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Discount Focus Subgroup Method: An innovative focus group method used for researching an emerging technology

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Abstract

This paper develops an innovative focus group method—discount focus subgroup (DFSG) method—through its application in research aimed at identifying the ethical and social concerns of using an emerging technology, called near field communication, for mobile payments. The DFSG method was needed to address the challenges encountered when this research was conducted, such as limited financial research resources, the emergent nature of the research topic and the challenges of gathering and analysing qualitative data. This paper illustrates when and how to use the DFSG method. It provides the methodological steps for its application, which can be followed while researching emerging topics in information systems. The paper also discusses why DFSG is an innovative method and reflects on its application.

Keywords: Focus group, qualitative research, emerging technology, information systems

INTRODUCTION AND MOTIVATION

This paper describes the development of an innovative focus group method, called the discount focus subgroup (DFSG) method. This method was applied in research aimed at identifying the ethical and social concerns that would arise by using near field communication (NFC) technology enabled by smart phones to make mobile payments. As an emerging technology, it is still not widely used or applied for mobile payments. However, Juniper Research expects that there will be rapid adoption of NFC and that one in five users worldwide will have an NFC-enabled phone by 2014 (http://www.juniperresearch.com). Özdenizci et al. (2010) noted that the body of literature on NFC does not include many journal articles. Nevertheless, they wrote a state-of-the-art paper after reviewing 74 academic papers from 2006 to 2010. Their findings showed that the majority of the NFC research is related to NFC applications, developments and infrastructure. Özdenizci et al. (2010) pointed out that the social and cultural issues associated with NFC represent a demanding area of investigation, as no previous research has clearly highlighted these issues.

As soon as a new technology is created, any possible ethical concerns should be highlighted immediately in order to use this technology so as to protect human values such as life, health, freedom, happiness and security. One should not wait until the ethical problems impede society and individuals. Sandler (2009) indicated that some people have misconceptions about ethics and emerging technology. One of these misconceptions is the belief that 'It is too soon to tell what the social and ethical issues are' (Sandler 2009, p. 6). This is due to the narrow focus on the technology itself while neglecting the broader contextual factors. Therefore, investigating the possible effects of NFC technology earlier will enable the implementation of different policies and actions to address them.

General and specific challenges arose in this research. The general challenges pertained to the limited funds available for conducting the research, and there were no funds to hire research assistants to help with gathering and analysing the qualitative data. Moreover, only one researcher was involved in conducting this research. The specific challenges were related to the difficulty in finding research participants, and particularly those who could provide insight and relevant information, due to the nature of this new and emerging research topic. When it comes to new technology or techniques that are not widely known or accepted, it is difficult to find participants who are familiar with them. Therefore, it is difficult to gain insight from one-on-one interviews or even focus groups with small numbers of participants, as one may conduct a focus group with four participants and find that none of them are familiar with the research topic (e.g. NFC technology) or have little knowledge, as happened in the first focus group conducted by the current researcher. A third challenge concerned the analysis phase. A qualitative researcher typically spends considerable time transcribing every single recorded word—a process that

may result in hundreds of pages that are not entirely insightful and useful. All of this motivated the current researcher to find new methods that would accommodate and address the above-mentioned challenges. Obviously, these challenges justify the need for DFSG, and so this answers the question of when it can be applied. Although many researchers in the information systems (IS) field have used the focus group method, the literature does not provide adapted methods for addressing the above-mentioned challenges.

The following two sections respectively present the literature review on the focus group method in general and in the IS field. Subsequently, a demonstration will be provided to show how the DFSG method was applied in the current research. This will be followed by a section discussing the criteria for evaluating the quality of the research that has applied the DFSG method. Finally, this paper will discuss why DFSG is an innovative method, highlight how it solved the challenges faced in the present research, and provide reflections on its application.

