concerns also.

The basic concern raised by all was regarding the dependency of idea on smart phone and wireless internet environment. However, they agreed that currently it can be considered as limitation but this may not be the case in very near future.

One participant raised concern that application would be useless if friend is not available or not responding on the request. According to this participant delivering of offline message might be helpful in establishing the contact with the friend before making the purchase or leaving the store. Another participant added that it would be nice to have always available experts as part of the application. She thinks such experts might be helpful in case of apparel shopping in order to get awareness about the latest trends and combinations.

Regarding the three different options for friend list, all participants want to combine them in one list. According to them even though they might not use SNS for serious shopping

advice but it would be good to have it for some fun while shopping. One participant added that it might be a good way to impress your peers with your popular brand shopping. One male participant mentioned that having SNS friends is useless for him as he never want to contact them for shopping related advice.

One suggestion was about the need of group conversation during shopping to reach on decision especially if purchase is for mutual use. Female participants were seemed a little reluctant in sharing the name of store automatically as according to them they might trust the advice of person but still do not want to share store information with him/her so it should be a customizable feature.

5.3 Learning from the Evaluation

This section briefly point out the learning I had from the evaluation phase regarding the future improvements of design concept.

5.3.1 Context Awareness

The application should be able to contact or suggest the friend/family member whose opinion and expertise are particularly valuable for the type of product being purchased. The application should be able to learn from the behavior of shopper about the selection of advisor in various contexts.

5.3.2 New Interaction Modalities

Need to explore gesture and audio based interaction modalities in order to easily control and access the features of application. Traditional interaction modalities may not be able to work effectively in the shopping context.

5.3.3 Mixing Physical with Digital

Need to explore further about augmenting physical options of the product with the digital picture and videos in order to enhance mutual awareness between the shopper and the advisor.

5.3.4 Group Interaction

Sometimes more than one person is required for the consultation about the purchase of a product. It implies that the application should be able to initiate conversation with more than one friend simultaneously as we usually have in video conferencing.

6. Conclusion

In this document, I have presented the work done to investigate the role of social interaction in decision making while shopping. The findings from the user study were transformed in design idea and a low-fi prototype was conceptualized and then evaluated.

Historically, shopping is considered as a social activity, where the presences of others not only fulfills the need of socializing but also helps in reaching a wise purchase decision. The nature of social interaction and the selection of person as advisor depend on the type of product as well as the reason of purchasing that product. Generally, it is noticed that people give more importance to the advice from a particular person than a general opinion of friends. The choice of advisor varies with the type and use of the product being purchased. Basically,

not any friend, acquaintance or family member can be able to satisfy the urge of social interaction to reach a happy purchase decision during shopping. People trust on advice of a particular person only, who can be different for different shopping situations.

Due to pervasive nature, rich multimedia capabilities and increase of use, smart mobile phone can become a suitable tool to fulfill the need of social interaction for purchase decisions. Hence, a design idea based on mobile phone capabilities was conceptualized and presented to the participants of the study in the form of low-fi prototype for evaluation. Generally, people welcomed the idea and shown great interest.

In terms of limitations of this study, the perspective of shopping stores management was not obtained during the user study as well as evaluating the conceptual design. The store management is an important stakeholder in creating the required environment that may be used to facilitate technology based social interaction while shopping. Hence, without getting their opinion about this it cannot be said that how they would receive this idea for their sale; a threat or opportunity and how far they would like to go in order to provide the required infrastructure. In addition to this, view point of sales staff is also missing, in spite of general impression that sales staff opinion is not trustworthy due to their loyalty to the store, still they are part of context so should not be ignored while studying the situation when a shopper needs an advice to reach at a final decision. Further, the most important stakeholder for the suggested design concept is the advisor. Unfortunately due to time constraints the advisor side was not explored in this study. So, this can be a dimension to work more in order to further improve the design concept and functionalities.

The need of social interaction is not limited to the shopping context only. There are many aspects of human life where its implications can be identified and mediated through technology. So this study can be considered as one of the starting points in digitalizing the social practices of human life.

