



# **Digital Inclusion: The Role of Information and Communication Technology in Alleviating Social Disruptions**

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## **Abstract**

In this thesis, we tackle two social disruptions: recent refugee waves in Germany and the COVID-19 pandemic. We focus on the use of information and communication technology (ICT) as a key means of alleviating these disruptions and promoting social inclusion. As social disruptions typically lead to frustration and fragmentation, it is essential to ensure the social inclusion of individuals and societies during such times.

In the context of the social inclusion of refugees, we focus on the Syrian refugees who arrived in Germany as of 2015, as they form a large and coherent refugee community. In particular, we address the role of ICTs in refugees' social inclusion and investigate how different ICTs (especially smartphones and social networks) can foster refugees' integration and social inclusion. In the context of the COVID-19 pandemic, we focus on the widespread unconventional working model of work from home (WFH). Our research here centers on the main constructs of WFH and the key differences in WFH experiences based on personal characteristics such as gender and parental status.

We reveal novel insights through four well-established research methods: literature review, mixed methods, qualitative method, and quantitative method. The results of our research have been published in the form of eight articles in major information systems venues and journals. Key results from the refugee research stream include the following: Smartphones represent a central component of refugee ICT use; refugees view ICT as a source of information and power; the social connectedness of refugees is strongly correlated with their Internet use; refugees are not relying solely on traditional methods to learn the German language or pursue further education; the ability to use smartphones anytime and anywhere gives refugees an empowering feeling of global connectedness; and ICTs empower refugees on three levels (community participation, sense of control, and self-efficacy).

Key insights from the COVID-19 WFH stream include: Gender and the presence of children under the age of 18 affect workers' control over their time, technology usefulness, and WFH conflicts, while not affecting their WFH attitudes; and both personal and technology-related factors affect an individual's attitude toward WFH and their productivity. Further insights are being gathered at the time of submitting this thesis.

This thesis contributes to the discussion within the information systems community regarding how to use different ICT solutions to promote the social inclusion of refugees in their new communities and foster an inclusive society. It also adds to the growing body of research on COVID-19, in particular on the sudden workplace transformation to WFH. The insights gathered in this thesis reveal theoretical implications and future opportunities for research in the field of information systems, practical implications for relevant stakeholders, and social implications related to the refugee crisis and the COVID-19 pandemic that must be addressed.



## Zusammenfassung

Diese Dissertation beschäftigt sich mit zwei gesellschaftlichen Verwerfungen: den Flüchtlingswellen in Deutschland und der COVID-19-Pandemie. Dabei konzentrieren wir uns auf den Einsatz von Informations- und Kommunikationstechnologie (IKT) als eines der wichtigsten Mittel, um diese Verwerfungen zu mildern/abzufangen und soziale Eingliederung zu fördern. Soziale Verwerfungen führen in der Regel unter anderem zu Frustration und Fragmentierung. Daher ist es essenziell, die soziale Beteiligung von Einzelpersonen und Gesellschaften in solchen Phasen sicherzustellen.

Im Kontext der Flüchtlingswellen konzentrieren wir uns auf die Gruppe der syrischen Geflüchteten, die ab 2015 in Deutschland angekommen sind, weil sie eine große kohärente Flüchtlingsgemeinschaft bilden. Insbesondere befassen wir uns mit der Rolle der IKT bei der sozialen Eingliederung von Geflüchteten in die Gesellschaft und der Frage, wie verschiedene IKT-Dienste (insbesondere Smartphones und soziale Netzwerke) eine bessere Integration und soziale Eingliederung von Geflüchteten fördern können. Im Zusammenhang mit der COVID-19-Pandemie konzentrieren wir uns auf das weit verbreitete unkonventionelle Arbeitsmodell „Work from Home“ (WFH). Unsere Forschung in diesem Zusammenhang fokussiert sich auf die Hauptkomponenten der Arbeit von zuhause und die Hauptunterschiede bei WFH-Erfahrungen, die auf persönlichen Merkmalen, z.B. Geschlecht und Familiensituation, beruhen.

Wir konnten neue Erkenntnisse gewinnen, die sich auf folgenden vier etablierten Forschungsmethoden stützen: Literaturrecherche, Mixed-Methoden, qualitative Methoden und quantitative Methoden. Die Ergebnisse unserer Forschung wurden in acht Forschungsartikeln innerhalb von relevanten Tagungen und Fachzeitschriften für Informationssysteme veröffentlicht. Zu den wichtigsten Erkenntnissen der Forschung zur Rolle der IKTs bei der Integration Geflüchteter gehören: Smartphones sind ein zentrales Element der IKT-Nutzung von Geflüchteten. Sie betrachten IKT als Informations- und Machtquelle. Die soziale Verbundenheit von Geflüchteten hängt stark mit ihrer Internetnutzung zusammen. Sie verlassen sich nicht nur auf traditionelle Methoden, um die deutsche Sprache zu lernen und sich weiterzubilden. Die Möglichkeit, das Smartphone jederzeit und überall zu nutzen, gibt Geflüchteten ein Gefühl der globalen Vernetzung und IKT tragen dazu bei, Geflüchtete in folgenden drei Punkten zu stärken: Beteiligung an der Gemeinschaft, Gefühl der Kontrolle und Selbstwirksamkeit.

