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UNDERSTANDING THE ROLE OF ICTS IN PROMOTING SOCIAL INCLUSION: THE CASE OF SYRIAN REFUGEES IN GERMANY

Research paper

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Abstract

With a number of refugees around the world reaching disastrous proportions, there is a growing pressure to understand which measures are effective in promoting social inclusion of refugees in their new homes. Considering an exemplary IT-savviness of the current refugee wave, there is a growing hope in the power of Social Media and other Information and Communication Technologies (ICTs) in supporting integration processes. Contributing to this discourse, in this study we build on the qualitative analysis of fifteen interviews with Syrian refugees in Germany. Based on the capability approach, our findings reveal dependencies between properties of ICTs and their use, ICT-enabled capabilities relevant for refugees, and the corresponding contribution of ICTs to the processes of social inclusion. On the theoretical level, our findings extend current understanding of the ICT effects on the processes of social inclusion in the refugee context. From the practical standpoint, our findings provide actionable recommendations for policy-makers in their efforts to achieve integration.

Keywords: Refugees, Social Media, Smartphones, Social Inclusion, ICTs.

1 Introduction

More than a million asylum seekers entered Europe in 2015, with Germany attracting the highest number of them among its European neighbors (BBC, 2016). These developments have triggered a crisis in hosting countries, with challenges of integration and social inclusion being on the top of the agenda for many political leaders in Europe and worldwide. Defined as “having the opportunities and resources to participate fully in economic, social and cultural life” (Wilson and Secker, 2015), social inclusion is a critical component of any democratic and equitable society. Gains in the level of social inclusiveness have been linked to improvements in mental and physical health on a personal level, as well as greater levels of cohesion on the society level (e.g., Waddell and Burton, 2006). This is because social inclusion functions as the glue that keeps all population segments together, helping societies to function effectively and fairly.

In the context of refugees, the notion of social inclusion encompasses the goal of granting opportunities for people to settle in, integrate and participate in the new environment. On many levels, social inclusion is a process, in which “excluded” or new groups find their place in the social networks of the hosting society, whereas incumbents are providing them space and opportunity to do so. Recognizing critical importance of these emerging social networks, there is a growing hope in the power of Social Media and other Information and Communication Technologies (ICTs) in supporting these processes. Indeed, as of this day, there is no larger inclusive system than Social Media, with Facebook counting over 1.79 billion monthly active users worldwide (Facebook, 2016). Social Media Sites may offer a platform for meaningful dialog between disconnected social groups, allowing refugees to efficiently maintain contact with new and existing friends and distant networks of geographically and socially dispersed acquaintances (Ellison et al., 2007; Andrade and Doolin, 2015). Importantly, this potential is likely to be particularly pronounced in the current refugee context considering an unprecedentedly high level of reliance

of refugees on Social Media and other ICTs. A significant share of this use is mobile-based, with smartphones emerging as an instrumental piece of technology central for refugees on their arduous journey to Europe and when building their new lives in hosting countries (Fitch, 2016). In fact, the Internet traffic of many refugees exceeds that of major airports (WeltN24, 2016), with most refugees using smartphones to access the Internet (Fitch, 2016).

Existing research offers limited insights into the process by which ICTs may contribute to a greater social inclusion of technology-empowered refugees (Andrade and Doolin, 2015). To fill this gap, we set out to explore mobile-based ICT usage patterns of Syrian refugees in Germany to understand the ways in which ICTs can promote social inclusion. On the theoretical level, we contribute to a better understanding of the ICT effects on refugees, which positions our study within the domain of enriching Bright ICT research (Lee, 2016; Lee, 2015; Fedorowicz et al., 2015). This is because uncovering beneficial uses of Social Media and other ICTs is the first step in promoting the bright sides of existing technologies in the refugee context. On the practical side, our insights may advise hosting governments and other stakeholders in their efforts towards a “smart, sustainable and inclusive world” – an overarching theme of ECIS 2017.

The rest of this paper is structured as follows. We summarize the theoretical background in Section 2. In Section 3, we explain our methodology and introduce our sampling for the study. Then, we introduce our findings in Section 4. In Section 5, we discuss the results of our research. We highlight our planned next steps for future research in Section 6.

2 Theoretical Background

2.1 Refugees and Technology

With the number of forcefully displaced people reaching a high record, there is a pressing need for more research on how emerging technologies can be used to address arising short- and long-term challenges of social inclusion. After their arrival to new hosting countries, refugees struggle with a range of issues, including learning a new language, overcoming their disrupted education, negotiating family relationships, and dealing with discrimination (Correa-Velez et. al., 2010; Gifford and Wilding, 2013; Gifford et. al., 2009; McMichael et. al., 2011). Moreover, they face a double challenge of finding ways to maintain their existing relationships with family and friends at home and establishing new social ties in their hosting country (Damian, 2014). The study of Navarrete and Huerta (2006) shows that the Internet has started to change the ways in which refugees interact, helping them to overcome time and distance. It is argued that the unique properties of emerging ICTs - ability to combine text, image, audio and video - not only satisfy the communication needs of refugees but are also useful for establishing and promoting their sense of community.

