

# **ICT AS AN ENABLER: UNDERSTANDING THE ROLE OF ONLINE COMMUNICATION IN THE SOCIAL INCLUSION OF SYRIAN REFUGEES IN GERMANY**

*Research paper*

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## **Abstract**

*Following recent call for papers, our paper contributes to the agenda of inclusive development as it showcases how technology can be used to foster the integration of those in need. In particular, due to the distinct role of ICT in the current refugee situation in Europe where it contributes to the social inclusion of refugees. Based on a thorough literature review, we conducted a comprehensive research with qualitative and quantitative studies to investigate the role of online communication on the social inclusion of Syrian refugees in Germany. In particular, we investigate the relation between the intensity of Internet use and the sense of social connectedness of refugees, as well as the impact of social connectedness on refugee social inclusion. Analyzing ten interviews, we derive new insights about social inclusion of Syrian refugees in Germany. We use these insights to construct our hypotheses that are validated through 135 participations in our questionnaire. Our hypotheses capture the relation in Internet use and social connectedness, social connectedness with family and friends, and social connectedness with locals. We believe that our findings could contribute to a successful social inclusion process.*

*Keywords: ICT, Social Inclusion, Social Connectedness, Refugees.*

## 1 Introduction

Triggered by the refugee crises in Europe, refugees represent an essential group that should be targeted in the social inclusion process. Defined by Beck et al. (1997) as the “process in which excluded or new groups find their place in the social networks of the host society, whereas incumbents provide them the space and opportunity to do so,” social inclusion encompasses critical outcomes such as individual sense of agency and well-being (Diaz Andrade and Doolin, 2016). The sense of agency reflects refugees’ ability to interact with the new world (Sen, 1985), and includes components ranging from those relevant for daily life, such as one’s ability to find housing and employment, get access to health services, and effectively communicate with public authorities, to more global ones, including one’s ability to master the new language, build social networks, and contribute to the political life and culture of the host country. At the same time, well-being – an integral outcome of social inclusion – reflects individual perceptions of one’s life and includes both cognitive aspects, such as life satisfaction, as well as affective aspects (Robeyns, 2005; Zheng, 2009).

The social inclusion of refugees is, to a large extent, contingent on their ability to navigate through social connections and thereby develop a sense of social connectedness. Defined as “the subjective awareness of being in close relationship with the social world” (Lee and Robbins, 1998), social connectedness is typically considered as the experience of belonging with other people and with society, which promotes a sense of comfort, well-being, and anxiety-reduction (Hagerty et al., 1993). There is a need for frequent social interactions of a positive nature in which individuals appreciate the existence of regular social bonds with others, whereas too little contact is considered upsetting (Baumeister and Leary, 1995).

In the online context, the sense of social connectedness has been shown to play a critical role in the attainment of social capital outcomes, such as emotional support, enhancement in offline participation, horizon broadening, and networking benefits (Koroleva et al., 2011). Developing a sense of connectedness is of paramount importance for refugees; torn from their home countries, stripped of their familiar social environment and connections, and often forced to relocate without their immediate family members, refugees are face the major challenge of rebuilding their social network in the host country, as well as stay connected to significant others back home. To fulfill the need of being socially connected to social groups, Information and Communication Technologies (ICTs) emerge as the main enabler because of the new capabilities for communication that are created (Christensson, 2010). A significant share of refugee ICT use is mainly mobile-based, with smartphones emerging as an instrumental piece of technology for refugees in the process of building their new lives in host countries (Fitch, 2016). Trauth and Howcroft (2006) argue that ICTs can be tools to bridge the gaps of social inclusion in the refugee context. In the current refugee crisis in Germany, the importance of online communication has become evident. In particular, ICTs play a unique role in refugee lives, because today’s refugees are the “most tech-savvy population of migrants in history,” with smartphone penetration rates of up to 90% (Maitland and Xu, 2015; Rutkin, 2016).

In a qualitative study, AbuJarour and Krasnova (2017) show that modern ICTs can be the right tool to promote integration, enhance well-being, and raise individual sense of agency. Moreover, social media sites offer a communication channel for meaningful dialog between disconnected social groups, allowing refugees to efficiently maintain contact with family and friends living outside of the host country as well as communities and acquaintances in the host country (Diaz Andrade and Doolin, 2016; Ellison et al., 2007). Yet, there is only limited research about the role of ICTs in the current refugee crisis in Europe (Diaz Andrade and Doolin, 2016; AbuJarour and Krasnova, 2017). Addressing this gap, our research is situated within the domain of the Bright ICT Initiative – a set of concerted research directions promoted by the AIS to achieve greater impact of the IS discipline (Lee, 2015; Lee, 2016). This is because uncovering beneficial uses of Internet and other ICTs is the first step in promoting the bright sides of existing technologies in the refugee context.

In our study, we differentiate between two groups of social networks in terms of social connectedness: (1) social connectedness with the family and friends back home and (2) social connectedness with the local population in the host country. We believe that the unique value of social connectedness to these social networks lies in the use of ICTs as an enabler of the social inclusion process. Focusing on the role

of ICTs in communicating with these two social groups, and the effect of this communication on the social inclusion of refugees, allows us to uncover the process by which social inclusion is achieved. Building on insights from previous studies, findings from qualitative research, and an empirical validation of the proposed conceptual model, in this paper we aim to answer the following three research questions:

- i. *To which extent is the intensity of Internet use to communicate with social groups related to the sense of social connectedness of refugees?*
- ii. *What is the impact of social connectedness of refugees with families and friends back home on the social inclusion of refugees?*
- iii. *What is the impact of social connectedness of refugees with the local community on the social inclusion of refugees?*

Following recent call for papers, our paper contributes to inclusive development, as it showcases how technology can be used to foster social inclusion. While focused on the integration of Syrian refugees in Germany, our findings could be applied to alleviate the situation of many disadvantaged people in developing countries (Walsham, 2012; Qureshi, 2015).