Zu den wichtigsten Erkenntnissen aus dem COVID-19-WFH-Stream gehören: Das Geschlecht und die Anwesenheit von Kindern unter 18 Jahren beeinflussen die Kontrolle der Arbeitnehmer über ihre Zeit, den technologischen Nutzen und den WFH-Konflikt, ohne jedoch ihre Einstellung zu WFH zu beeinträchtigen. Sowohl persönliche als auch technologische Faktoren beeinflussen die Einstellung eines Einzelnen zur Arbeit von zuhause und seine Produktivität. Zum Zeitpunkt der Einreichung dieser Dissertation werden in fortlaufenden Forschungsprojekte weitere Erkenntnisse zu diesem Themenbereich gesammelt.

Diese Dissertation trägt einerseits zur Diskussion innerhalb der Gesellschaft für Informationssysteme bei, indem sie aufzeigt wie verschiedene IKT-Lösungen eingesetzt werden können, um die soziale Eingliederung von Geflüchteten in ihren neuen Gemeinschaften

zu fördern und so zu einer integrativen Gesellschaft beizutragen. Andererseits steuert die Dissertation neues Wissen zu der Forschung über COVID-19 bei, insbesondere zur Umstellung des Arbeitsumfelds im Kontext von Heimarbeit (WFH). Die im Rahmen dieser Arbeit gesammelten Erkenntnisse tragen maßgeblich dazu bei, theoretische Implikationen und zukünftige Forschungsmöglichkeiten auf dem Gebiet der Informationssysteme aufzudecken. Ferner werden praktische Implikationen für relevante Stakeholder und soziale Auswirkungen im Zusammenhang mit der Flüchtlingskrise und der COVID-19-Pandemie adressiert, die in Zukunft entscheidend und wichtig sein werden.



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## **Part I: Research Summary**





## List of Publications

This section provides a list of the papers published in the context of the dissertation, additional papers that were published but not included in this dissertation, and papers under review.

### Publications of the Dissertation

Following is a list of papers that consist of this thesis.

#### *Publications in Journals*

1. **AbuJarour**, S., Wiesche, M., Díaz Andrade, A., Fedorowicz, J., Krasnova, H., Olbrich, S., Tan, C., Urquhart, C., and Venkatesh, V. (2019). "ICT-enabled Refugee Integration: A Research Agenda." *Communications of the Association for Information Systems (CAIS)*, Volume 44, pp. 874-891. <https://doi.org/10.17705/1CAIS.04440>.
2. **AbuJarour**, S., Ajjan, H., Fedorowicz, J., and Köster, A. (2021). "ICT Support for Refugees and Undocumented Immigrants." *Communications of the Association for Information Systems (CAIS)*, Volume 48, pp. 456-475. <https://doi.org/10.17705/1CAIS.04840>.
3. **AbuJarour**, S., Ajjan, H., Fedorowicz, J., and Owens, D. (2021). "How Working From Home During COVID-19 Affects Academic Productivity." *Communications of the Association for Information Systems (CAIS)*, Volume 48, pp. 55-64. <https://doi.org/10.17705/1CAIS.04808>.

#### *Publications in Conferences*

1. **AbuJarour**, S., and Krasnova, H. (2017). "Understanding the Role of ICTs in Promoting Social Inclusion: The Case of Syrian Refugees in Germany." *European Conference on Information Systems (ECIS 2017)*, Guimarães, Portugal.
2. **AbuJarour**, S., Krasnova, H., and Hoffmeier, F. (2018). "ICT as an Enabler: Understanding the Role of Online Communication in the Social Inclusion of Syrian Refugees in Germany." *Twenty-Sixth European Conference on Information Systems (ECIS 2018)*, Portsmouth, UK.
3. **AbuJarour**, S. (2020) "Social Inclusion of Refugees Through Digital Learning: Means, Needs, and Goals." *Pacific Asia Conference on Information Systems (PACIS 2020)*, Dubai, UAE.
4. Ajjan, H., **AbuJarour**, S., Fedorowicz, J., and Owens, D. (2020). "Working from Home During the COVID-19 Crisis: A Closer Look at Gender Differences." *International Conference on Information Systems (ICIS 2020) at the AISWN International Research Workshop on Women, IS and Grand Challenges 2020*. 4. Hyderabad, India.
5. **AbuJarour**, S., Köster, A., Krasnova, H., and Wiesche, M. (2021) "Technology as a Source of Power: Exploring How ICT Use Contributes to the Social Inclusion of Refugees in Germany." *Hawaii International Conference on System Sciences (HICSS 2021)*, Manoa, Hawaii.