Complementing these findings, Gifford and Wilding (2013) argue that if refugees are able to maintain their connections to family and friends, which can be achieved through a variety of mobile-based apps and Social Media applications, they may experience a greater sense of “being at home” in a hosting country. Additionally, Social Media platforms empower refugees with a voice as they create a space for them “to speak” about their experiences, as well as allow them to present themselves to their community, friends and the hosting country, thereby enhancing their feeling of fitting in (Nunn, 2010; Gifford and Wilding, 2013). Furthermore, several studies have shown that the use of Social Media platforms, such as Facebook, is associated with greater quality of social relationships among migrants, both online and offline, which include relations in their home as well as hosting country (Damian, 2014; Lee et. al., 2016; Ogan and Ozakca, 2010). Furthermore, immigrants who communicate more frequently with locals and natives online have been shown to be more successfully and exhibit greater progress towards their social, cultural and psychological adaptation (Ye 2006; Chen 2010).

In the most recent study, Andrade and Doolin (2016, p. 405) build on the capability approach to theorize the role of ICTs in initiating and supporting the process of social inclusion of refugees in New Zealand. In line with the capability framework, the authors view technology as a resource that enables refugees

to realize a set of five critical capabilities, which include their ability “[1] *to participate in an information society*, [2] *to communicate effectively*, [3] *to understand a new society*, [4] *to be socially connected*, and [5] *to express a cultural identity*”. Being able to realize these capabilities refugees are well-positioned to function effectively and regain control in a new society. This, in turn, enhances their sense of agency and, above all, perceptions of well-being – a major premise of social inclusion in the refugee's context. Rooted in the IS tradition to look for a wider societal impact of emerging technologies (Trauth et al., 2006; Zheng, 2009; Zheng and Walsham, 2008), the study by Andrade and Doolin (2016) serves as a starting point for our research efforts.

2.2 Capability Approach

To provide a theoretical foundation for our research, theories introduced in social studies and human development fields have been reviewed (Robeyns, 2005). Following Zheng and Walsham (2008) and Andrade and Doolin (2016), we rely on the capability approach to analyze the role of mobile-based ICTs, especially Social Media, on Syrian refugees in Germany (Sen, 1980, 1987, 1993, 1999). The capability framework is particularly suited in the context of our study since it focuses on individual well-being, as well as covers broader aspects of social functioning and change (Robeyns, 2016).

As such, capability framework entails two core normative claims; the first is that freedom to achieve well-being is of primary moral importance. The second is that freedom to achieve well-being is to be understood in terms of individual capabilities, that is, real opportunities “to do and be” what one has a reason to value (Robeyns, 2016; Sen, 1999; Zheng and Walsham, 2008). In other words, the capability approach empowers individuals with the freedom to achieve well-being, subject to opportunities given to him or her to effectively do so; their capabilities (Robeyns, 2016; Zheng and Walsham, 2008).

The capability approach differentiates between two key concepts: *capabilities* and *functionings*. Functionings represent “beings and doings” of a person, including specific states, activities, and undertakings a person *can engage in or actually achieve* (Robeyns, 2016). Examples of functionings include working, exercising, being healthy, being accepted, belonging to a religious group, just to name a few. Generally linked to living conditions, functionings represent what makes life worthy of living (Sen, 1987). Capabilities, on the other hand, embrace the freedom and opportunity to engage in a set of functionings, as one chooses. Positioned within a liberal school of thought, capabilities encapsulate the notion of choice and freedom an individual has to have in order to achieve a life one values. In summary, “*a functioning is an achievement, whereas a capability is the ability to achieve*” (Sen 1987, p. 36). Importantly, to convert capabilities into personal achievements (achieved functionings) a person should have access to a reasonably diverse range of *resources*, which are subject to a range of personal, social, and environmental factors (Andrade and Doolin, 2016; Clark, 2005).

Another key aspect of capability approach is the difference between the goals of *well-being* and *agency*. While personal well-being relates to one's own life and its quality (Robeyns, 2005), agency is defined as the “freedom to set and pursue one's own goals and interests” (Sen, 1985). As such, achievement of one's own well-being may be one of the goals of individual pursuit (Welzel and Inglehart, 2010; Zheng, 2009). While often aligned, the goals of well-being and agency can also be in conflict. For example, by exercising one's agency, an individual can experience a loss of well-being (Robeyns, 2005). Moreover, the absence of one type often has a causal impact on the other (Zheng, 2009). In the refugee context, both well-being and sense of agency represent key goals of social inclusion, which is broadly understood as being given the “the opportunities and resources to participate fully in economic, social and cultural life” of a hosting society (Wilson and Secker, 2015), including opportunities for refugees to settle in, integrate and participate in the new environment.

Sen (1993) argued that the capability approach would be used for a wide range of purposes and fields. In the ICT context, the capability approach has been applied as an evaluative framework (Madon, 2004; Zheng and Walsham, 2008), and has proven its value in the context of refugee research (Andrade and Doolin, 2016). Hence, we build on this approach as a conceptual framework for our study.

2.3 Differences to Past Research

We have been largely inspired by the research conducted by Andrade and Doolin (2016) on the refugees in New Zealand. However, while their study delivers an array of valuable insights, there are fundamental differences to our sample and context that may considerably influence emerging patterns and research results (see Table 1). In this light, our goal was to adapt and extend the theoretical model of Andrade and Doolin (2016) to the current situation of Syrian refugees in Germany.

