THESIS DESIGN

DIGITAL DIVIDE: SOCIAL INCLUSION OF HOMELESS PEOPLE IN THE NETHERLANDS

Carlbandro Edoga

Vrije Universiteit Amsterdam

De Boelelaan 1105, 1081 HV Amsterdam

c.edoga@student.vu.nl

February 25, 2019

ABSTRACT

This proposal serves as a basis for the subsequent master thesis. The goal of this document is to examine the obstacles homeless people face in urban areas of the Netherlands when using technology. Interviews with the target group will be conducted in order to assess the most relevant information for them. Additionally, a design will be conceptualized that is most suitable for homeless people. Ideally, this will lead to a prototype application that can be compared to state of state-of-the-art technology and, in turn, be tested and evaluated by the target group.

Keywords Digital divide · homeless people · social inclusion · information gap · usability

Figure 1: Visit of the Huis van Sant'Egidio for the *homeless dinner*

Introduction and Background

The focal point of this research is to examine, identify and eventually tackle problems homeless people have when accessing digital information. Thereby, it will also be investigated if there are needs that are unique for homeless people and thus require to adjust already existing technology. Within the research team Digital Divide under supervision of Anna Bon[1] this thesis will focus on developing and designing a user-friendly software system that provides the target group with relevant information e.g. where to find shelter, food bank or medical aid. The thesis is tightly connected with other research in the Digital Divide team and aspires to contribute to a sustainable success of the entire project.

A generally accepted definition of homelessness, which essentially also applies to the Netherlands, was made as part of the Stewart B. McKinney Homeless Assistance Act in 1987 aiming for inclusion of people who lack a fixed, regular, and adequate nighttime residence, and people with a primary nighttime residence that is (a) a supervised publicly or privately operated shelter designed to provide temporary living accommodations; (b) an institution that provides temporary residence for individuals intending to be institutionalized; or (c) a public or private place not designed for or ordinarily used as a regular sleeping accommodation (Foscarinis, 1996).

The reasons for becoming homeless are miscellaneous ranging from low level of education over unemployment to a lack of a supportive social network. Also the background such as a difficult childhood, learning disabilities and mental illnesses increase the chances of becoming homeless (Buré, 2006). Although it is difficult to precisely estimate the number of homeless people due to diverging definitions and a possibly high dark figure, roughly 31,000 people lived in the Netherlands without a permanent place to stay in 2015. This emphasizes the importance and omnipresence of homelessness in our contemporary society.

With the entry of the digital era the question was raised, if technology can actually overcome inequalities between homeless and non-homeless people or, if it may even further the gap between them (Henwood and Wyatt, 2000). In any case, one can state that digitization, especially in form of the mobile phone, has drastically changed the way how we interact with each other and how we retrieve information across all socioeconomic classes.

An important insight for our research was gained when (Rice et al., 2011) showed that almost half of the homeless youth indeed owns a smart phone. However, it was also described that these homeless adolescents tend to use social networks merely to communicate, whereas sheltered college students spend recreational time on social platforms and use them as source of information (Guadagno et al., 2013).

This research both intends to delineate the requirements homeless people have regarding modern technology and also to design an appealing and user-friendly software. The implications for homeless people could be huge such as mitigating their social exclusion, familiarizing them with (mobile) technology and empowering them to independent information acquisition - all of which could potentially enhance their (re-)socialization.

Related work

The systematic research that was done in the US suggests that there is potential to fundamentally improve the lives of homeless people by the use of ICT[2]. They discerned the mobile phone as the most essential factor serving as a platform to contact friends or family members for example to ask for support and also as a figurative link to our modern society (Le Dantec and Edwards, 2008).

It was also found that digital inclusion does not necessarily mean social inclusion (Buré, 2006). Still, the authors were able to show that the use of technology did change their lives for the better by facilitating their everyday activities. They also proposed that mere access, use and ICT capability are not sufficient for social inclusion but rather a stable socioeconomic environment.

While many studies focus on the individuals and their peers as a target group, it was also discovered that ICT can enhance communication and collaboration between homeless people and the rest of the community. This could not only

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[1] https://research.vu.nl/en/persons/a-bon
[2] Information and Communications Technology

arouse more attention for these projects but also lead to a deeper and more thorough inclusion of the homeless people into the whole social community (Roberson and Nardi, 2010).

There are a few aspects, which distinguish our research from the existing scientific work. Firstly, we will restrict our endeavor to the Netherlands where the research on this topic is still scarce. Moreover, for now there will be no further division (age, sex, area) within the target group, i.e. homeless people, to avoid a potential convolution of the study. Lastly, so far there is no outcome in form of a software system or similar which we want to realize.

Research questions and Methodology

We decided to pose a broader research question, which will then be subdivided into two more narrow research questions. This represents the separation into requirement analysis and development/design of the software. The aforementioned availability and accessibility of mobile phones among homeless people induced us to limit the research questions to mobile devices.

- **RQ**: How can mobile technology efficiently support homeless people in urban areas of the Netherlands?
    - **RQ1**: Which is the most relevant and most useful information homeless people would like to retrieve via their mobile phones?
    - **RQ2**: How can applications be developed and designed to facilitate and encourage their usage among homeless people?

Like the research question the methodology has to be divided into two parts.