## **Additional Publications**

In addition to the papers included in the thesis, the following articles were published during my doctoral studies. However, they are not part of this dissertation.

1. **AbuJarour**, S., Krasnova, H., Wenninger, H., Fedorowicz, J., Tan, C.-W., Urquhart, C., and Venkatesh, V. (2016). "Leveraging Technology for Refugee Integration: How Can We Help?" Panel Summary. International Conference on Information Systems (ICIS 2016), Dublin, Ireland.
2. **AbuJarour**, S., Krasnova, H., Díaz Andrade, A., Olbrich, S., Tan, C.-W., Urquhart, C., and Wiesche, M. (2017). "Empowering Refugees with Technology: Best Practices and Research Agenda." Panel Summary. European Conference on Information Systems (ECIS 2017), Guimarães, Portugal.
3. **AbuJarour**, S., and Krasnova, H. (2018). "E-Learning as a Means of Social Inclusion: The Case of Syrian Refugees in Germany." Proceedings of the Americas Conference on Information Systems (AMCIS 2018), New Orleans, LA.
4. **AbuJarour**, S., Bergert, C., Gundlach, J., Köster, A., and Krasnova, H. (2019). "Your Home Screen is Worth a Thousand Words: Investigating the Prevalence of Smartphone Apps among Refugees in Germany." 25th Americas Conference on Information Systems (AMCIS 2019), Cancun, Mexico.
5. **AbuJarour**, S., Ajjan, H., Fedorowicz, J., and Köster, A. (2019). "Turning the Dark Side of Social Media Bright! The Case of Immigration in the USA and Germany." Panel Summary. 25th Americas Conference on Information Systems (AMCIS 2019), Cancun, Mexico.
6. **AbuJarour**, S. (2019). "Smartphone App Adoption at Home and on the Move: The Case of Syrians." In the 3rd AFU International Conference: Towards Advanced Scientific Knowledge (TASK2019) in Business Sciences, Dubai, UAE.
7. **AbuJarour**, S., and Rabaiah, A. (2019). "Opening the Black-Box of Facebook Use in Palestine: An Empirical Study." In the 3rd AFU International Conference: Towards Advanced Scientific Knowledge (TASK 2019) in Business Sciences, Dubai, UAE.
8. **AbuJarour**, S., and AbuJarour, M. (2020). "Connecting Human Potentials and Opportunities Through Technology: A Digital Integration Use Case." Pacific Asia Conference on Information Systems (PACIS 2020), Dubai, UAE.
9. **AbuJarour**, S., and AbuJarour, M. (2020). "How Refugees Perceive Digital Learning Systems During the COVID-19 Lockdown." MENA Chapter of Information Systems (MENACIS 2020), Morocco.
10. **AbuJarour**, S., Jaghjougha, L., and AbuJarour, M. (2021). "The Impact of Digitizing Social Networks on Refugee Decision Making – The Journey to Germany." International Conference on Wirtschaftsinformatik (WI 2021), Duisburg-Essen, Germany.

### **Papers under Review**

1. **AbuJarour**, S. “Integration Through Education: Using ICT in Education to Promote the Social Inclusion of Refugees in Germany.” *Journal of Information Systems Education (JISE)* (Under Review).
2. **AbuJarour**, S. and AbuJarour, M. “Investigating the Use of Digital Learning Systems by Refugees for Homeschooling During Covid-19.” *European Conference on Information Systems (ECIS2021)* (Under Review).
3. **AbuJarour**, S., Ajjan, H., Fedorowicz, J., and Owens, D. “The Impact of Technology on Work-From-Home Performance During the COVID-19 Pandemic: The Effects on Management Role, Stress, and Family-Work Conflict.” *Behaviour & Information Technology Journal* (Under Review).



# 1. Introduction

## 1.1. Motivation

The term “social disruption” is used to describe the alteration, dysfunction, or breakdown of social life—often in a community setting—whether caused by natural disasters; massive human displacements; rapid economic, technological, and demographic change; or dangerous diseases. Social disruptions are radical transformations in which the old certainties of modern society fall away and something new emerges (Beck, 2016). They often lead to five social symptoms: frustration, democratic disconnection, fragmentation, polarization, and escalation (Itten, 2018). Therefore, it is essential to introduce necessary measures to ensure the social inclusion of individuals and societies when such disruptions occur.

In this thesis, we consider one regional and one global social disruption, namely the recent refugee waves in Germany that began in 2015 and the COVID-19 pandemic that began in 2019. For both, we focus on the use of information and communication technology (ICT) as a key measure to alleviate these social disruptions with the goal of ensuring, keeping, or introducing social inclusion. Below, we describe these social disruptions so that we can introduce our research scope, questions, and results.