Dimension	Andrade and Doolin (2016)	Our Research
Asylum State	Refugees have been already re-settled.	Most respondents in our sample are still waiting for the final decision regarding their asylum applications and face significant ambiguity regarding the final decision.
Living Conditions	Participants received state houses and have access to governmental support services.	Most of our participants are living in refugee shelters or in temporary residences.
Employment Status	Most participants were employed.	The majority of our participants are still unemployed and are not allowed to resume their career or educational paths until they receive their residence permit.
Level of ICT Knowledge	Most participants had no or very limited ICT knowledge.	Most of our participants have advanced knowledge of ICT and possess a smartphone.
Support for ICT Infrastructure	Additional ICT equipment has been purchased for the participants and their family members.	Our respondents have paid a lot of money to buy their smartphones. However, they often lack basic infrastructures, e.g., WiFi connection at residences, laptops, etc.
ICT Communication Channels	Email was the primary communication tool.	Our respondents heavily use Social Media applications, WhatsApp, other emerging ICTs. Most of this use is smartphone-based.
Sample	The sample is not homogeneous (different countries, backgrounds).	Our sample is culturally homogenous and consists of Syrian refugees to avoid any bias in the results as well as to capture the particularities of the current refugee crisis.

Table 1: Comparison of Our Study with Existing Research by Andrade and Doolin (2016)

3 Methodology and Sampling

Our qualitative study is based on a sample of 15 participants, whom we interviewed face-to-face. All interviewees were selected randomly in the area of Berlin and Brandenburg. Nine interviewees were male, and six were female. The age of refugees we interviewed differed, with four being between 18-24 years old; three 25-30 years old; six 31-39 years old; and two interviewees were above 40. Eight refugees in our sample have high school certificates, and seven have a college or university degree. The majority already had a working experience (thirteen respondents). Most of our interviewees have arrived in Germany 6-12 months prior to the interviews, and only four had been less than six months in Germany at the time of the interview. Only two respondents already had a decision on the residence permission, while thirteen others had not yet received a decision on their status. All refugees still had family members in Syria at the time of our study. Six interviewees already lived in an apartment, five were living in a refugee shelter, and four stayed in a temporary residence.

All interviews were conducted following a semi-structured approach. We asked respondents questions related to their journey to Europe, their current situation in Germany, how they have been using different types of ICTs during their journey and after their arrival, their participation in educational programs, how they use Social Media, and their perceptions of social inclusion in their new home. Each interview lasted 59 minutes and 27 seconds on average. All interviews were initially conducted in Arabic. In the next step, they were audio-recorded and transcribed, and then carefully translated into English. Afterward, data was organized and coded using the constant comparison method (Strauss and Corbin, 1990).

We used an iterative process according to which we read through a sample of transcripts and then created a preliminary codebook. After coding a sample of transcripts, the codebook was refined and any ambiguities were clarified. In the final step, each transcript was coded. In the process of eliciting the codes and merging them into superior categories, we specifically looked for themes reflecting the use of ICTs by our respondents and in which way these uses contributed to their perceptions of social inclusion and other achievements. Specifically, our codebook covered themes related to resources provided by ICTs, including their enabling properties; capabilities afforded by ICT; as well as refugees' achievements in terms of their social inclusion, including their sense of well-being and agency, as suggested by Andrade and Doolin (2016). A complementary process of selective coding helped us discover patterns across themes as they relate to each other along the lines of the capability approach presented above. Specifically, capability framework was used to guide our decisions on the formulation of codes and analysis of the emerging patterns. Importantly, our analysis has shown that while journey and integration in a hosting society represent two different processes, there are strong continuity patterns in the ICT use and their impact across both stages. For example, we observe that refugees are using the learnings they collected before and during their journey also at their current stage of integration. Following this observation, we analyzed refugee reports for these two phases together.

4 Findings

Our initial analysis of data has revealed that refugees in our sample are not relying on “traditional” ways of communication with others – e.g. email or a landline phone. Landline communication is costly. Moreover, many landlines are not operational in several areas, international calls are sometimes banned by the government, and synchronous communication is not always possible as both parties might not be reachable simultaneously considering the war circumstances. Landline phone calls and emails also do not provide opportunities for mass communications, which is appreciated by refugees. Instead, smartphones represent a centerpiece of refugee ICT use, with refugees using a multitude of different apps on their phones, including Facebook, WhatsApp, Facetime, Google Maps, just to name the few. Hence, our analysis is focused on smartphones at the entry point of refugees for their ICT use.

Following our analysis, we break down our findings along the lines of capabilities framework (Figure 1). Specifically, we differentiate between (1) *resources* (smartphone-based) ICTs provide, including specific usage patterns and their properties, (2) *capabilities* (smartphone-based) ICTs enable, and (3) *achievements* (smartphone-based) ICTs help to realize. For scope reasons, in the following sections we mainly elaborate on the *capabilities* smartphones help to enable, while establishing the links to other two components of the framework – resources and achievements – as we go along.

4.1 Resources: The Value of Smartphones for Refugees

Our analysis has revealed several properties of ICTs that emerged as particularly relevant in the refugee context and should be viewed as enablers of *capabilities* smartphones provide. Specifically, refugees have underlined the *cost efficiency* of smartphone-based communication through a variety of Social Media and instant messaging channels; its *dynamic and real-time* nature; ability to *communicate asynchronously*, as well as use Social Media for *mass communication*. Moreover, the ability to access Social Media channels anytime and anywhere gave refugees an empowering feeling of *global connectivity*, critical for them in their uncertain and constantly changing circumstances (see Figure 1: Resources).