ACKNOWLEDGMENTS

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Appendix 1: Interview Guide

I am really thankful to you for getting out time for this interview. All the information you shared over here is used for the research purpose only and no other use is intended for it. I will record this interview and this recording will be discarded after transcription. Your name and any information that may identify you will be kept completely confidential. All features that could identify you will be removed while the transcription also. You are free to stop this interview at any time you want.

- Please indicate your age and occupation.
- How often you go for shopping?
- Can you please tell what type of shopper you are? (Careful, impulsive, etc.)
- Can you please describe what type of and how you access information related to a certain product purchase? (Routine daily shopping, cosmetic, DVD/Book, electronics, apparel, shoes, sports equipment etc.)
- What type of advice you look for from your family or friends regarding purchase decision?
- How much the recommendations/advice from family or friends about a certain store, brand or item influence your decision to purchase or not to purchase it? How often you look for such advice?
- What type of recommendation/information about a store, brand or item you would like to give/share your family or friends?
- How much importance you give to the online rating/reviews about an item?
- How do you think advertisements contribute in the final decision of your purchase?
- What type of purchases you like to share with your family or friend?
- Can you describe how you make purchase decision for gifts?
- What if you have to purchase an item for your family member or friend? How you make it sure that it is according to her requirement/choice?
- How you feel that the purchases shared by a friend/acquaintance or family member inspired or influence your shopping plan or purchase decision?

Thanks for being so helpful. Are there other thoughts or feeling you want to share regarding your shopping behavior, routine or process? Anything which you would like to add?

Appendix 2: Modified Interview Guide

I am really thankful to you for getting out time for this interview. All the information you shared over here is used for the research purpose only and no other use is intended for it. I will record this interview and this recording will be discarded after transcription. Your name and any information that may identify you will be kept completely confidential. All features that could identify you will be removed while the transcription also. You have all rights to stop this interview at any time you want.

- Please indicate your age, occupation, marital status, number of kids and country.
- How often you go for shopping?
- Can you please tell what type of shopper you are? (Careful, impulsive, etc.)
- What information you collect before leaving house for following items?
    - Daily routine
    - Electronics
    - Personal shopping
    - Apparel, footwear and fashion accessories
- What information you look for in the store?
- How much you would like to turn to a friend or family member for some advice/comment while making final purchase?
- How much such comments influence your decision to purchase or not to purchase an item?
- What type of recommendation/information about a store, brand or item you would like to give/share your family or friends?
- What you think about reviews and rating available on the internet? How much such rating helps you to reach on final decision?
- How do you think advertisements contribute in the final decision of your purchase?
- Would you like to show your purchases or share experience with your family or friend? How much their comments effect your post purchase satisfaction?
- Can you describe how you decide for the gifts?
- How would you reach at the final decision for the purchases you are doing on behalf of your family or friend?
- How much the purchases shared by a friend/acquaintance or family member inspired or influence your shopping plan or purchase decision?

Thanks for being so helpful. Are there other thoughts or feeling you want to share regarding your shopping behavior, routine or process? Anything which you would like to add?