The number of refugees worldwide has increased dramatically since 2014, mainly driven by conflicts in several regions, including the Middle East. Among the 71 million displaced people worldwide as of June 2019 (United Nations Refugee Agency, 2019), many have sought asylum in Europe, the majority in Germany (United Nations High Commissioner for Human Rights [UNHCR], 2020). Between 2014 and 2018 alone, Germany hosted 3.2 million refugees and two million asylum seekers (UNHCR, 2020).

These developments pose several challenges on the national and international level, ranging from urgent operational needs (e.g., fast registration of a large number of incoming asylum seekers upon entry and providing access to initial medical support, transportation, and housing) to more strategic long-term measures oriented towards integration. However, handling these challenges is often difficult for several reasons, such as a lack of necessary infrastructure, lack of coordination between involved offices, and newcomers’ different cultural backgrounds. Accordingly, issues regarding refugee integration and how to socially include refugees in their host societies have become a central topic of debate worldwide. In light of these challenges, refugees’ social inclusion has surfaced as a critical topic of debate in political and social spheres, with numerous stakeholders (including governments, decision-makers, industries, and non-governmental organizations [NGOs]) urging swift solutions to manage the refugee crisis.

Social inclusion is a critical component of any democratic and equitable society. It involves, among others, connecting with others in the host society by finding a job, pursuing education, learning the language, and understanding the host culture. Social inclusion is defined as “having the opportunities and resources to participate fully in economic, social and cultural life” (Wilson & Secker, 2015, p. 52). Being socially included is linked to improvements in mental and physical health on the personal level and greater levels of coherence on the societal level (Waddell & Burton, 2006). Achieving acceptable social inclusion for refugees can require

efforts at different levels, such as orientation programs, mentoring programs, language learning opportunities, special training and education programs, and so on. Implementing such efforts requires sufficient resources to ensure that goals are reached.

Nowadays, ICTs can play a significant role in facilitating refugees' social inclusion in host societies (Díaz Andrade & Doolin, 2016). Whether hardware (including smartphones, tablets, PCs, and laptops) or software (including, for example, the Internet and web- or mobile-based applications), the effective deployment of ICTs is often mentioned in conjunction with refugees' social inclusion as a means of facilitating and even expediting integrative efforts. In this context, smartphones have emerged as an instrumental piece of technology for refugees, given refugees' reliance on mobile devices, the Internet, and social networks for guidance in journeying to host countries and building new lives there (Fitch, 2016). Refugees rely on smartphones to communicate with the families and friends they leave behind, access geolocation services, and learn the language and societal norms of the host country—all factors that facilitate social inclusion into host communities (Aumüller & Bretl, 2008; Beiser et al., 2015; Díaz Andrade & Doolin, 2016; Ives, 2007).

Smartphones represent many refugees' sole information access point. Together with apps (such as Google Maps, translation apps, and social networking platforms) and Internet access, smartphones allow refugees to navigate the complexities of bureaucratic and socioeconomic structures in their new homes (AbuJarour et al., 2016). As Qureshi (2019) has emphasized, the implementation, use, and diffusion of ICTs lead to improvements in people's lives through bettering the economic, social, and human conditions of a group of people, community, or region. This, in turn, could create an inclusive society. The question thus arises of how ICTs can be deployed to tackle the urgent issue of refugees' integration and social inclusion. To this end, we applied scientific research methods to study the use of ICTs (e.g., the use of social networks by Syrian refugees in Germany) and understand how refugees used ICTs to survive long and dangerous journeys to Europe and facilitate their integration into their new society.

This thesis contributes to the information systems (IS) community's discussion of how to use different ICT solutions to promote the social inclusion of refugees in their new communities with the aim of achieving an inclusive society. In particular, this thesis offers an in-depth appreciation of the effects of ICTs on refugees' social inclusion. We believe that highlighting the beneficial uses of mobile applications, social media, and other ICT-enabled solutions is an essential step towards integrating refugees, both economically and socially. Moreover, our findings can inform governments, businesses, locals, and other stakeholders in their efforts to find new ways to enable the social inclusion of refugees and migrants.