FOCUS GROUP METHOD

The focus group is a qualitative research method that emerged in the social research of the 1950s (Templeton, 1992). Powell et al. (1996) defined a focus group as 'a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research' (p. 499). Focus groups allow researchers to obtain insight and rich data from a group discussion in a short amount of time (Morgan and Scannell 1998). The data collected from focus groups provide profound insight into people's beliefs, opinions and experiences. The focus groups method is most appropriate for exploratory research, but it can also be used for confirmatory research (Stewart and Shamdasani 1990). There are several textbooks which provide detailed guidelines for planning and running focus groups (e.g. Morgan and Scannell 1998; Puchta and Potter 2004; Krueger and Casey 2009), making it a method that is widely accepted and applied in different fields. According to the literature, more than one focus group meeting is needed within a study (Morgan and Scannell 1998; Krueger 2000). The literature also suggests that the number of focus group participants should be in the range of 4–12 (Jankowicz 1995), 6–10 (Morgan and Scannell 1998), 7–10 (Krueger 2000) or 6–12 (Kelley 1999). Participants are selected using purposive sampling, on the basis of their relevance to the research topic under investigation. Typically, focus group sessions are conducted by a moderator, who should have the necessary skills to conduct the session successfully, such as allowing all participants to express their views, the ability to communicate both orally and in writing, the ability to listen and the ability to involve all participants in the conversation (Krueger and Casey 2000). The sessions are usually recorded with audio and/or video devices (Krueger and Casey 2000) and then transcribed for analysis using different methods and techniques.

FOCUS GROUP METHOD IN IS RESEARCH

IS researchers have also advocated the use of the focus group method (see, e.g. O'hEocha et al. 2012; Stahl et al. 2011; Burgess 2010; Sobreperez 2008). Despite its suitability for researching IS phenomena, it has not been used extensively in the IS field (Sobreperez 2008; O'hEocha et al. 2010). This was confirmed by Belanger (2012), who reviewed 58 articles published in top IS journals that used the focus group method. The result of her literature review showed that quite a few published articles adopted this research method in general, and that most studies using the focus group research method have been published in recent years: 49 out of 58 studies were published between 2003 and 2011. Furthermore, she pointed out that this method is gaining acceptance for its appropriateness in IS research. An important finding was that most of the reviewed papers used the focus group method to study the new exploratory nature of IS phenomena (e.g. the critical success factors for the implementation of cloud computing). She also highlighted that focus groups can play an important role in developing theoretical models of IS phenomena to be tested.

The focus group research method has been used to study IS phenomena such as IT/IS adoption, acceptance, impact and evaluation (see, e.g. Klaus and Blanton 2010; Otondo et al. 2009; Chesney et al. 2009; Sutton et al. 2008; Weidong and Lee 2005). However, some of the IS research using this method did not specify the number of focus groups (see, e.g. Smith et al. 1996) and some did not specify the number of participants in each group (see, e.g. Smith and McKeen 2007; Weidong and Lee 2005; McKeen et al. 2005). In fact, some articles neither specified the number of focus groups in the study nor the number of participants in the focus groups (see, e.g. Wang et al. 2004). In some cases, the focus group was used as the sole research method (Lee & Kwon, 2008; Campbell et al. 2005) and in others, it was used in conjunction with other methods, such as survey or/and or interviews (Krasnova et al. 2010; Galup et al. 2008; Weidong and Lee 2005; Smith et al. 1996; Dickinger et al. 2008).

The focus group was also used as the method for requirement elicitation and IS development (see, e.g. O'hEocha et al. 2010; Farinha and da Silva 2009; Le Rouge and Niederman 2006). Stahl et al. (2011) suggested using focus groups in IS research as a critical method which can facilitate emancipation. Tremblay et al. (2010) used the focus group method as an evaluation technique for design research. However, previous IS research using the focus group method did not adapt the traditional method to clearly address the challenges mentioned in the

introduction. Therefore, this paper came to develop a new innovative focus group method which tackles those challenges.

HOW THE FOCUS GROUP METHOD WAS APPLIED IN THE CURRENT RESEARCH PROJECT

As NFC technology is relatively new and not widely known, the focus group was an appropriate method in this research because some of the participants knew little about the research topic; this required group discussion to stimulate all the participants to make a contribution and enrich the discussion. Due to the limited resources, the researcher selected the participants from the university, that is, the researcher's work environment. All group members were undergraduate students, and some of them were professional workers. The participants were selected purposively: they had mobile phones (the great majority had modern ones) and some of them had NFC-enabled mobile phones.