The rest of this paper is organized as follows. We summarize the theoretical background and introduce our qualitative study in Section 2. In Section 3, we develop our hypotheses and show our research model. We explain our empirical research and introduce our findings in Section 4. In Section 5, we discuss the results of our research. We highlight the limitations of this study and conclude our paper in Section 6.

## 2 Theoretical Background

Initially belonging to the field of social sciences, the concepts of social inclusion and social connectedness have received growing attention in the Information Systems field (Diaz Andrade and Doolin, 2016; Köbler et al., 2010). To ensure clarity about these two constructs in the context of our research, we first provide a literature review on social connectedness and social inclusion, including the dimensions that contribute to the refugee integration process. In the next step, results of our qualitative study are used to complement theoretical findings in the light of specific particularities of social inclusion of Syrian refugees in Germany. Building on this structure, we develop our conceptual model that we use as a basis to derive our hypotheses, which we validate through quantitative research as shown in the following sections.

### 2.1 Social Connectedness

According to Townsend and McWhirter (2005), “human beings have a powerful need for connectedness,” that if not satisfied, can have a negative impact on their health, adjustment, and well-being (Rude and Burham, 1995). According to Hagerty et al. (1993), the sense of connectedness is present “when a person is actively involved with another person, object, group, or environment, and that involvement promotes a sense of comfort, well-being, and anxiety-reduction.” Lee and Robbins (1998) define social connectedness as “the subjective awareness of being in close relationship with the social world.” Townsend and McWhirter (2005) include different groups under the term social connectedness, mainly the “social network of family, friends, colleagues, and other social groups; and connectedness to a larger meaning or purpose in life.”

As such, perceptions of social connectedness can reduce the negative effects of stressful life events and contribute positively to well-being, especially by having a sense of connection and belonging to both mainstream and ethnic communities. Individuals with a greater sense of social connectedness are more likely to cope with emotions through their ability to adjust to social environments (Bourgeois et al., 2014). Furthermore, these individuals tend to feel very close with other people, perceive others as friendly and approachable, and participate in social groups and activities. In contrast, individuals who are disconnected from others suffer from social isolation, deficits in belongingness, lack of meaning or purpose in life, higher trait anxiety, difficulty relating with the social world, and greater social mistrust (Baumeister and Leary, 1995; Lee and Robbins, 1998; Townsend and McWhirter, 2005). In the case of

refugees, social connectedness is tightly linked with access to practical and emotional support and is therefore important for their social inclusion. On the one hand, being connected to family back home enables emotional and material stability during the social inclusion process and is a source of comfort (Beirens et al., 2007; Fozdar and Hartley, 2013). On the other hand, being connected to local friends and participating in the local community is associated with a sense of belonging (Beiser et al., 2015). In our research, we investigate social connectedness in the context of refugees along two dimensions:

**Social connectedness with family and friends back home:** Being connected to the family (back home) has a positive impact on the social and health outcomes of refugees. Engaging with one's family can contribute to engagement in the local community and wider society because they provide needed emotional support to refugees (Aumüller and Bretl, 2008; Beiser et al., 2015).

**Social connectedness with local friends and acquaintances:** Participation in the community is essential for creating a sense of belonging and identity (Flanagan et al., 2006). Being socially connected to a network of locals helps refugees feel less stressed in the acculturation process, also enhancing their knowledge about the host society and its values and cultural practices (Fozdar and Hartley, 2013).

## 2.2 Social Inclusion

Social inclusion functions as “the glue that keeps all population segments together, helping societies to function effectively and fairly” (AbuJarour and Krasnova, 2017). It has a high impact on individuals' health and the cohesion level of the society (Waddell and Burton, 2006). Beck et al. (1997) define social inclusion as a “process in which “excluded” or new groups find their place in the social networks of the host society, whereas incumbents provide them the space and opportunity to do so”. This definition is widely accepted in the community, for instance by Berman and Phillips (2000), Barnes et al. (2002), Pradhan (2006), Rawal (2008), Oxoby (2009), and Chan et al. (2014). Another perspective is provided by Saunders (2013), who considers social inclusion a policy goal to reduce disadvantages for the citizens in a society and increase their civic, social, cultural, and economic participation. A more generalized definition is provided by Wilson and Secker (2015), in which social inclusion means having the opportunities and resources to participate fully in economic, social, and cultural life.

The social inclusion of refugees is a multi-faceted concept and consists of refugees' perceptions of well-being and their sense of agency (Diaz Andrade and Doolin 2016). Agency is defined as the “freedom to set and pursue one's own goals and interests” (Sen, 1985), whereas personal well-being relates to one's own life and its quality (Robeyns, 2005). Both well-being and sense of agency represent key goals in refugee social inclusion, including opportunities for refugees to settle, integrate, and participate in the new environment. In this paper, we adopt this definition of social inclusion to investigate (1) well-being in terms of its positive affect and self-assurance of refugees and (2) the sense of agency in terms of the achievements refugees could attain in the new host society.

Following this approach, we analyzed relevant research articles to identify the key dimensions of agency. Our analysis of 86 articles indicates that the common dimensions critical for the agency aspect of social inclusion include: social networking, employment, education and language, culture, health, government and citizenship, and housing.