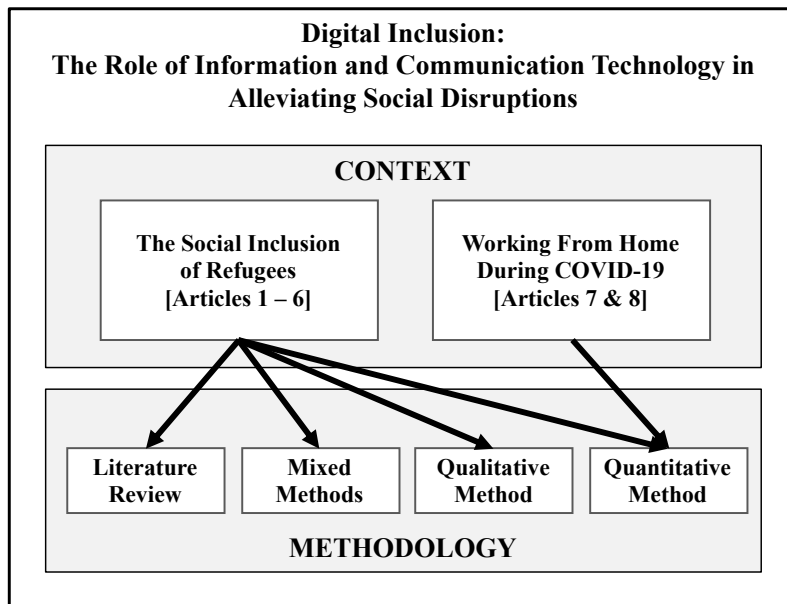
This thesis also contributes to the body of research on COVID-19. As a result of the lockdown measures introduced by many governments to contain the spread of the coronavirus, many workers have had to fulfill their work duties from home. Several ICT solutions and services have enabled this "unusual" work setting. Those working from home have intensively used ICT-enabled solutions during the COVID-19 pandemic. We investigated how employees have coped with the sudden move towards working from home caused by the unprecedented spread of COVID-19 worldwide. Moreover, it is essential that the digital technologies used while

working from home are designed and used to ensure inclusiveness, especially in times of crisis. To this end, we follow the research agenda proposed by Venkatesh (2020), who called for research to be conducted in different areas in the time of COVID-19—for example, topics that have impacts on life, such as employment and work–life conflicts. Venkatesh (2020) states that performing research and collecting data from different groups of subjects during COVID-19 “will provide us with a critical contextual understanding, including potential boundary conditions, of established theories” (p. 4), which will enable us to contextualize the impacts of COVID-19, develop theories and models, and help create new critical knowledge. This contribution is crucial because, although individuals have worked from home for decades, little information is available on working from home during crises. Due to the novelty of this social disruption, only initial findings could be derived, that have been published in journal and conference articles. We are motivated to pursue with our ongoing project on the topic to derive more insights and findings.

**Personal Motivation.** I would also like to emphasize that this research is appealing for me as an IS scholar because I have been actively involved as a volunteer since the early days of the refugee crisis in Berlin. This enabled me to deeply understand the challenges refugees face on their path to settle and integrate into German society. My experiences during my volunteer work showed me the immense value of social networks and other ICT services in facilitating refugees’ integration into their host societies, bearing in mind the cultural differences between their cultures and the new ones. As a member of German society with an immigration background, I can bridge the gap between the two cultures and apply research methods to develop a scientific approach to connect newcomers with German society and support their integration process through technology. Therefore, I decided to investigate this case and identify best practices using quantitative and qualitative research methods. This effort began in March 2016 and was the basis for the project “Digital Integration” at the chair of Social Media and Data Science at the University of Potsdam in Germany. While I called for inclusive societies through my research, the COVID-19 pandemic hit most regions of the world, forcing me—and many workers worldwide—to work from home. This unconventional work setup raised several challenges, among them social inclusion. This motivated me to initiate a task force of four IS researchers to investigate this topic. In the rest of this thesis, I use the plural pronoun in appreciation of the work done by my collaborators on the various research projects that contributed to my dissertation.

## 1.2. Scope and Research Questions

We studied the use of ICT services for social inclusion in the context of two social disruptions: refugees in Germany and the COVID-19 pandemic. We present an overview of the research structure of this thesis in Figure 1.



**Figure 1: Thesis Overview and Used Research Methods**

In the research for this dissertation, we discuss how ICT can support individuals and societies in regions across the world. On the one hand, we focus on the role ICT plays in refugees’ journeys to safety, temporary stays in settlement camps, and post-settlement inclusion in host countries. On the other hand, we investigate the role of ICT use in the context of WFH during COVID-19 and its effects on workers’ performance and productivity.

### *The Context of Syrian Refugees in Germany*

Although all migrants can benefit from ICT-enabled solutions during their immigration journeys and adjustment to a new country, we mainly focus on refugees and asylum seekers in our research. To contextualize our research for the reader, we next distinguish among the terms applied to those who are compelled to leave their home country for various reasons and define migrants, immigrants, refugees, and asylum seekers based on their legal status.<sup>1</sup>

- **Migrant** is an umbrella term not defined under international law that reflects the common lay understanding of a person who moves away from his or her usual place of residence, whether within a country or across an international border, temporarily or permanently and for a variety of reasons. The term includes people in a number of well-defined legal categories, such as migrant workers and persons whose particular types of movements are legally defined, such as smuggled migrants, as well as those whose status or means of movement are not specifically defined under international law, such as international students.
- **Immigrants** are persons born abroad who have come to settle in a country, regardless of their legal immigration status or whether they have become citizens of that country.