Building on these properties, refugees tend to use smartphones for almost everything in their lives: “*As a refugee, I use my smartphone to learn, to stay in touch with my family, to navigate from one place to another, and to catch up with recent changes and news.*” Other refugees were more extreme in describing the value of their smartphones: “*In fact, if I own anything that is precious for my life and home, then it is my smartphone.*” Others described it as a part of their body extension: “*You could say, the smartphone is my hand, my leg, and my everything. [...] but it is all what I need.*” One interviewee summarized the value of the smartphone by concisely saying: “*It is my entire life.*”

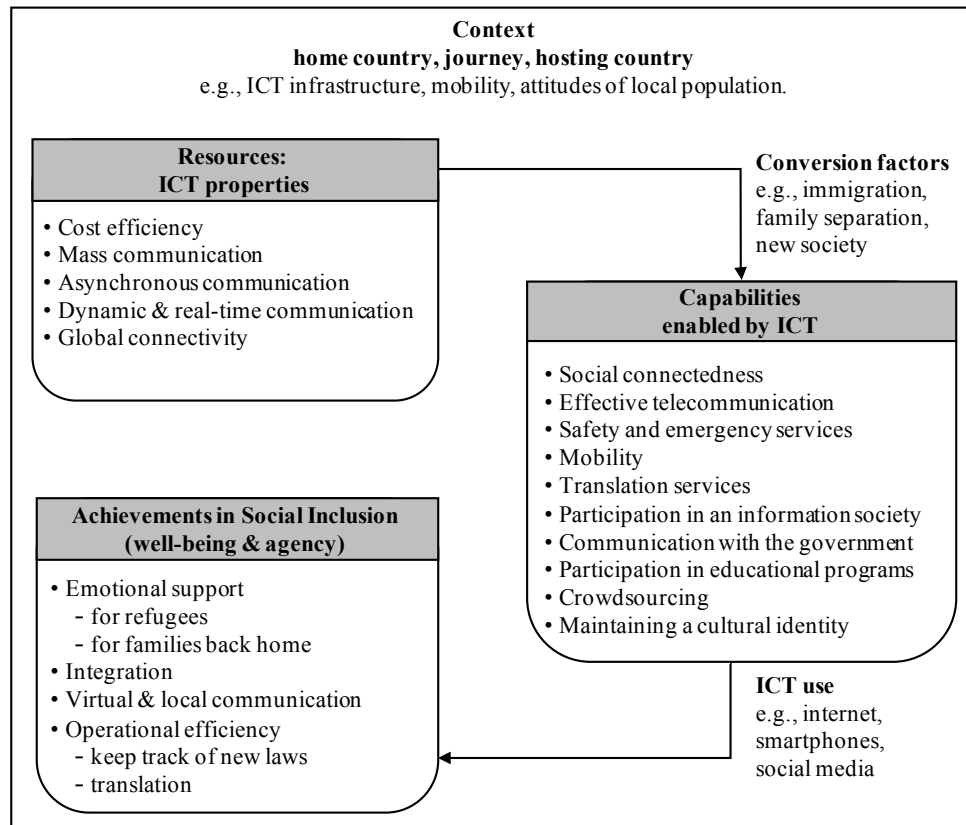


Figure 1. The Role of ICT in Promoting Social Inclusion of Syrian Refugees in Germany

This high value that refugees attach to their smartphone is not surprising, considering its crucial usefulness during their journey to Europe and after their arrival in Germany. Crossing multiple borders with limited resources is dangerous and having the right tools could save one’s life. For example, one of our respondents noted: “It was 100% important that we had a smartphone during our journey. We considered it a 100% necessity because we were traveling in foreign countries and areas. [...] Therefore, it was a necessity that we had smartphones to help us find our route using GPS and maps apps.” Other interviewees underlined the importance of having a smartphone also after their journeys. For instance, one of them considered it as “...the lighthouse on the coast. Yes, it is like the lighthouse.”

Importantly, refugees underscored the value of their smartphones in promoting feelings of well-being and agency – two relevant goals of social inclusion – regardless of time and location: “When my smartphone is with me, I can let anything else go.”; “With my smartphone I feel strong and comfortable.”; “Without the smartphone, life here would be too difficult.”; and “...my smartphone is everything for me.” Clearly, refugees feared to lose their smartphone: “If my smartphone gets lost, I would do everything to find it and get it back, simply because I can’t afford buying a new one and because it has a lot of data that I couldn’t retrieve otherwise.” Another interviewee could not even bear the idea of losing it: “No, no, no! It is not possible to stay without a smartphone. It is my entire life. My family is far away and my daughters are also far away from me. I can’t stay without it.” One of our interviewees experienced a situation where his smartphone was damaged and he had to buy another one immediately: “About 1.5 month ago, my smartphone got damaged and I had to buy a new one. It was difficult for me to afford it, but I tried to save from my pocket money and from my eating and drinking expenses so that I can buy it.” Taken together, our research shows that smartphones are at the core of refugees’ lives. In the following, we focus on the capabilities afforded by smartphone-based ICTs.

4.2 Enabling Capabilities

Our research revealed a number of capabilities that are enabled by ICTs. These capabilities empower refugees in their pursuit of social inclusion and integration in their new environment.

4.2.1 Social Connectedness

Given the high value of social relations for Syrians, Social Media sites play a crucial role in enabling them to keep their social connections active. For instance, one of our interviewees reported: *“In Syria, social relationships are very important. But, because international calls [in our area] are banned by the government, we cannot call our families in Syria using landline phones anymore. The only available option is to connect with them via the Internet.”*

Our data shows that it is essential for the refugees to keep their family connections active despite the physical displacement. This includes the core family, i.e., husband and wife, parents and children, as well as the extended family members, i.e., uncles, aunts, cousins, etc. The value of these relationships is evident in their usage of Social Media, where Facebook and WhatsApp groups are used to share updates among family members. These groups represent the primary source of information about family for many: *“There is a WhatsApp group for my family, where I follow their updates and make sure they are fine.”* One of the common usages of ICT in this regard is sharing pictures and videos with families back home. One mother expressed this by saying: *“I am here on my own. I delivered my three twins without having my husband or my family around me. I use the smartphone to communicate with my family and my husband. I use it to take pictures of the three boys and send them to my family and husband, we communicate using audio and video. For the father, it is important to see his boys. For me, it is important to make sure that my family is fine because of what is going on there.”*