In this research, three focus group sessions were conducted, each one lasting about 75 minutes. There were four participants in Group 1, and none of them had NFC-enabled mobile phones. The second group consisted of 16 participants, and 10 had NFC-enabled mobile phones. The third group consisted of 17 participants, but only 5 of them had NFC technology on their mobile phones. Some of the participants discovered during the course of the meeting that they had this technology on their mobile phones; they were not previously aware that they had it, or of the need for it. The current study used a different number of participants than that recommended by the literature. Groups 2 and 3 were larger than the group sizes suggested in the literature. However, the reason for this larger number was due to the nature of the research topic, which involved discussion and debate about emerging technology that is not widely accepted by individuals or merchants; thus, it was expected that some of the participants would be unfamiliar with this technology. However, their contribution could still be considered effective in raising questions and enquiring into the topic, while others who were more familiar could provide answers on the basis of their opinions and experience. The first focus group comprised four participants, as suggested by the literature. However, it was found that the richness of ideas and discussion was greater in the other two groups (Groups 2 and 3), which were larger.

The researcher worked as a facilitator to motivate and encourage the participants to share their opinions and beliefs freely. The researcher led the discussion by introducing the objectives of this research and providing a briefing about NFC technology. The discussions revolved around the main question: What are the ethical and social implications of using NFC technology for mobile payment? This question was rephrased for some participants who did not understand it clearly: What are the impacts of using NFC technology for mobile payment on individuals and society?

Since the number of participants in Groups 2 and 3 was relatively large, the researcher divided each group into subgroups. The participants were asked to spend a few minutes writing their answers in note form and discussing them, first, with the members of each subgroup and then in open discussion among the whole group. The discussion between the members of each subgroup involved debating, joking and sometimes reaching agreement about their opinions. The focus group session results were documented on paper by the participants themselves (see a sample in Appendix A), and notes were taken by the researcher during the open discussion. These results were combined into a document for analysis which focused on identifying the issues and themes. The researcher did not focus on transcribing each word spoken in the discussion; instead, the focus was on identifying the significant ideas discussed by the groups. In addition, in this research, no video or audio recordings were made; this was to avoid too much formality and the possible concern that each participant would be assessed on the basis of his/her speech. Instead, the participants themselves led the discussions, as each of the subgroups had a leader who made notes on paper. Some members of the subgroups posed the questions while others provided the answers and opinions. This approach enabled each participant to think, speak out and express his/her opinion freely. To ensure that no ideas were missed, each subgroup wrote its ideas on paper and the researcher focused on writing notes during the open discussion between subgroups.

When the discussion between all subgroups was open, the ideas were taken in a circular round. It was found, for example, that most of the subgroups recorded privacy as an issue. However, when the issue was raised for the first time by one subgroup, other subgroups stated their viewpoint in relation to the same issue, even when it was listed as point #4 on the sheet for another subgroup. This procedure was done to avoid repetitions of the same issues during another round of discussion. When there was open dialogue between all subgroups, the researcher got their opinions on why this is a concern (i.e. privacy) when NFC technology is used for mobile payment, and how this is different from tracking credit card transactions; for example, some subgroups provided clarifications and viewpoints, and some said that it is similar to credit cards.

After collecting the papers, the researcher applied comparative analysis (Strauss & Corbin, 1998) to the collected data by constantly comparing the ideas and then grouping similar ones together under one category. The category names reflected the data themselves. It is important to mention that the clustering process was applied before this categorisation was done, and this was very important to ensure the emergence of concepts and ideas; in categorisation, the researcher might have a set of predefined categories or concepts and must classify each idea according to these categories, while in clustering, the researcher tries to group together a set of ideas that are similar or that have similar properties, and then a category name can be identified and assigned to them. The findings that emerged from the focus group discussions were categorised into three main ethical/social concerns as perceived by the participants: dependency and vulnerability, inequality and privacy. These are not described in the current paper as they are not the core idea of the paper, rather the application of proposed method.

HOW TO APPLY THE DFSG METHOD

On the basis of the demonstrated application of the focus group method, the following five steps are generalised for applying the DFSG method:

- Utilise the limited resources available. Find participants from the work environment: in academia, students and instructors at the university; in industry, staff and workers from organisations. Both have various characteristics which are suitable for a large number of research topics. For example, university students are female or male, are of different ages, from different backgrounds, cultures and geographical areas, practice different religions, and some are professional workers in industry, have mobile phones and use the Internet.
- Divide and assign roles. Divide the participants (the larger the number, the more numerous the insights and issues that emerge from the discussion) into subgroups and appoint one member of each subgroup as a research assistant/moderator, to write notes and ideas (in the form of a list) from the subgroup discussions on paper which will later be delivered to the researcher.
- Avoid formality. Avoid using recorders and cameras to allow everyone to talk freely and spontaneously. Allow joking, debates and fun. Avoiding formality increases participation. No one will be shy or judged by his/her speech and answers; rather, those who are unfamiliar with the topic or who have limited knowledge can pose questions and enrich the discussion. Having participants from the same environment (as indicated in step one) will facilitate the discussion and remove the formality, as the participants will know each other.
- Open the discussion and document cross-discussions and debates among all subgroups that are not written by the subgroup leaders and which come out from the interaction among the subgroups. Take the contribution from each subgroup in a circular round. Start with one idea/issue from each subgroup, then do another round to take another idea/issue and allow intervention and debate from the other subgroups.
- Consolidate and cluster lists of ideas written on paper by all subgroup leaders as well as ideas written during open discussion and debating.

By applying these steps, the data collection and analysis are carried out simultaneously as each subgroup leader writes the notes on paper in point form, and thus the researcher will not have to devote time later to transcribing each word and coding the keywords. The listed ideas from all subgroups are usually ready for clustering and categorising. Figure 1 shows a typical DFSG meeting in which the above steps are applied.
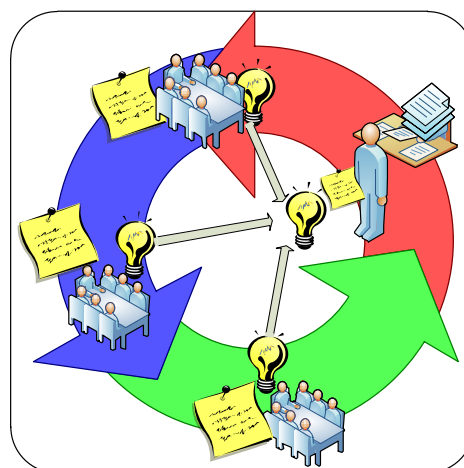

Figure 1: Typical DFSG meeting

DFSG QUALITY EVALUATION CRITERIA

After reviewing the literature, four options were considered for evaluating the proposed method. However, ultimately, one appropriate rational option was selected. Option 1, which was excluded, at the outset, was to use criteria for evaluating quantitative research, such as validity and reliability. However, many qualitative researchers have deemed these criteria inappropriate for qualitative research (see, e.g. Northcote 2012; Guba and Lincoln 2005; Tobin and Begley 2004; Schofield 2002; Whittemoreet at al. 2001; Altheide and Johnson 1998), because qualitative research is based on completely different epistemological and ontological assumptions as compared to quantitative research. Option 2 was to use criteria/principles for evaluating interpretive research, such as the seven principles developed by Klein and Myers (1999). However, this option was not completely suitable and applicable to the current method, as the proposed qualitative research method can be applied using two different research paradigms, namely, the positivist and interpretive research, as Myers and Avison (2002) stated. Option 3 was to find particular criteria for evaluating the quality of the focus group research; although there is extensive literature on how to design and conduct focus group research (Morgan 1997; Barbour 2007; Krueger and Casey 2009), there are very few well-defined criteria for evaluating focus group research (O'hEocha et al. 2010). It is argued that using a more holistic view of the quality of the research as a whole, rather than on discussing any specific criteria to evaluate the use of focus group method for data collection (O'hEocha et al. 2010). In the current research, to avoid ambiguity, the focus is on evaluating the quality of qualitative research in particular, rather than on generic criteria for evaluating the research in general. Hence, option 4 was to use Lincoln and Guba's (1985; 2000) criteria for evaluating qualitative research in general. These criteria are appropriate for evaluating the quality of the proposed method because it involves collecting qualitative data. These criteria are summarised in Table 1. The table also shows how these criteria are applicable and ensured when applied to the DFSG method.