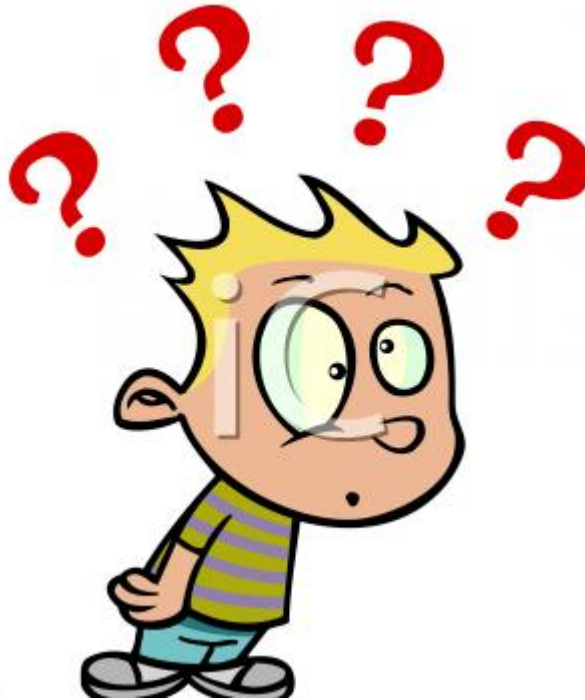# Appendix 3: Evaluation Phase Presentation
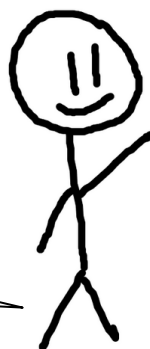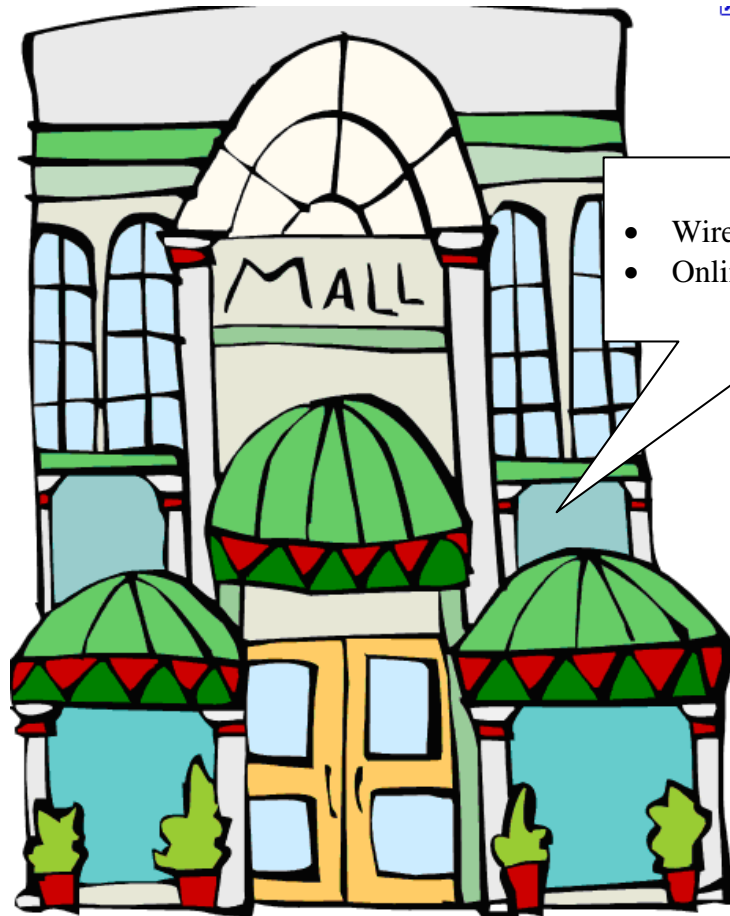
Which style suits me more???
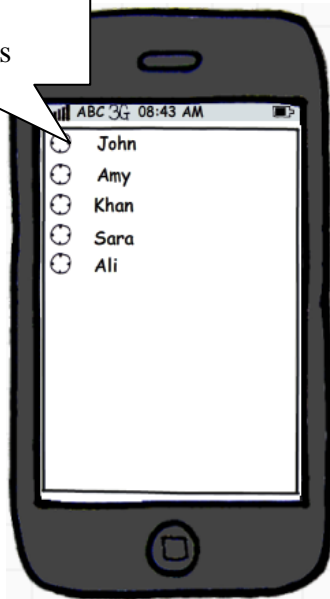Which bag is more stylish???

v

Oh! it is out of stock…which other brand we use???