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<sup>1</sup> Adapted from <https://disasterphilanthropy.org/disaster/southern-border-humanitarian-crisis/>, as cited in AbuJarour et al. (2020).



- A **refugee** is someone who has been forced to flee his or her country because of persecution, war, or violence. A refugee has a well-founded fear of persecution on the basis of race, religion, nationality, political opinion, or membership in a particular social group.
- The term **asylum seeker** describes someone who has applied for protection as a refugee and is awaiting a status determination. Asylum seekers can become refugees if the local immigration or refugee authority determines that they fit the international definition of a refugee.

Against this background, we launched the discussion with the goal of initiating discourse and deliberation by experts on how the knowledge accumulated by the IS community can be leveraged to design targeted technological solutions to tackle the refugee crisis and avoid potential risks. We began with a panel discussion at the International Conference of Information Systems (ICIS) in Dublin, Ireland, in December 2016 (AbuJarour et al., 2016). At that time, despite the urgency and potential risks of the refugee crisis, there was little consensus among stakeholders regarding the type of technological solutions that should be used to aid refugees' integration, as well as disagreements over how such solutions could be deployed in an adaptive and culturally sensitive manner. Our discussion served as a call for action that motivated further investigation of the topic, resulting in novel research articles (e.g., AbuJarour and Krasnova, 2017; AbuJarour et al., 2019b, 2020a) and dedicated conference tracks in major IS venues (e.g., AbuJarour et al., 2019; Fedorowicz et al., 2020).

The insights gathered from that panel discussion form one of the cornerstones of this thesis, which starts by defining its desired goal: the social inclusion of refugees, which implies a further step towards an inclusive society. We propose using ICT solutions to promote the social inclusion of refugees in their new communities so that they feel able to create new lives and head towards a brighter future. The lion's share of this thesis consists of our research papers explaining how ICT solutions can foster inclusion. Then, we discuss one of the achievements of ICT use to promote social inclusion, namely, digital education.

In the context of Syrian refugees in Germany, we examine the following research question:

- **What is the role of ICT in refugee social inclusion, and how can ICTs promote better integration and social inclusion of refugees in their host societies?**

Through a detailed literature review and quantitative and qualitative studies, we gained an in-depth understanding of how refugees use ICT solutions for various purposes. We used this understanding to assess the current state of knowledge on ICT-enabled refugee integration and thus formulate an agenda for future research.

In the context of this thesis, we chose to focus on the population of Syrian refugees living in Germany for two reasons. First, Germany is the destination for the greatest number of asylum seekers in Europe, and second, Syrian refugees represent the largest group of asylum seekers in Germany (UNHCR, 2020).

Figure 2 shows an overview of the connections between the published research articles on ICT use in the context of refugees in Germany.