Refugees also rely on ICTs for tracking their family’s situation back home, in particular considering military conflict there. This is challenging considering changing circumstances: *“In Syria, things change all the time. As we talk now, bombs might be launched there anytime. Therefore, I keep checking on them [family] and asking about their situation there [...] and asking who survived and who did not. The only available option to keep in touch with each other is the smartphone.”*

Staying in contact with family and friends promotes feelings of *emotional support* among refugees in our sample – a critical achievement that can be realized via ICT use. One of our interviewees made the correlation between being in contact with his family and his positive attitude particularly clear: *“Communicating with my family is so important for me. I cannot continue without it. They affect my positive attitude. When I talk with them, they give me the energy to go on despite the difficulties.”* Reversely, ICT-enabled social connectedness allows refugees to support their families back home: *“Connecting with my family is for them the only hope. It is just like a candle that lightens the darkness from very far away, and they are looking forward to having it getting closer to them, so that they can join me here.”*

4.2.2 Effective Telecommunication

Typically limited in the volume of mobile data available to them, refugees emphasize asynchronous communication, mass communication, and cost efficiency as important resources for them to communicate effectively. For example, we observe that refugees pay particular attention to the applications they use in term of their data consumption and quality: *“I use several apps to communicate with my family [for example] ‘Line’ that has a clearer quality for audio calls. Its audio calls are so clear and many people use it because it consumes small data volumes and does not require strong connection to connect to the Internet.”* (interview quote). Cost efficiency is another critical resource enabling effective communication: *“The Internet is the only medium to communicate with my family in Syria. International lines are available, but are too expensive. Therefore, we use the Internet instead.”*

Furthermore, asynchronous communication and reachability despite disruptive environments is a vital requirement for refugees. Most people with whom they communicate live in areas with damaged infra-

structure making it difficult for them to be online all the time. WhatsApp text and audio messages represent a prime example here, based on our interviews: *“In the times where my family can’t connect to the Internet, I send them messages via WhatsApp. When they go online, they receive my message.”*

Because of the strong relationships between family members and friends, it is important for refugees to share their updates with all family members and friends. Here ability of Social Media platforms to scale the message – mass communication – emerges as particularly useful. For instance, one of our interviewees reported: *“Then, I posted on Facebook [...] There were more than 500 comments asking us to inform them once we arrive safely.”* Sometimes, friends and family members might be using different ICTs, such as Facebook and WhatsApp making the refugees circulate through multiple applications: *“...we, in the Middle East, are by nature social and have many relatives. But we do not have many of them around us here. Hence, we go online to communicate with our families, relatives, and friends both here and there. We chat with one person using Viber and with another using Facebook.”*

4.2.3 Safety and Emergency Services

Our analysis reveals a critical role of ICTs in providing the required safety and protection for the refugees during their journeys. For example, one of our interviewees mentioned that: *“During our journey, the smartphone was a medium to protect my life and the lives of my family members. If we hadn’t had it, our journey would have been definitely interrupted.”* Furthermore, one of our interviewees described how a smartphone saved them when the engine of their boat was damaged: *“I used the smartphone in the middle of the sea when the engine of our boat stopped working [...] and since we had Internet connection, we posted what happened with us on Facebook and asked for help.”*

Our transcripts have also revealed that using ICTs to rescue refugees during their journeys was taking to "the next level", with refugees forming and joining “virtual rescue groups” on Social Media platforms before their journey to Europe. Key goals of these groups included monitoring boat journeys and calling for help in emergency cases: *“We were in touch with a rescue group of 15 people on WhatsApp, whose task is (once we tell them) to inform the coast guards in case of emergency.”* Another interviewee described how they interacted with a virtual rescue group on Facebook: *“There was a rescue group on Facebook whose task is to track the refugees on their way. Before leaving, we informed them that we were leaving so that they track us and call the police or coast guards in case of emergency.”*

Many of the interviewed refugees crossed the sea around winter, which magnified their anxiety and fear. To achieve greater safety, refugees relied on specialized applications to ensure that the weather was suitable for sailing: *“There is an app for smartphones that gives the sea level and height of the waves in the position you determine. It also gives you the exact time period during which the waves are expected. Such apps helped us a lot.”*

Importantly, we observe strong continuity patterns in the ICTs use and their impact on safety perceptions during the journey and also upon the arrival, which suggests that ICTs promote refugees’ sense of safety also along their integration pursuit. Taken together, our findings indicate that smartphones enable refugees with a greater sense of agency as well as at least partly mitigated their anxieties during their dangerous journey to Europe, thereby contributing to their well-being.

4.2.4 Mobility: Transportation, Navigation, GPS

Most of our interviewees indicated that they had used smartphone-enabled GPS services during their entire journey to determine their location and the correct route. With the help of smartphones and GPS, crossing forests on feet has become possible: *“From Serbia to Hungary, we walked 7 hours during which I used GPS on my smartphone to find the right route and cross the forests safely.”* Other refugees harnessed the power of Social Media by combing smartphones, GPS, and SNSs to find better paths: *“When we left Hungary, I took a shorter, easier, and safer route because I was using GPS and Social Media.”*

Upon arrival, our respondents were not familiar with hosting countries and did not speak German. Therefore, they relied on their smartphones to find their way around. In addition to navigation, they have also installed city-specific applications for public transportation, as one of our interviewees stated: *“I use*

GPS or the public transport app to navigate to that address. Because I don't speak German, I could not even ask the people on the street to help me find that address." Just as in the previous case, these capabilities enabled by ICTs promoted feelings of agency and well-being among refugees, enhancing their perceptions of social inclusion – focal achievements in our model.