**Social Networking:** Social contacts to friends, family and community groups make individuals feel connected, cared about, and part of a community (Board, 2012). This participation is essential for creating a sense of belonging and identity (Flanagan et al., 2006; Sánchez-Franco et al., 2015). A social network provides emotional support, especially in times of challenges. It can prevent someone from slipping into multiple disadvantages when one disadvantage, e.g., unemployment, occurs (Board, 2012). The social networks of refugees, however, include networks with family and friends back home in addition to networks with locals. A social network offers refugees practical and emotional support and is important for their social inclusion (Beirens et al., 2007). Although networks with locals can develop a sense of belonging among refugees, engagement with the family and friends back home is important for refugees through contributing to the settled feeling, as well as potentially to engagement in the local community and wider society (Aumüller and Bretl, 2008; Beiser et al., 2015).

**Employment:** Having access to paid employment, equal opportunities in the labor market, and a high quality of employment, e.g., job security and low health risks at work, improves the social inclusion of an individual in society. These factors improve personal well-being and self-respect, leading to economic security and creating a sense of belonging and purpose in life. In contrast, unemployment, low-income work, and job insecurity increase the potential for social exclusion (Al-Jaghoub and Westrup, 2009; Berman and Phillips, 2000; Farrington and Farrington, 2005; Stanley et al., 2011). Active refugee participation of refugees in the labor market is essential for successful integration (Ives, 2007). Employment is important in order to promote economic independence, plan for the future, restore self-esteem, and encourage self-reliance (Ager and Strang, 2008). Furthermore, it enables refugees to reach economic self-sufficiency and regain a positive sense of identity and control over their lives (Beiser et al., 2015; Fozdar and Hartley, 2013). On the other hand, unemployment and underemployment lead to lower self-esteem and confidence (Morrice, 2007).

**Education and language:** Equal access to quality education, educational achievements, and life-long learning leads to an inclusive society (Berman and Phillips, 2000; Council of Europe, 2001; Farrington and Farrington, 2005). Furthermore, language enable social inclusion and improve well-being (Stanley et al., 2011). In contrast, language and dialect differences hinder effective communication, leading to social exclusion in society (Board, 2012; Chan et al., 2014; Council of Europe, 2001). In the case of refugees, research has shown that active participation in education and language learning is essential to their successful integration process (AbuJarour et al., 2016; Ives, 2007). Due to the importance of speaking the local language, refugees are often required to attend language courses upon their arrival (Ager and Strang, 2008; Aumüller and Bretl, 2008; Yu et al., 2007). The main barriers that hinder refugee participation in education and language are legal formalities and limitations as well as a lack of information about the host country's education system (Ager and Strang, 2008; Morrice, 2007; Papillon, 2002).

**Culture:** Access to and participation in cultural activities is essential for social inclusion because it makes people feel welcome in a society and improves their well-being (Farrington and Farrington, 2005; Stanley et al., 2011). In contrast, a lack of participation in community life can lead to social exclusion (Pradhan, 2006). For refugees, active participation in cultural activities enhances their understanding of the host country's culture and supports social inclusion (Ives, 2007; Stewart et al., 2011). The main barriers that hinder the cultural social inclusion include differences with regards to beliefs and cultural values and a lack of cultural, linguistic, and religious recognition by the local population (Almohamed and Vyas, 2016; Haggis and Schech, 2010; Papillon, 2002).

**Health:** Good health, high life satisfaction, and access to healthcare services and information are vital factors contributing to social inclusion. In contrast, limited access to healthcare services and poor health are indicators of social exclusion (Board, 2012; Atkinson et al., 2004; Berman and Phillips, 2000; Farrington and Farrington, 2005; Saunders, 2013; Stanley et al., 2011). In the context of refugees, good health and access to healthcare services are important to actively engage with society (Ager and Strang, 2008). However, refugees often experience psychological health issues due to past experiences in their home countries. Besides homesickness, they often suffer from past trauma and post-migration stress (Aumüller and Bretl, 2008; Fazel et al., 2012; Fozdar and Hartley, 2013). Access to healthcare services by refugees is hindered by several barriers, such as the lack of information about available healthcare services and communication limitations (Colic-Peisker, 2005; Mestheneos and Ioannidi, 2002).

**Government and citizenship:** Having a citizenship status or residence permit, and thereby access to political, social, and civic rights leads to social inclusion (Council of Europe, 2001; Farrington and Farrington, 2005). In the case of refugees, they often suffer from a loss of status (Haggis and Schech, 2010). Certainty around their residence permit is vital for them to regain the full set of human rights and to have the possibility of family reunification. Moreover, it promotes a sense of safety and security in the new country (Ager and Strang, 2008; Haggis and Schech, 2010). Yet, refugees often have to struggle through the complex formal asylum seeking process (Fazel et al., 2012). In addition to the bureaucracy barrier, refugees often have a lack of information about available governmental services and frequently face communication problems while interacting with governmental employees (AbuJarour and Krasnova, 2017; Aumüller and Bretl, 2008; Mestheneos and Ioannidi, 2002).

**Housing:** Having adequate and appropriate housing in a civilized and stable neighborhood, including having a stable home, affordable housing costs, and equal access to housing, leads to social inclusion (Atkinson et al., 2004; Board, 2012; Hutchinson and Lee, 2004; Huxley et al., 2008). In contrast, precarious housing conditions or homelessness lead to social exclusion (Saunders, 2013). For refugees, housing plays a crucial role in the social inclusion process as they spend long time periods being displaced or on the move without having a home. However, refugees often face several barriers finding their new home including a lack of information about the housing market and the customs and strategies relevant to access housing, a complex application process, and a lack of public housing offers (Fozdar and Hartley, 2013; Mestheneos and Ioannidi, 2002).