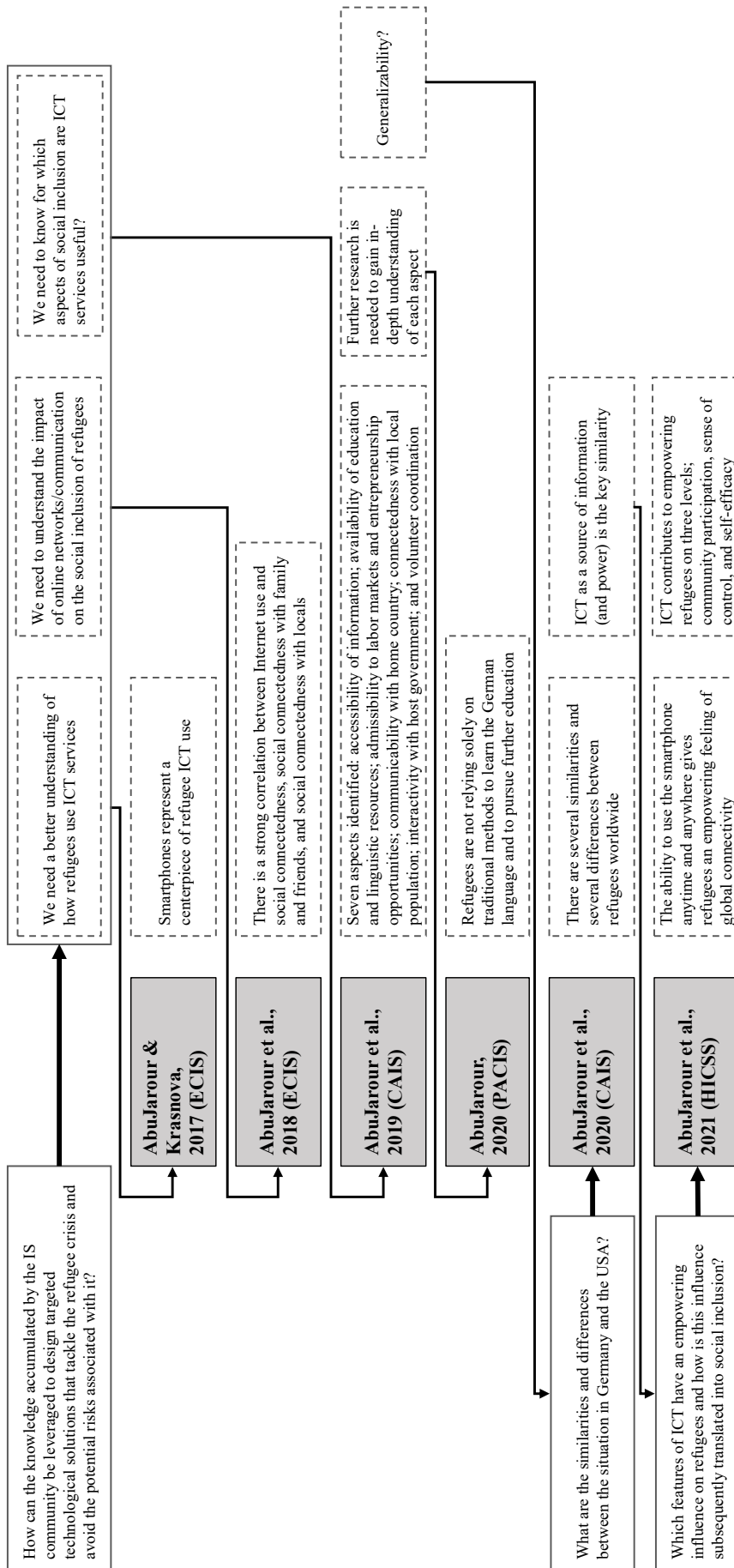


Figure 2. Overview of Connections Between Research Articles on Refugees in Germany

### *The Context of Working From Home During COVID-19*

We were motivated to conduct this research by the further lockdowns expected to happen soon (World Health Organization [WHO], 2020). Many reports have observed the situation to assess the likelihood of further waves of the pandemic (Heise, 2020), while others have discussed the “new normal” in the context of COVID-19 (Buheji et al., 2020). While IS research on this topic is not directly related to solving the COVID-19 crisis, our study could fulfill the essential need of providing “knowledge and insights that might be helpful in the fight against COVID-19 and during future pandemics” (Ågerfalk et al., 2020, p. 203).

Researchers—and IS researchers in particular—identified this field early and began applying research methods to alleviate this global social disruption. Key researchers such as Venkatesh (2020) have even made calls for action. Several studies have analyzed all aspects of this new situation, such as the new online- and home-centered life. Recent relevant studies (e.g., Pan et al., 2020) have observed that the rapid lockdown produced significant challenges for all members of society due to the pressure to adapt to this new lifestyle.

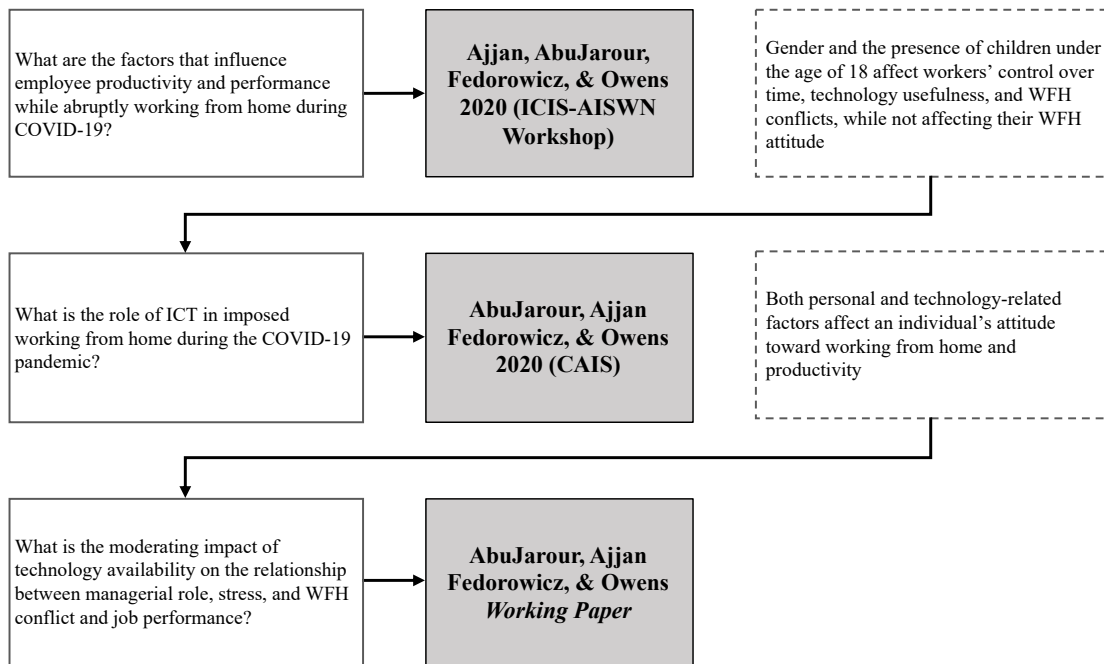
We contribute to this topic by investigating how ICTs can be employed while working from home to alleviate the current COVID-19 crisis. Against this background, our research examines aspects of the work from home (WFH) environment, documenting workers’ characteristics, the role of technology in enabling work, and the personal challenges and perspectives of workers trying to cope with competing work and home demands.