4.2.5 Translation Services

Our research revealed that most refugees do not speak English or German, making it difficult for them to accomplish their asylum processes efficiently or doing their daily routines, such as visiting doctors. Here, ICTs are widely used to mitigate discomfort in communication, and help refugees achieve their goals, which enhances their sense of agency and well-being. For example, one of our respondents described how she used Google Translate to enable her to visit her physician: *"[...] I used Voice Google Translate to communicate with the physician. I talked to the app in Arabic, and it translated to German and spoke the translation to the physician. She replied to the app in German, it translated to Arabic and I listened to the translation. At the end, she was amazed how I used that app and she told me she did not know that voice translation exists. She thanked me for this new information and she admired our smart usage of technology."*

Moreover, communicating with locals is important for the refugees, including such basic ones as grocery shopping. One interviewee reported: *"When I go to the supermarket, I write what I want to say in Arabic into the translator app and the app translates the text into German so that the supermarket's staff knows what I want to tell them."* Another significant capability enabled by ICTs in this context is the translation of official documents that refugees receive regularly. Typically, it is not easy for them to understand these documents even if they are attending German classes. One interviewee mentioned: *"I use Google Translate a lot. Sometimes I receive a letter that is too difficult for me to understand."*

4.2.6 Participation in an Information Society

We observe that Syrian refugees in Germany face numerous difficulties resulting from the differences between their home country and the hosting society, both culture-wise and system-wise. Therefore, the smartphone is the medium through which they get to know the new country and the new system. Using ICTs to get to know new society helps refugees to integrate faster and contributes to their feelings of social inclusion. For example, one interviewee mentioned: *"Using my smartphone and Social Media adds a lot of positivism to my life here, because I got to know the German society even better and this could help my integration process."* We find that refugees would like to learn more about their hosting society, which is easily achievable with the help of Social Media channels: *"On Facebook there are many posts that are useful for us (refugees). For instance, I follow pages and German sites that give us information and stuff that we did not know before."*

Another key use of ICTs by refugees is coping with the new legislation and regulations regarding their asylum in Europe. Since these regulations change frequently and are often published just in the local language, refugees rely on their smartphones for access and interpretation of this information. One of our respondents reported: *"Whenever there is a new legislation (related to refugees), in most cases, this is formulated in difficult German terms. Most of us are not able to translate such terms to understand this new legislation. That's why we go to Social Media and ask people whether they were able to translate it correctly and ask them to explain it to us."*

Furthermore, using ICTs, both locals and refugees can come together to get to know each other better. This enables refugees to learn more and faster about the hosting society. Many initiatives in Germany organize joint offline events through Social Media, and refugees are interested in participating in them: *"Often, we participate in events that are organized through SNSs, and we participate in the events offline."* Moreover, they use ICTs to learn the local language faster in different ways. For instance, some apps connect German volunteers with refugees who are willing to learn German: *"I use my smartphone to connect with two German girls to learn the German language further."*

4.2.7 Communication with the Government

Upon arrival, refugees have to undertake a number of administrative steps at different governmental offices to finalize their asylum applications and other formalities, including getting a residence permit, health insurance, finding a job, etc. Not speaking German, refugees encounter major difficulties in their communication with authorities: *“It was not enough to use English, because at the governmental offices one has to use their official language.”* Therefore, refugees prefer to visit government websites on their smartphones to extract the information they require. However, most of the relevant websites do not offer languages other than German: *“With German, you can visit the website of the Job Center and there you can find all the information you need. You can also call them or any other governmental department [...]. But in Arabic there is no website or no one whom we meet provides 100% accurate information without charging for that.”* Here, capabilities enabled by ICTs allow refugees to tackle some challenges. For example, one of our interviewees noted: *“For instance, once they asked me in the Job Center whether I had an email - I said no. They kept asking me, so I created one because they can communicate with me and send me relevant stuff.”*

4.2.8 Participation in Educational Programs

Official statistics has shown that more than 83% of all asylum seekers in Europe in 2015 were younger than 35 years old (Eurostat, 2016). This clearly indicates the importance of education for this young population group. This includes the need to learn a local language, participate in educational programs and professional training. However, asylum seekers are typically not allowed to participate in education programs (including learning the language) until their lengthy asylum application process has been completed. Therefore, it does not come at a surprise that refugees in our sample turn to ICTs to satisfy their need for education: *“I started learning German by myself to adapt to the new place using open education through the Internet, because I have not received my residence permit yet and therefore officially I’m not qualified to visit a language school.”*

Most of our interviewees mentioned a YouTube channel for one Arabic teacher who posts lessons to learn German in Arabic. It is also worth mentioning that most of our participants learned about this channel through Social Media platforms, such as Facebook and WhatsApp. One respondent stated: *“We learn German language using our smartphones, where we visit certain Facebook groups. There is also an Arabic teacher who posts German lessons on YouTube daily from absolute beginners to advanced.”* Other participants reported on many advantages of open education not only during their asylum application time but also afterward. For instance, for parents: *“I prefer learning the (German) language online using my smartphone. First, because I have a daughter. Second, I can repeat the lesson or certain parts as many times as I need to grasp it.”* Furthermore, our research revealed several reasons why open education can be in some cases a better option for refugees. Specifically, our respondents mentioned not being affected or distracted by other group members; having the flexibility with regard to their schedule, since they frequently had official appointments they could not postpone; as well as the mobility of open education, as it can be pursued anytime and anywhere.