### 2.3 Qualitative Study

In this section, we give an overview of the methodology used in our qualitative study, which served as the basis of the conceptual model we developed.

#### Methodology and Sampling

To expand on top of our literature review and gain preliminary insights about the social inclusion and social connectedness of refugees, we conducted a qualitative study with Syrian refugees in Berlin. Our qualitative study is based on a sample of 10 participants, whom we interviewed face-to-face, with an average duration of 49 minutes. The average age of the refugees we interviewed was 33, with five male and five female participants. Seven refugees in our sample have a college or university degree, and three have school/high school certificates. Most of our interviewees have been in Germany for 2-3 years, one participant for 18-24 months, and one participant for 12-18 months. All of our respondents already have residence permission in Germany, as well as family members still in Syria at the time of our study. Eight interviewees were living in an apartment and two were living in a shared or temporary residence. All interviews were conducted following a semi-structured approach. We asked respondents questions related to their current living situation in Germany, how and with whom they communicate on a regular basis, how they have been using different types of ICTs for different social inclusion dimensions, their participation in German society, and their perception of their well-being. All interviews were initially conducted in Arabic and were audio-recorded. Then, we transcribed the interview recordings before translating them carefully into English. Afterwards, we organized and coded the data using the iterative comparison method (Strauss and Corbin, 1990).

In Table 1, we show selected comments from our respondents, describing their connectedness to the different social groups and how this connectedness contributes to their social inclusion.

Groups of Social Connectedness	Example Comments from Respondents
Family and friends back home	<ul style="list-style-type: none"> <li>- <i>“When I communicate with my family back home, I feel safe and relieved. If I lose the connection with them, I feel lost and get negative emotions.”</i></li> <li>- <i>“My mother back home always provides me with support and this encourages me to continue here in Germany, learn the language, and find a job.”</i></li> <li>- <i>“Communicating with my family back home gives me a sense of comfort that I need to continue my life here in Germany and be an active member.”</i></li> <li>- <i>“Connecting to my family enabled me to continue my life here in Germany. They provided me with the needed emotional support.”</i></li> </ul>
German friends and acquaintances	<ul style="list-style-type: none"> <li>- <i>“Interacting with the society prevents the feeling of isolation and homesickness.”</i></li> <li>- <i>“The more I’m connected to people in Germany, the more I will feel socially included and satisfied.”</i></li> <li>- <i>“I could not live separated from the society, otherwise I would feel depressed.”</i></li> <li>- <i>“I contact Germans regularly to practice the language and learn about German culture and society.”</i></li> <li>- <i>“When I need help understand things in Germany, I contact with my German friends.”</i></li> </ul>

Table 1. Example comments from respondents in our qualitative study

Our analysis shows that refugees use ICTs to fulfill their sense of social connectedness with the two social groups presented in our literature review. Additionally, our analysis shows a relation between being connected to these group and the social inclusion of the refugees in the host country.

### Conceptual Model

Based on the insights that we gathered from our qualitative study, we developed our conceptual model (Figure 1) around three dimensions: (i) the use of the Internet by refugees; (ii) social connectedness with two social networks: family and friends back home and friends and acquaintances in Germany; and (iii) the dimensions of social inclusion in terms of agency and well-being.

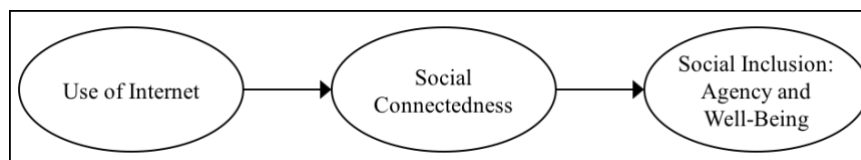


Figure 1. Conceptual Model

## 3 Hypotheses Development

In this study, we focus on Germany being the country with the highest number of asylum seekers in Europe (BAMF, 2015). We used our conceptual model to develop a set of hypotheses on (1) the impact of intensity of ICT use on refugee social connectedness and (2) the impact of social connectedness on their social inclusion. We validate these hypotheses through a quantitative study, as we show in the following sections.

### 3.1 Intensity of Internet use and the sense of social connectedness

Latest advancements in ICT have changed the way individuals interact with each other (Christensson, 2010). This change is prominent in the case of refugees due to the uniqueness of their needs; both technological, e.g., asynchronous communication, and personal, e.g., social connectedness. Thus, ICT creates new capabilities for communication allowing refugees to efficiently maintain contact with family and friends back home, and establish contact with the local communities in the host countries. These capabilities are essential for a successful integration process. Therefore, ICT can be considered the right tool to promote social inclusion of refugees. Upon this background, we develop the following hypotheses:

- *H1a: Intensity of Internet use to communicate with family and friends is positively related to the sense of social connectedness **with family and friends back home**.*
- *H1b: Intensity of Internet use to communicate with the local community of Germans is positively related to the sense of social connectedness with **Germans**.*

### 3.2 Social connectedness with family and friends back home

Social relations lead to better physical and mental health, well-being, quality of life, and self-esteem. Being socially-connected to family back home provides refugees with the necessary emotional support so that they can become socially included in the host society. The lack of such social networks results in feelings of loneliness, sadness, and isolation, and can lead to depression. Within this context, we develop the following hypotheses:

- *Intensity of social connectedness with **family and friends back home** will have a positive relationship with refugees' perceptions of agency concerning **social networking in Germany (H2a), employment (H2b), education and language (H2c), culture (H2d), health (H2e), government and citizenship (H2f), and housing (H2g)**.*