Idea! Let ask from john

Mobile and Social Networking Sites (e.g. Facebook)

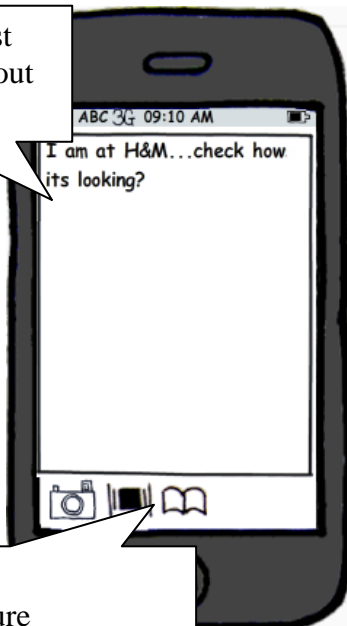Application showing the list of online friends and john is

John
Amy
Khan
Sara
Ali

Should it be?
- List of all friends or
- Only shopping buddies or
- both

Auto generated first message telling about the store.

I am at H&M…check how its looking?

- Send as message??
- Initiate video chatting??

Options to
- share picture
- share video
- share price, specifications and available colors from

Mobile and Chatting Software (e.g. Skype, MSN)

5

Application showing the list of online friends and john is

John
Amy
Khan
Sara
Ali

Audio or video call

Should it be?
- List of all friends or
- Only shopping buddies or
- Both
Group chat?
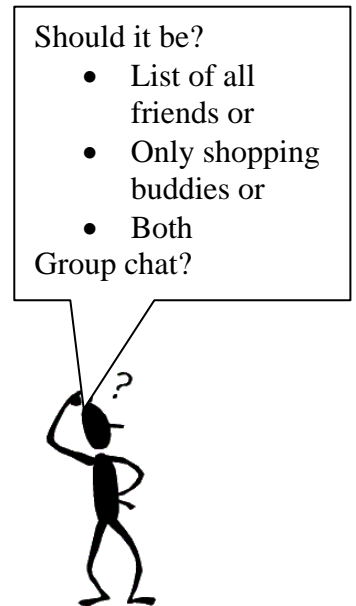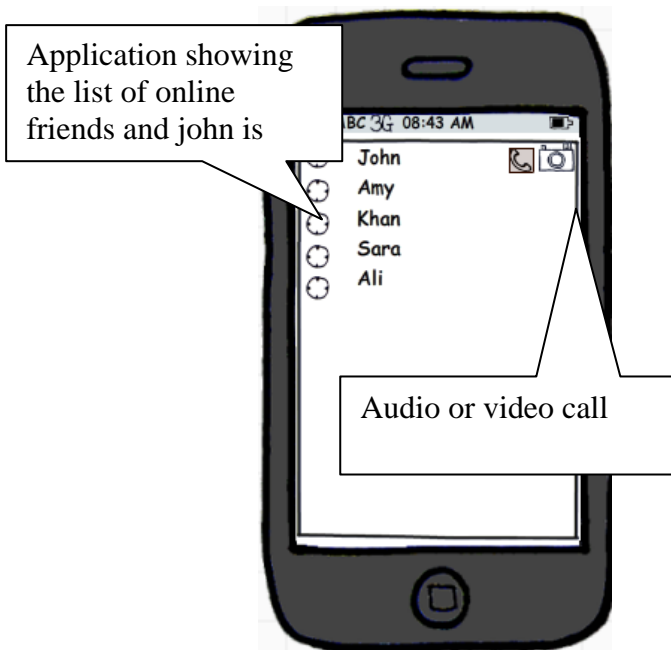
Text/Audio chat
Auto generated first message telling about the store.

I am at H&M…check how its looking?
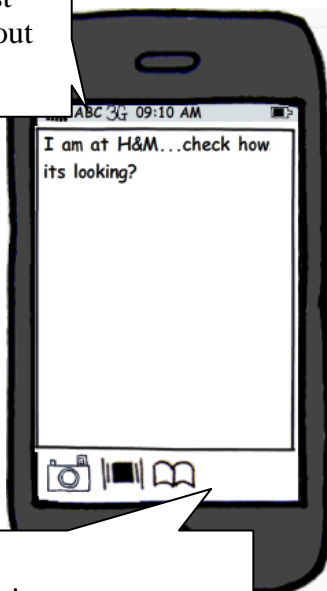
Options to
- Send picture
- Turn on video
- share price, specifications and available colors from

Displaying video

all ABC 3G 09:10 AM

I am at H&M...check how its looking?