For *RQ1* qualitative and semi-structured interviews will be conducted. The number of participants very much depends on the availability and willingness of the target group. We are confident, that in consultation with the aforementioned and possibly other companies a representative number of participants can be found. We decided not to assess whether the person in question indeed is homeless but to rely on the indications made by the supportive institution and/or the person itself. Likewise, we will not grade the target group according to age, as this would unnecessarily aggravate the evaluation by introducing additional parameters. Particular attention has to be directed on strict observance of ethical principles when interviewing members of such a vulnerable group. Besides, we want to avoid a power imbalance between conductor and interviewee, which may result in biased or even dishonest answers. Therefore, it will be crucial to create an atmosphere in which the target group will feel comfortable. For instance, the interviews could take place in a familiar setting or the interviewers could first, if that is not already the case, try to bond with the interviewee. The interview itself has to ascertain the most important information for the inquired person. The questions will be rather open-ended to prevent any information loss. Following questions could be incorporated:

- Which applications do you frequently use on your phone?
- Which one of them would you consider the most helpful?
- Which information do you get offline because you could not find it online?

To tackle *RQ2* we will develop a digital questionnaire where the target group has to select the most appealing design. Considering the knowledge we have gained so far simplicity and intelligibility will play a big role when addressing homeless people. The former will entail a plain design, that is easy to comprehend even for people, who do not use their smart phone as much. The latter can rather be achieved by using straightforward language or even omit it entirely and instead replace it with symbols or pictures. In contrast to the interviews the questionnaire will only contain closed questions. The person surveyed either chooses the most appealing design from a selection of answers or expresses his/her opinion on a design via a 7-ary scale from very unsatisfying to very satisfying.

Ultimately, the results from both parts will be combined in order to develop an application that will be tested by the target group for its functionality and usability. We will then assess how satisfied the users are with look and feel of the software compared to to applications that they are currently using. Lost Lemon is already experienced in this kind of testing procedure; they agreed to support us on testing software methodologically. Again, the answers will be given on a 7-ary scale.

Naturally, any interaction with the target group and information deriving from it will be handled confidentially and should be kept to a minimum. Especially after the passage of the GDPR[3] the design of interviews and questionnaires has to be planned meticulously and acquired personal information be secured with utmost care. (Dicicco-Bloom and Crabtree, 2006) can serve as a guideline for setting up these qualitative less structured interviews and later analyzing the data.

Context Analysis

The initial phase of this research, the context analysis, has already begun and mainly comprises meetings with organizations and companies in Amsterdam and its environs. In this way, we try to elaborate both the problems regarding digital inclusion homeless people in the Netherlands face and also the strategies, which have already been pursued in order to overcome them. In a more practical sense these meetings also provide us with information on how to get in touch with the target group, which seems to be a intricate task. So far three potential collaborators emerged [4].

Huis van Sant'Egidio: Sant'Egidio is a Christian community that is concerned with charity work all over the world. On Tuesdays and Fridays they hand out food in the city center of Amsterdam to people in need. We have already attended one gathering on a Tuesday (see Figure 1). This seems to be a promising contact point to find members of the target group.

Municipality of Amsterdam[5]: Naturally, the city of Amsterdam itself shows deep interest in including all people to its community. The meeting we had with a responsible of the municipality confirmed our presumption that this topic indeed is highly relevant at the moment. The municipality of Amsterdam has the political influence to structurally support this research. Moreover, finding sustainable solutions will undoubtedly require the involvement of the city of Amsterdam.

Lost Lemon: Lost Lemon is an IT-consulting company in Haarlem, which among others examines the realm digital divide. Interestingly, they also do research on this topic and could assist us in conceptualizing interviews. Apart from that Lost Lemon can serve as a mediator to further contact institutions.

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[3]General Data Protection Regulation: Eu-wide data privacy law, that was introduced on the 25 May 2018. See https://eugdpr.org/

[4]https://www.digitize.amsterdam/

[5]Here the municipality of Amsterdam is exemplary for any municipality in the Netherlands. It was chosen because we are already in contact with them.

Expected results

Ideally, we will obtain meaningful results already from our first session as according to Lost Lemon the process of setting up the interviews and finding enough people who are willing to partake can be arduous. Although the term *information* is very vague with regards to *RQ1*, we expect to elicit certain information topics such as shelter-related, money/job-related or food-related.

The results from the questionnaire will either confirm or refute the assertion, that the design of applications actually influences, how homeless people make use of technology or even determines, if they use it in the first place.

After testing our prototype we hopefully will be able to develop a user-friendly software system that provides homeless people with relevant up to date information.

Evaluation

One of the biggest pitfalls of conducting interviews clearly is underestimating the transcription of the conversations in question. This is not only a fairly time-consuming task but also prone to errors. When analyzing the interviews one must try to see things from the interviewee's perspective. In our case this is even more relevant, since probably nobody of the interviewers was homeless himself/herself, which might lead to biased perceptions (Burnard, 1991). After the analysis we will compare our results with the existing literature, that has been done on social inclusion of homeless people. Additionally, the feedback we will receive on our prototype will serve as a reliable indicator of success and will affect future research and development in this field.

Timetable

		January	February	March	April	May	June
Context Analysis		■	■				
Requirement Analysis	Interview			■	■		
	Questionnaire			■	■		
Engineering and Design					■	■	
Sustainability Analysis and Testing						■	■
Evaluation							■

Figure 2: Planned timetable for the master thesis

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