- *Intensity of social connectedness with **family and friends back home** will have a positive relationship with refugees' perceptions of well-being concerning **positive affect** (H2h) and **self-assurance** (H2i).*

### 3.3 Social connectedness with the local community of Germans

Local neighbors can become friends and create a social network where they can provide emotional and practical support. Refugees can improve their language skills by learning from neighbors as established members of the community. Language and dialect proficiency give the ability to communicate with people in the society. It empowers and facilitates social contacts, increases personal well-being, and helps achieve life control. With a certain level of knowledge of the local language, refugees can participate in cultural activities. This participation leads to the development of a social network and makes refugees feel welcome in the community. Upon this background, we develop the following hypotheses:

- *Intensity of social connectedness with **Germans** will have a positive relationship with refugees' perceptions of agency concerning **social networking in Germany** (H3a), **employment** (H3b), **education and language** (H3c), **culture** (H3d), **health** (H3e), **government and citizenship** (H3f), and **housing** (H3g).*
- *Intensity of social connectedness with **the local community of Germans** will have a positive relationship with refugees' perceptions of well-being concerning **positive affect** (H3h) and **self-assurance** (H3i).*

In Figure 2, we summarize our research model, including all the hypotheses introduced above.

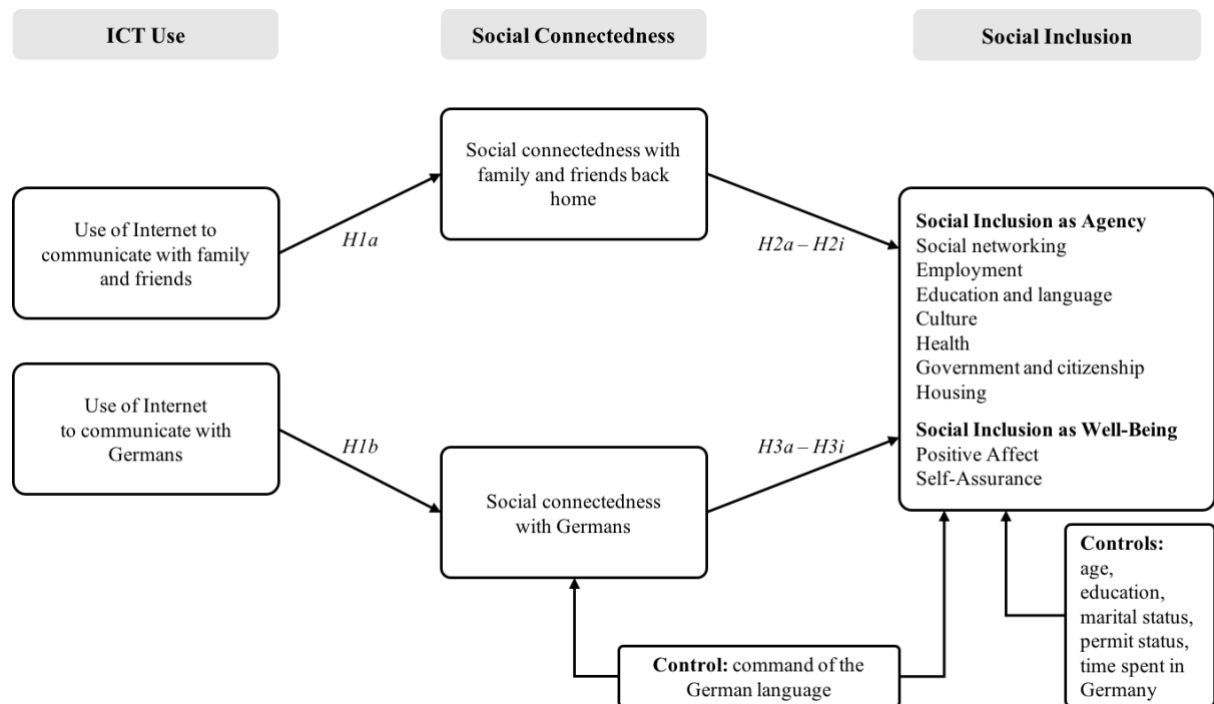


Figure 2. Research Model

## 4 Empirical Research

### 4.1 Measurement

All latent constructs in our study were operationalized with multiple items (at least four) and modelled reflectively. While we relied on the pretested scales where possible, some items had to be slightly modified or self-developed to better reflect the construct definition in the unique context of our study.



Outcomes of *social inclusion* were measured on a 7-point Likert scale (1=strongly disagree; 7=strongly agree). Examples of items include *social networking*: Overall, I feel able to: contribute to the German society; *employment*: In Germany, I am optimistic that I am able: to build on my previous qualifications to find a suitable job position; find my place in the job market (Correa-Velez et al. 2012); *education and language*: In Germany, I am optimistic that I am able to: learn German; make myself understood in German (Ward and Kennedy 1999); *culture*: In Germany, I feel able to: understand norms and values of the German society; adapt to the German culture (Ward and Kennedy 1999; Chen 2010); *health*: In Germany, I feel able to: navigate the healthcare system; find the right doctor when I need one (Sheikh-Mohammed et al. 2006); *government and citizenship*: In Germany, I feel able to: navigate through the rules and regulations; deal with people in administrative/governmental offices (Ward and Kennedy 1999); fit in the German society (Lee and Robbins 1995; Ward and Kennedy 1999); *housing*: In Germany, I feel able to: find affordable housing when I need one; get a place to live where I would feel “like at home” (Ager and Strang 2008); *positive affect* (seven items): During the last week, I felt active; happy; enthusiastic (Watson and Clark 1999); *self-assurance* (six items): When I have access to the Internet (e.g. on my smartphone): I feel I have mastery over my life; I feel strong; I feel I can do/achieve anything (Watson and Clark 1999).