Table 1. Criteria for evaluating the quality of qualitative research applied to DFSG

Evaluation Criteria*	Description	Application to DFSG Method
Credibility	-Refers to the degree to which a study's findings are credible and represent the meanings of the research participants. Credibility is achieved by -using triangulation -allowing the participants to check their dialogue transcripts and their meaning. Checks relating to the accuracy of the data may take place 'on the spot' in the course, and at the end, of the data collection dialogues; here, the emphasis should be on whether the informants consider that their words match what they actually intended. -providing thick description of the phenomenon under scrutiny	-Triangulations took several forms when the DFSG method was applied; data triangulation was achieved by (1) gathering sheet notes including a list of ideas discussed and written by the subgroup members; (2) notes taken by the researcher when the open discussion was opened among all subgroups; (3) close observation and listening by the researcher to each subgroup discussion and comments -Member checks achieved on the spot and immediately by the participants, since they had written the notes, and after the members' agreements and discussions -Thick description is also a strategy to ensure transferability, so it is highlighted in the next row
Transferability	-Refers to the degree to which the findings can be applied and transferred to other contexts with similar conditions; this can be achieved by providing the reader with rich, detailed information (so-called thick description) about the context that has been investigated	-Details on the research project, context and participants were provided: research topic and nature, i.e. about new and emerging technology, number of focus groups, time for each focus group discussion, number of subgroups in each group, how group discussion data were collected and documented, who documented the collected data, participants' backgrounds, events that occurred during group discussion, such as the participants picking up their mobile phones to check if they have NFC technology
Dependability	-Refers to the degree to which the research process is well-documented and can be traced, and which gives documentation of the methods and approaches used in the research; this allows others outside the research project to follow the research process, and involves the need for the researcher to describe the changes that	-Details of the way of conducting the proposed method are provided and justified, whereby the method can be used in other similar situations in which similar challenges might be faced; see section one, three challenges that motivate adapting the focus group method, and section five which shows how the method steps (five generalised steps) applied, which can be

	occurred in the context and how these changes affected the way the researcher approached the study	followed by other IS researchers -The changes that occurred in the course of conducting the research were also documented, for example, the number of participants in the focus group was increased; the first focus group comprised four participants, but since the research topic was emergent and a small group did not produce rich information, the subsequent focus groups comprised larger numbers of participants, and the decision was made to divide these large groups into subgroups
Conformability	-Refers to the degree to which the results could be confirmed or corroborated by others; this can be achieved by showing how the findings emerge from the data collected from participants, and not from preconceptions, by showing raw data and demonstrating the steps of the analysis leading to the reporting of the results and outcomes (so-called audit trail)	-The participants themselves wrote their perceptions and experiences on sheets, so the findings emerged naturally, as these are considered the outputs from the discussion and they were ready for clustering -Clustering was applied, first, by comparative analysis; then the categorisation ensured the emergence of the concepts/categories -Sample of the notes written by the participants is attached in appendix A; attaching the sample of these notes confirms that the findings reflect the participants' meanings (e.g. privacy)

*Description of evaluation criteria and examples of strategies/techniques used to ensure the quality were taken from Lincoln and Guba (1985, 2000), Padgett (2008), Shenton (2004) and Viswanath et al. (2013).

DISCUSSION

This paper developed a new, innovative focus group method. The term 'innovation' has been defined in many different ways in different fields. However, one of the general definitions in Webster's New World Dictionary is that innovation is 'the act or process of innovating; something newly introduced, new method, custom, device, etc.; change in the way of doing things; renew, alter'. Therefore, an 'innovative method' in this context means doing things in new, different ways to solve emerging problems and challenges. DFSG is considered innovative for the following three reasons.

First, more than 12 participants (the maximum number suggested in the literature) can be involved, and the method remains effective, as they are divided into subgroups. This is different from all suggestions in the literature. The more participants we have, the more insight and discussion there will be. Using subgroups in one big group is a new way of addressing a large number of participants. This is also needed for certain research topics that are new and emerging, as it is expected that some of the participants will be unfamiliar with the topic under investigation, but their role is to raise questions. This, again, does not cause problems, as those participants are divided into subgroups and each is led by a leader, who plays the role of moderator or acts as a research assistant, so the session can be managed and organised.