Options to
- Suspend/resume video
- share price, specifications and available colors from store information
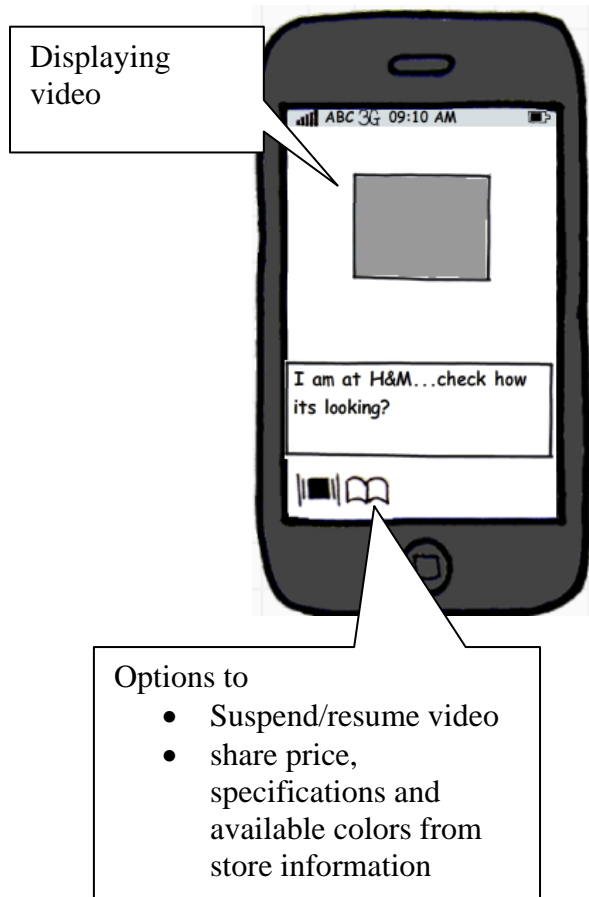
Mobile to Mobile

Same list of contacts you have in phone

Alert received on John mobile
"I am at H&M…see how it's looking?
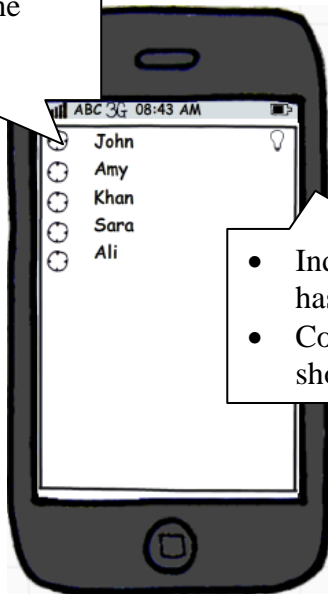
- Indicating that he also has same app.
- Contact him using shopping buddy app

| ABC 3G 08:43 AM |
| John |
| Amy |
| Khan |
| Sara |
| Ali |

Video call started on john response

ABC 3G 09:10 AM

Naushin Malik
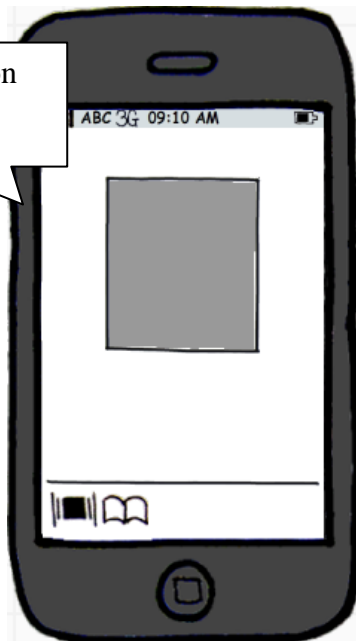
Appendix 4: Content Analysis Example

Code	Sub Category	Main Category
Quality		
Seasonal	Judging usefulness	
Worth of		
		Confirmation
Size		
Price limit	Verifying Requirements	
Quantity		
Needed		