Perceptions of *social connectedness* were also measured on a 7-point Likert scale. Examples of items include: *social connectedness with family and friends*: Overall, I: feel close to family and friends outside Germany (e.g., in Syria); have a feeling of being connected to my family and friends outside Germany (e.g., in Syria); *social connectedness with Germans*: Overall, I: feel close to some German people I know; have German friends / acquaintances I can count on when things go wrong (Carroll et al. 2017; Lubben 1988). Scales to measure *intensity of Internet use* were self-developed and measured on a frequency scale (1=very rarely/never; 7=several times a day). Examples of items include: *online communication with family and friends outside of Germany*: How often do you use the Internet to do the following: communicate (e.g., messaging, voice, and video calls) with family and friends outside Germany (e.g., in Syria); share pictures and videos with family and friends outside Germany; *online communication with Germans*: ask questions and get advice from German friends and acquaintances; follow updates from German friends and acquaintances; exchange cultural and language experiences German friends and acquaintances.

Finally, we also included the following variables as controls: age, education, time spent in Germany so far, command of the German language (1= no knowledge; 2=beginner - Level A; 3=Average - Level B; 4=Advanced - level C or higher), permit status (1=approved for 1 year; 2=approved for 3 years), and marital status (1=single or divorced; 2=married). Since the study targeted Syrian refugees in Germany, the English version of the survey was carefully translated into Arabic.

## 4.2 Sample

Respondents for the online survey were recruited by posting announcements on refugee-related mailing lists in Germany. Additionally, invitations were distributed via numerous Facebook groups. In total, 1812 respondents have accessed the survey, with a large share dropping out after the first page. Respondents had to answer affirmatively to the following four statements to be able to proceed with the survey: “I am a refugee from Syria”, “I live in Germany”, “I own a smartphone or a tablet”, and “I have access to the Internet”. Those who negated at least one of these statements were forwarded to the final page and thanked for their willingness to support our research. As part of the initial screening, observations with a response duration of less than 6 minutes (mean processing time was 16 min. and 29 sec.), a significant share of missing values, and repeating response patterns were removed. A final net sample included 135 observations. The majority of respondents are between 20 and 39 years old (83.7%), predominantly male (62.2%), and married (53.3%). Those with bachelor degrees constitute the largest proportion of our sample (30.4%), and 60.7% of respondents have some lower level of education. 79.3% of our respondents have an intermediate or advanced level of German. 84.4% of our sample has been in Germany for one to three years. 78.5% have residence permit approval for a three-year stay. Approximately 83.7% currently live in permanent or temporary housing, with those living in permanent housing accounting for 57.0%. 31.1% of respondents work either full, half-time, or are self-employed,

while 68.2% currently don't work. Almost all refugees in our sample (97.8%) use smartphones to connect to the Internet, whereas laptops and tablets are used less (51.1% and 11.1% respectively).

### 4.3 Research Results

In the next step, the research model was evaluated using Partial Least Squares (PLS). Each outcome of social inclusion (e.g. *health, positive affect*, etc.) was tested as a separate model with the help of the SmartPLS 2.0.M3 software (Ringle et al. 2005). In total, nine models were tested. For each model, first the Measurement Model (MM) and then Structural Model (SM) were estimated. The MM was assessed by evaluating the criteria for Convergent and Discriminant Validity. To ensure Convergent Validity, parameters for Indicator Reliability (IR), Composite Reliability (CR) and Average Variance Extracted (AVE) were estimated. Across all models, most item loading exceeded the 0.7 threshold and were significant (Hulland 1999), which provides assurance for IR. Only few exceptions could be observed: loadings for one item from the *online communication with friend and family* scale ranged from 0.568-0.569; two items from the *government and citizenship* scale were slightly below the required threshold 0.497 and 0.591; as well as one item from the *health* scale had a loading of 0.630. However, since all other measurement quality criteria were met, as explained below, these items were kept in the scale. CR values for all constructs across all nine models were higher than the required cut-off level of 0.7 (Hulland 1999). The AVE values for all constructs across our models exceeded the threshold level of 0.5 (Quan-Haase and Young 2010). Finally, Cronbach's Alpha was higher than the required threshold of 0.7 for all constructs in all models (Nunnally 1978). Therefore, Convergent Validity can be assumed. Next, Discriminant Validity was assessed by ensuring that the square root of AVE for each construct was higher than the correlation between this construct and any other construct in the model (Hulland 1999, p. 200). This requirement was met for all constructs in our models. Taken together, all nine MMs were well-specified.

Next, the Structural Model (SM) for each model was evaluated. We find that our model explains 35.4% of variance for *social inclusion outcome: culture*; 15.7% for *employment*; 11.5% for *housing*; 43.8% for *education and language*; 19.1% for *government and citizenship*; 24.0% for *health*; 39.2% for *social networking*; 32.3% for *positive affect*; and 19.2% for *self-assurance*. Explained variance for *social connectedness with family and friends* and *social connectedness with Germans* reached 17.5% and 25.0% respectively. Considering the exploratory nature of our research study, this explanatory power across our models can be assumed to be appropriate (Ringle 2004). Size and significance of path coefficients were evaluated based on the PLS algorithm and a bootstrapping procedure by setting the number of cases equal to the respective sample size (Tenenhaus et al. 2005) (see Table 2). Significance levels of 5% or less were considered acceptable.