Finally, many respondents in our sample aimed to join a formal university program. For example, one respondent mentioned: *“[...] the most important thing for me is that I decided to go for a Master’s program at Berlin University of Technology using my smartphone. I visited their website and I found a special program for refugees.”* Providing required orientation and tools to enable these young and motivated refugees to join such university programs is essential and can be to a large extent handled with the help of Social Media channels and relevant websites.

4.2.9 Crowdsourcing

The dynamic nature of refugees’ circumstances makes traditional information management systems, such as wikis, incapable of handling these challenges. Information relevant for refugees changes frequently, and a wrong piece of information can affect human lives. Therefore, Social Media platforms are increasingly used by refugees as a new form of information management through crowdsourcing.

The crowd is the core of crowdsourcing, which, in this context, is often composed of former refugees and volunteers. This crowd is typically organized in specialized groups on Social Media sites, such as Facebook and WhatsApp. Refugees reply on these groups for support to navigate their way through the new society and bureaucratic processes that are imposed on them. One participant reported that he knew about such groups even before leaving Syria: *“Before traveling to Europe, I subscribed to many Facebook pages I could find and that provide information about traveling to Europe.”* Another refugee described such communities as a dictionary that has answers to all questions: *“You find answers to all questions that might come to one’s mind, just like a dictionary that you use to search for any term.”*

Furthermore, these and other communities can be used to mobilize collective action, e.g., to organize demos as one of our respondents reported: *“Using Facebook, I organized a peaceful demonstration in front of the German ministry of foreign affairs to complain about the slow process of family reunification and to ask them to fasten it so that we can bring our wives and children to Germany. We organized that through Facebook and we were able to gather 6,000 people in about 11 days.”* This example clearly exemplifies the capabilities provided to refugees by ICTs to exercise their agency.

Another prime example is refugees using the crowd during the journey to Europe, for instance, to get to know facilitators and to assess how reliable they are. One participant reported: *“There are many specialized Facebook pages that collect the experiences of people during their journeys including all details [...] They alert us about police operations against refugees. They also post evaluations about the smugglers they had dealt with.”* Another participant reported on his usage of the crowd to connect to facilitators, mainly smugglers that would help refugees move from one place to another: *“When I arrived Budapest, I posted in the Facebook group that I need to contact a smuggler to bring me to Germany. I got 50 replies with contacts.”* Furthermore, refugees would use ICTs to communicate with facilitators directly. One participant stated: *“I communicated with the smuggler through WhatsApp.”*

4.2.10 Maintaining Cultural Identity

Being far from their families and friends motivates refugees to find and engage in local or virtual communities in Europe. Here, ICTs emerge as a primary capability available to refugees in this pursuit. For example, one of our interviewees has been using his smartphone to find other peers: *“Additionally, I used my smartphone to get to know other Syrians who have been in Germany for a longer period.”* Further, another important aspect of cultural identity for refugees is religion. ICTs can also play a crucial role here, with refugees relying on smartphone apps for religious purposes: *“In Germany, we installed some apps, such as prayer times [...]”*. Additionally, ICTs enable refugees to find local centers and organizations that offer religious and cultural activities for them. One of our respondents reported: *“There are other activities in the mosque that I visit, about which I got to know through Facebook.”* Further, many refugees turn to ICTs to track news and updates from their home country. One participant stated: *“... I follow many Arabic sites, including informative and news sites. Facebook is my only way to catch up with the latest news and updates as I don’t have a TV or radio. I follow these pages, and I find all the news from all over the world...”*. All in all, the ability of refugees to connect with like-minded people and maintain a connection to home is likely to have a favourable influence on refugees' perceptions of well-being and social inclusion (Gifford and Wilding 2013).

4.3 Achievements

Through our research model, we have been able to show how ICT enables Syrian refugees in Germany to achieve the social inclusion in the new society, represented by enhancing well-being and agency (see Figure 1: Achievements in Social Inclusion).

Most of the refugees face an intense cultural shock in Germany, because of the significant differences between their societies and the new society. Being separated from their families exacerbates this feeling and makes their lives stressful. Therefore, it is vital for them to keep in touch with their families to ensure they are safe and to get the necessary *emotional support* that gives them the power to live comfortably in the new society. One of our interviewees stated that clearly: *“Communicating with my family*

affects my energy and my positive attitude here. If I lose the ability to communicate with them, that would affect me a lot. Sometimes, I get a negative attitude, because I am away from my home and family, all out of a sudden. When I call my family and my fiancée, I get a lot of strength from them. Life here is full of stressful situations because I am starting my life from scratch and I have to learn a new and difficult language. Therefore, my family supports me and give me the strength to go on. I do the same when they face a difficult situation because of the tough situation back home.”

Another important means of social inclusion is supporting refugees in *virtual and local communication*. For instance, bringing both refugees and locals together to support the integration process: *“I am trying also to join Facebook groups that coordinate meetings for integration and language exchange.”*

ICT enables the refugees to overcome the language barrier empowering them to *keep track of new laws* that affect them directly, e.g., family reunification programs. *“We come together on Facebook, and we share our knowledge about the new legislations and we look for their translations on other Facebook Arabic pages. Then, we start discussing and sharing our own experiences and we share our knowledge and hints among each other. This way, we manage to know more.”*

In addition to the efficiency of using smartphones for *translation* purposes, it gives also additional capabilities such as pronunciation, which is to a large extent important in enhancing the readiness of social inclusion: *“One of the most frequent things I do is translating a term and memorizing its meaning because the app gives me the pronunciation as well.”*

5 Discussion

Even before the widespread of Social Media, Trauth and Howcroft (2006) argue that ICTs can be tools to bridge the gaps of social inclusion in the refugee context. Corroborating this view, our findings show that modern ICTs, such as Social Media, can be the right tool to promote integration, enhance well-being and individual sense of agency. This applies to both connecting refugees with their families back home as well as with local communities.