Second, DFSG eliminates the costs of using voice/video recorders and of employing research assistants, as well as the time needed to transcribe each recorded word; instead of transcribing intensive irrelevant speech, the research can focus on issues and themes and use the participants to write the ideas. Therefore, the answers to the research questions are focused and organised, as they are written in the form of a list on paper. In addition, the cost of finding participants is reduced, as the participants are selected from the researcher's environment, or from one that can be easily accessed (school, university, hospital, a company, etc.). Due to these economic factors, the term 'discount' was added to the name of the method, which is also a new perspective that was not clearly considered by previous researchers in the context of qualitative IS research. Furthermore, the use of the term 'discount' was inspired by Nielson (1989) (http://www.nngroup.com/articles/discount-usability-20-years/), who advocated 'discount usability engineering' in the human–computer interface field as a formative technique. However, in this paper, we use the term 'discount' with the focus group method in the context of qualitative research as a formative and/or summative data collection and analysis technique involving unique and different procedures: sampling whoever is easily available, dividing the participants into subgroups (and using larger groups than are typically recommended; however, this differs drastically from Nielson's (1989) method which recommends testing interface designs only with five participants), asking participants to take notes (removing the need for transcriptions), discussing unique items from each subgroup with the full group, consolidating a list of ideas from all subgroup lists and full group discussion, and avoiding formality and recorders. It is important to mention that the word 'discount' in the method name does not mean producing lower quality research, as some

might think. Discount means reducing the research costs in a smart way, while maintaining the quality of the research, as pointed out in the previous section, that is, that the quality criteria were preserved and ensured.

Third, the application of DFSG aids in promoting awareness and learning new things (e.g. new technology and its impact). In emerging issues that are not common or widely known, it is acceptable to have some participants who are unfamiliar with the topic under investigation. In the current research, the participants learnt from the discussion about NFC and some discovered that they have this technology on their mobile phone. The traditional focus group method does not go beyond the objective of data collection and thus does not assist in learning and spreading awareness among participants during focus group meetings.

One important observation which can be noted when applying DFSG is that less data are collected as compared to traditional focus groups. In fact, this is expected, since the data are already organised by the participants themselves and prepared for cross-group/subgroup analysis and clustering. Here, it is important to differentiate between the value and the amount of gathered data; it is possible that one can glean insight from a small amount of data, as was the case in the current research project, since the collected data were summarised and organised. In traditional focus groups, where audio/video is used to record every single moment of the session, it is expected that a large amount of data will be collected and will then be transcribed into tens or hundreds of pages, but not necessarily that each sentence or transcribed speech will be significant and insightful. The notion is that by applying DFSG, the data collection and analysis processes will be shortened due to the focus on issues, ideas and themes, as opposed to the transcription of detailed speech and manifold sentences.

Another important observation noted concerns the approach for selecting the participants from the researcher's environment. The proposed approach can help to minimise the bias in the data collection and analysis processes by involving the participants in leading the subgroups, and allowing the research participants themselves to provide and document their own comments and viewpoints. In this regard, it is important to select active participants to lead the subgroups. They should have oral, written and leadership skills. Those participants can be identified in the meeting and when the subgroups are formed. They can spontaneously volunteer to write the notes of the subgroup discussion and present them. Failing to identify those active volunteers might result in missing important ideas which are not documented. Another limitation is that some subgroups' leaders might take note of the ideas with which they agree and marginalise other ideas. Therefore, the principal researcher should observe the participants and their discussion and document those issues which are hidden or ignored by the subgroup leaders, and then raise them when the discussion is opened up to all subgroups.