We find that *online communication with family and friends outside of Germany* has a positive significant relationship with the sense of *social connectedness with family and friends* (H1a supported). Similarly, *online communication with Germans* is significantly and positively associated with *social connectedness with Germans* for refugees (H1b supported). Interestingly however, while *social connectedness with Germans* has a significant positive link with all *agency-related outcomes of social inclusion*, such as *social networking, employment, education and language, culture, health, government and citizenship, and housing* (H3a-H3g supported), there is no link between *social connectedness with family and friends back home* and these agency-relevant outcomes (H2a-H2g rejected). Importance of *social connectedness with family and friends back home*, however, becomes critical when *well-being outcomes of social inclusion* are considered, including *positive affect* and *self-assurance* (H2h, H2i are supported). Furthermore, *social connectedness with Germans* also positively contributes to *positive affect*, but not to perceptions of *self-assurance* of refugees in our sample (H3h supported; H3i rejected). Interestingly, we find that older refugees feel more optimistic about their ability to achieve cultural integration (*age* → *culture*: 0.159\*); refugees with longer residence permit approval (three as opposed to one year) feel more able to navigate the health system in Germany (*permit status* → *health*: 0.213\*), as well as benefit in terms of higher positive affect (*permit status* → *positive affect*: 0.241\*). At the same time, being married as opposed to being single or divorced has a negative association with the positive affect for refugees (*marital status* → *positive affect*: -0.145\*). The reason might be family reunification issues as

well as greater challenges to settle as a family in Germany. We discuss implications of our findings in the following section.

Tested Relationships	Dependent Variable: Outcomes of Social Inclusion: Agency							Well-Being	
	SN	Empl	Language	Culture	Health	Govern	Housing	PA	SA
Social Connectedness → Outcomes of Social Inclusion (H2a-H2i; H3a-H3i)									
SC_FF → SI	-0.077	-0.030	0.015	-0.009	0.032	0.136	0.009	<b>0.186*</b>	<b>0.354</b>
SC_G → SI	<b>0.564*</b>	<b>0.394*</b>	<b>0.496*</b>	<b>0.535*</b>	<b>0.366*</b>	<b>0.37*</b>	<b>0.257</b>	<b>0.360*</b>	0.147
Online Communication → Social Connectedness (H1a; H1b)									
OC_FF → SC_FF	<b>0.418*</b>	<b>0.418*</b>	<b>0.419*</b>	<b>0.418*</b>	<b>0.417*</b>	<b>0.417*</b>	<b>0.418</b>	<b>0.417*</b>	<b>0.418*</b>
OC_G → SC_G	<b>0.502*</b>	<b>0.503*</b>	<b>0.503*</b>	<b>0.503*</b>	<b>0.504*</b>	<b>0.503*</b>	<b>0.503</b>	<b>0.502*</b>	<b>0.503*</b>
Control Variables → Outcomes of Social Inclusion									
Age → SI	0.121	0.020	0.102	<b>0.159*</b>	-0.062	0.082	0.121	-0.138	0.005
Marital Status → SI	-0.081	-0.006	-0.047	-0.016	-0.055	-0.015	-0.015	<b>-0.145*</b>	0.055
Education → SI	-0.092	-0.038	<b>-0.188*</b>	-0.134	<b>-0.181*</b>	-0.040	-0.102	0.051	0.035
Time in Germany → SI	-0.051	-0.002	-0.091	-0.142	0.017	-0.044	0.020	0.009	0.037
Permit Status → SI	0.089	-0.071	0.070	-0.081	<b>0.213*</b>	-0.015	0.079	<b>0.241*</b>	0.086
German Language → SI	0.105	0.077	<b>0.427*</b>	0.192	0.034	0.116	-0.052	0.001	0.098
Control Variables → Social Connectedness									
German Language → SC_G	-0.010	-0.011	-0.010	-0.011	-0.010	-0.011	-0.012	-0.011	-0.012

Table 2. Standardized path coefficients and respective significance levels

Significance: \*at 5% or lower; Abbreviations: SI – social inclusion; SC\_FF - social connectedness with family and friends back home; SC\_G → social connectedness with Germans; OC\_FF - online communication with family and friends outside of Germany; OC\_G → online communication with Germans; Empl → Employment; SN → Social Network; PA → positive affect; SA → self-assurance.

## 5 Discussion

In this section, we elaborate on our findings based on the three hypotheses resulting from this research.

### Intensity of Internet use and social connectedness

In our study, we find that online communication with family and friends outside Germany has a positive significant relationship with the sense of social connectedness with family and friends (H1a supported). This communication is achieved mainly through ICT in the current refugees' situation. In particular, this is due to how ICT provides cost-efficient and asynchronous communication capabilities that fulfill the needs of the refugees in their new country. In our sample, 97.8% of our participants use smartphones to connect to the Internet. One of the pivotal outcomes of ICT-enabled communication is promoting the feeling of emotional support among refugees while staying in contact with family and friends. This kind of connectedness affects their positive perception of life and increases their belongingness to society.

Analogously, we find that online communication with Germans is significantly and positively associated with social connectedness with Germans for refugees (H1b supported). In this setting, ICT facilitates this communication because it enables mass-communication and empowers refugees to communicate effectively. For instance, it can bridge the language barrier through translation services that can be easily integrated with the various communication apps. Therefore, it does not come as a surprise that more than 80% of the participants use translation apps on a daily basis. Communicating with this network

leads to become socially connected within the host society, which potentially enables refugees to be socially included in their environment.