Another important factor in well-being and thus readiness to social inclusion is the relation with the government offices, especially during the asylum process. The observations and findings of our research revealed several limitations in the current governmental services and processes, which can be easily mitigated through ICT. This can be easily applied in the context of asylum seekers in particular due to their high reliance on ICT in all aspects of their lives. Indeed, despite an increasing amount of research as well as practical efforts to improve the quality of e-government services, the design of citizen-centric websites remains an elusive problem in many areas (Tan et al., 2013). Cultural adaptation of the governmental websites is almost non-existent. At the same time, cultural and social obstacles may stifle any attempt to transplant the technology onto other cultural contexts (e.g., Arab culture) (Rose and Straub, 1998; Straub et al., 2001). On the other side, governments can abuse technology to infringe on the rights of refugees. Although in many countries security checks of asylum seekers are already part of a standard procedure, information technology makes it easy to gather extensive and intrusive personal data in this vulnerable community. For example, on the pretext of national security, there are voices calling for the screening of Social Media profiles of asylum seekers before approving their application (Diehl and Meritz, 2016). Furthermore, our research revealed that preliminary ICT governmental services are missing, such as official information sources in other languages. One of our interviewees stated: *“So far, no one found a trusted source in Arabic that has 100% accurate information (in this regard).”* We believe that more governmental efforts are still required to provide the required information and services to the refugees through ICT customized to the needs and capabilities of the target users; refugees.

With education and language skills seen as being vital to successful integration and social inclusion, stakeholders across all political levels are calling for better access to educational opportunities for refugees. A shortage of teachers, however, complicates current efforts with Germany reporting a shortfall of 20,000 new teachers relative to demand (Spiegel Online, 2016). Here, an open education approach seems relevant, because online modes of pedagogy are scalable and can empower learners with control

over where, what, how and with whom to study (Kop and Fournier, 2010). Aligned with the fact that ICT can change the nature and raise the quality of teaching and learning (Reynolds et. al. 2003), we observe in our interviews that many refugees have already started learning German using ICT.

Such open education services towards social inclusion requires particular infrastructures and process. One of our interviewees expressed that saying: *“To utilize open education, we need three things. Dedicated smartphones that are blocked and no other apps or pages rather than the language learning app can be accessed. The second thing, is quality assurance on teachers and schools to ensure that powerful and real teaching instead of time waste. Third thing, which is the most important, is a sufficient campaign, because the refugees come here like blind people that require someone else to tell them and guide them.”* This also generalizes to other usages of ICTs, as well. One of our interviewees described the usefulness of the smartphone: *“Any mobile phone that does not have Viber and WhatsApp, through which I cannot communicate with my family, or does not have Internet connectivity is useless for me.”*

To sum up, our research revealed a direct impact of ICT usage by refugees on their social inclusion into hosting societies. Nowadays, refugees rely on technology (esp. smartphones) to communicate with families and friends they have left behind, to access geo-location services, as well as to learn the language and culture of the host country. For many refugees, smartphones represent the only information access point at their disposal. Therefore, we believe that more efforts are still required to provide the required information and services to the refugees through ICT customized to their needs and capabilities. This involves different stakeholders, including governments, industries, NGOs and the local population.

6 Limitations and Future Research

Although the analysis of our interviews showed coherency in the sample, this requires further investigation to verify whether this coherency is also generalizable to the entire population of Syrian refugees in Germany. One limitation of our research is the small size of our sample, which does not allow generalizing the results the entire Syrian refugees. Moreover, since we included only Syrian refugees in our scope, our results did not cover the refugee population coming from different countries of origin. Towards overcoming these limitations, we plan to continue investigating this case using more qualitative and quantitative research methods.

For our future research, more qualitative and quantitative research will be conducted to investigate this topic further. We will extend our sample of Syrian refugees and investigate their usage of specific areas of ICTs and their contribution to the process of integration by conducting quantitative research, where we will use focused questionnaires to analyze each aspect in details. Additionally, we plan to conduct further interviews with other Syrian refugees to verify the observed coherence. Another important component of our future research is investigating the role of ICT in the social inclusion of refugees coming from other countries, e.g., Iraq, Afghanistan, Eritrea, etc. Considering the differences in cultures and infrastructures, we will compare the results of this research with future ones with the goal of generalizing our findings to the context of refugees in Germany.

Our plan also includes re-conducting the interviews with the same sample to track how their perception and usage of ICT has changed after spending one year in Germany. We will also do interviews with family members who joined their families in Germany recently through the family reunification program, to investigate the role of ICT on their social connectedness while being in Syria.

Further research is also planned to widen the scope of our research by investigating the ICT use of supporting organizations and governments in order to be able to propose actionable policies and procedures for improving the situations in similar cases. We will also be more specific in our future research on smartphone usage, contribution to social inclusion, and specific social media and mobile applications used by refugees. Moreover, more research will be conducted to consider generalizing our conceptual model to other contexts other than refugees. As a theoretical vehicle, we are investigating the use of grounded theory to construct a model that captures the role of ICT in the social connectedness of the refugees in Germany.

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