CONCLUSION

This paper contributes to IS research methods by developing an innovative focus group method and providing methodological steps for its application. The proposed DFSG method can be used to investigate emerging IS/IT research phenomena. The paper provided evidence that the number of participants in the focus group can exceed 12 participants (the maximum number suggested in the literature) and still be effective, especially when the research topic is new and emergent, and when the participants are not completely familiar with it (e.g. NFC). Furthermore, the DFSG method is appropriate when it is difficult to obtain relevant data from people on an individual basis or from a small focus group. In addition, the application of DFSG will reduce the financial resources required for data collection and analysis, and assist in analysing data in a short time. All these advantages help to address the research challenges.
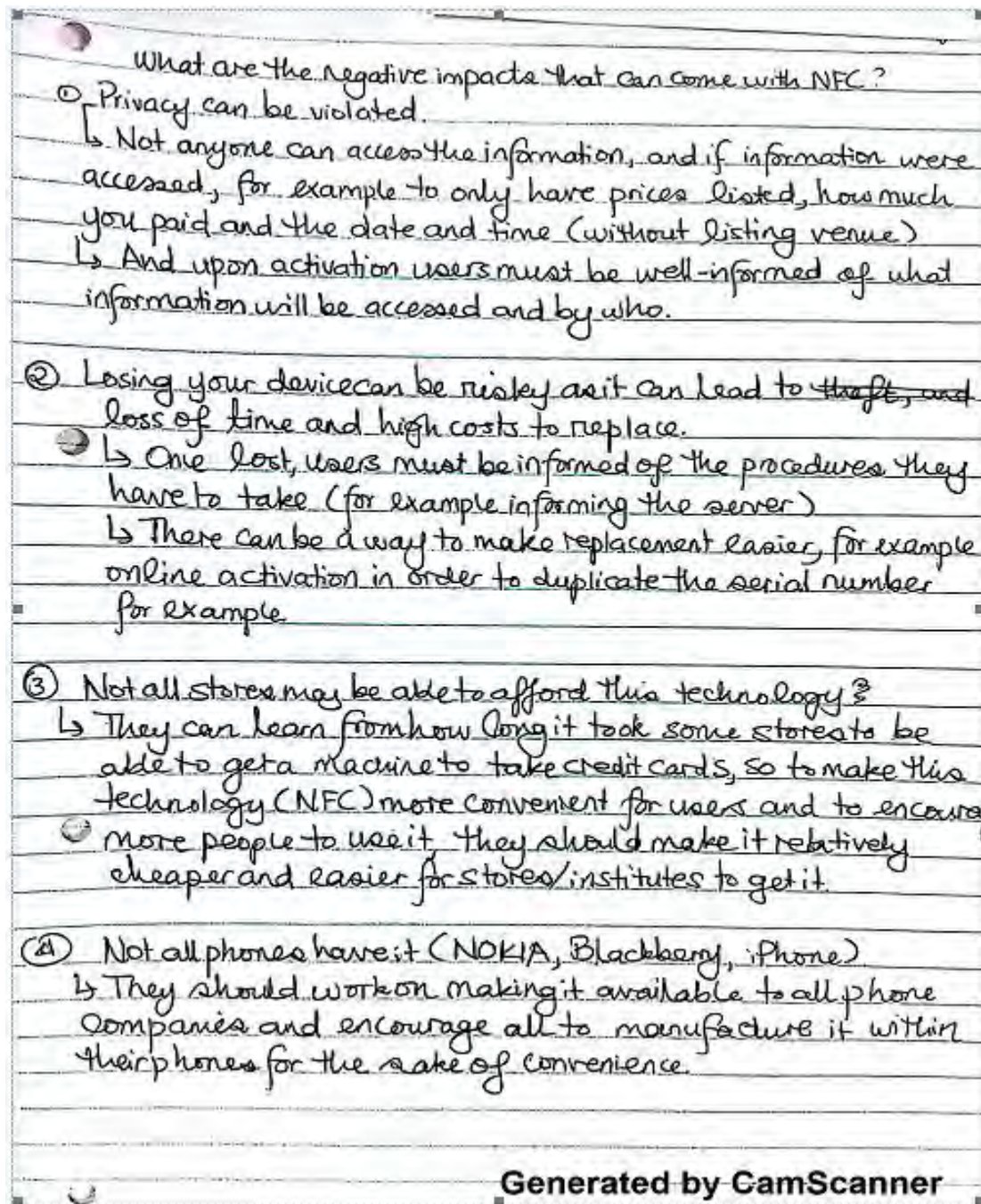
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APPENDIX A: SAMPLE OF NOTES WRITTEN BY THE PARTICIPANTS

What are the negative impacts that can come with NFC?

① Privacy can be violated.
↳ Not anyone can access the information, and if information were accessed, for example to only have prices listed, how much you paid and the date and time (without listing venue)
↳ And upon activation users must be well-informed of what information will be accessed and by who.

② Losing your device can be risky as it can lead to ~~theft, and~~ loss of time and high costs to replace.
↳ Once lost, users must be informed of the procedures they have to take (for example informing the server)
↳ There can be a way to make replacement easier, for example online activation in order to duplicate the serial number for example.

③ Not all stores may be able to afford this technology?
↳ They can learn from how long it took some stores to be able to get a machine to take credit cards, so to make this technology (NFC) more convenient for users and to encoura[ge] more people to use it, they should make it relatively cheaper and easier for stores/institutes to get it.

④ Not all phones have it (NOKIA, Blackberry, iPhone)
↳ They should work on making it available to all phone companies and encourage all to manufacture it within their phones for the sake of convenience.

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