### **Social connectedness with Germans and social inclusion in terms of agency and well-being**

Our study shows a significant positive correlation between the social connectedness of refugees with Germans and their social inclusion in terms of agency, including social networking, employment, education and language, culture, health, government and citizenship, and housing (H3a-H3g supported). This does not come as a surprise considering that 80% of our sample have already acquired adequate German skills and can communicate in German. Language skills empower and facilitate social contacts, increase personal well-being, and help to achieve life control (Cakir and Guneri, 2011; Chan et al., 2014; Ives, 2007). Another relevant insight is that 50% of our sample were looking for jobs at the time of the study. Adequate German skills and strong social networks are two important factors for job-hunting, and having a social network can provide support in times of unemployment and facilitate access to the labor market (Board, 2012; Papillon, 2002). In the case of refugees, researchers have already shown that refugees with social networks can find better quality employment compared to refugees without such networks (Beiser et al., 2015; Mestheneos and Ioannidi, 2002; Papillon, 2002).

Similarly, our study shows a positive correlation between the social connectedness of refugees with Germans and their social inclusion in terms of positive affect of well-being (H3h supported), but not to self-assurance (H3i rejected). As the majority of our sample have already acquired a good knowledge of German language, this fosters social networks and lead to long-term social well-being (Fozdar and Hartley, 2013; Ives, 2007). Moreover, a network of locals would make refugees feel less stressed in the acculturation process because it enhances their knowledge about the host society and its values and cultural practices (Colic-Peisker, 2009; Fozdar and Hartley, 2013). Our results align with what other researchers have generalized thus far; the impact of local networks, reflected in the friendliness of the host society, have a positive impact on the well-being of refugees, their quality of life, and their feelings of security and of being welcome (Ager and Strang, 2008; Fozdar and Hartley, 2013). This positive effect on well-being reduces anxiety, stress, depression, and the feeling of isolation, which can occur when refugees receive no social support from local people and are discriminated against by the community (Beirens et al., 2007; Correa-Velez et al., 2012; Fozdar and Hartley, 2013). Generally, acculturation and adaption to the new culture is highly correlated to overall satisfaction of refugees (Colic-Peisker, 2009).

### **Social connectedness with family and friends back home and social inclusion in terms of agency and well-being**

Our study does not indicate any correlation between the social connectedness with family and friends back home and social inclusion in terms of agency (H2a-H2g rejected). Analyzing the in-puts that we gathered from our participants shows that the majority have already settled down and their natural next step is finding a job. For instance, 85% have been in Germany for 1-3 years already, 80% can speak good German, 77% have already received 3-years resident permits, and more than half our sample (55%) live in permanent apartments. Because remote friends and family members cannot help in the current situation, not even by giving hints and advice, connecting with them does not have a strong impact on refugee social inclusion.

In contrast to its correlation with social inclusion in terms of agency, social connectedness with family and friends back home does have a significant positive correlation with social inclusion when it comes to well-being outcomes, including positive affect and self-assurance (H2h and H2i supported). Researchers have already shown that refugees with social support from family and friends have improved mental and physical well-being (Kovacev and Shute, 2004). In contrast, refugees who suffer from family separation may face mental health problems, which lead to anxiety, sadness, loneliness, and depression (Almohamed and Vyas, 2016a; Beiser et al., 2015; Fozdar and Hartley, 2012).

## 6 Conclusion and Limitations

In this research, we identified the key dimensions of social inclusion of refugees to analyze the relation between the intensity of Internet use and refugees' social connectedness with two social groups; family and friends back home and Germans. We used a combination of a literature review and qualitative research methodology with ten refugees in Berlin to capture their perceptions of the social inclusion process in terms of agency and well-being. Based on our preliminary conceptual model, we investigated how social connectedness to the aforementioned social networks affects the different dimensions of refugee social inclusion by validating our conceptual model through a quantitative study, in which we collected responses from 135 refugees in Germany.

We believe that the unique value of social connectedness to the two social networks lies in the use of ICT to enable the social inclusion process. Focusing on the role of ICT in communicating with these two social groups and the effect of this communication on refugees' social connectedness enables revealing crucial insights that can contribute to the success of the social inclusion process. Building on insights from previous studies, findings from qualitative research, and an empirical validation of the proposed conceptual model, in this paper we tackled the following three research questions: (i) to which extent is the intensity of Internet use to communicate with social groups related to the sense of social connectedness of refugees; (ii) what is the expected impact of social connectedness of refugees with families and friends back home on the social inclusion of refugees; and (iii) what is the expected impact of social connectedness of refugees with the local community on the social inclusion of refugees? While focused on the integration of Syrian refugees in Germany, our findings could be applied to alleviate the situation of many disadvantaged people in developed as well as developing countries. We believe that by understanding the characteristics of one cultural group, which is the Syrian refugees in our paper, we could use this learning to understand other cultural groups by applying similar techniques to investigate other cultural groups. Moreover, we believe that by understanding these cultural groups in developed countries, we could then apply this understanding in future research in the context of the developing countries, which then allow us to investigate the same research problem in these countries but based on well-developed concepts.

One of the main challenges in this research was collecting data, particularly as refugees have narrow trust circles due to tough life experiences. Therefore, the size of our sample for the empirical study was limited. The total number of Syrian refugees in Germany is 27.247 (BAMF, 2017). In our paper, we managed to collect 135 participations. In our next research, our target is to cover a larger population and collect more responses for our surveys to reflect more on the ICT usage by refugees and its effect on their social inclusion. Our plan is to distribute the questionnaire within broader samples so that we reach a more diverse (in terms of demographics) sample. Towards developing further insights that can be used in broader contexts, we aim to extend our research to include refugees from other cultural groups, such as Afghan, Iraqi, etc.

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