The research conducted for this dissertation in the context of the COVID-19 pandemic investigates the following research question:

- **What is the role of ICT in imposed WFH during the COVID-19 pandemic, and what are the factors that influence employee productivity and performance while working from home during the mandate to self-isolate?**

Due to the novel context of working from home during COVID-19, we are able to report only on our initial findings published in [Articles 7 and 8]. Our findings motivated us to continue our research on this topic. In future research, we plan to apply time- and boundary-spanning theories to investigate scheduling, personal factors, and home situations that may influence academic WFH productivity and performance. We plan to examine factors (including those linked to technology) that contribute to increased stress levels when academics WFH. Furthermore, we plan to assess whether the availability of specific technologies affects academics’ performance and productivity.

Figure 3 presents an overview of the connections between published research articles and our work under review on ICT use in the context of WFH during COVID-19.



**Figure 3. Overview of Research Articles on Working From Home During COVID-19**

### 1.3. Structure of the Thesis

This dissertation consists of two parts: the research summary (Part I) and the papers that form the dissertation (Part II).

Part I introduces the research field in Chapter 1, discussing the overall motivation, introducing the scope and research questions, and outlining the structure of the thesis. Next, the research context and related work are presented in Chapter 2, which focuses on the role of ICT in the context of refugee social inclusion and WFH during COVID-19. We then summarize our key research findings in Chapter 3 by providing an overview of each paper in the dissertation. Part I is concluded in Chapter 4 with a discussion of the theoretical and practical contributions of the thesis.

Part II lists the research articles that have been published in the context of this dissertation. The papers have been reformatted for consistency in presentation in terms of font styles and sizes. Lists of figures and tables are provided at the beginning of this dissertation.

## 2. Research Context and Related Work

At the times of social disruptions, we are confronting many confusions and consternation, which might contribute to feelings of anxiety, distress, and exclusion. Therefore, collective efforts of all society members are needed to alleviate the negative sides of social disruptions. In this context, social inclusion is proposed as a lens to direct our research activities.

The concept of social inclusion has become recently increasingly prominent within different disciplines and research areas (Jansen et al., 2014). Social inclusion can pertain to a variety of areas, e.g., economic, social, cultural, demographic, or geographical (Gidley et al., 2010). In trying to clarify concepts of social inclusion, definitions should include an explicit focus on the hidden conditions imposed by social norms (Davey & Gordon, 2017). For instance, Gidley et al. (2010) point to social inclusion on different three levels; neoliberal access, social justice participation, and human potential empowerment.

To gain an overview of the social inclusion theories, we searched for literature that provide theoretical foundations and introduce constructs of social inclusion. Using Google Scholar, we searched for research articles on the topic of social inclusion theory. We used keywords like: “social inclusion + theory”, “social inclusion + theoretical”, and “social inclusion + conceptual.” We were mainly looking into the constructs that consist the social inclusion theory. We started by analyzing the abstracts to refine our results. Then we went deeper into the articles to identify relevant articles, which we summarize in Table 1.

Essentially, the understanding of social inclusion needs to be broadened (Cobigo et al., 2012) to include variety of contexts and areas. Liscandru and Cui (2018) define subjective social inclusion as a multi-dimensional construct comprising of acceptance, belongingness, empowerment, equality and respect. On a similar level, Jansen et al. (2014) consider social inclusion as a hierarchical two-dimensional concept consisting of perceptions of belonging and authenticity. Mostly, social inclusion is achieved through increased opportunities to interact with others and the expansion of one’s social capital. This includes belonging to a social network, maintaining relationships to others (at home, at work, etc.), and acquiring informal support when needed (Jansen et al., 2014; Liscandru & Cui, 2018; Martin & Cobigo, 2011; Wilson, 2006).

Moreover, participation in a community, trying to achieve equity and feel the acceptance from one’s surrounding is one of the main social inclusion drivers (Cobigo et al., 2012; Liscandru & Cui, 2018; Martin & Cobigo, 2011; Wilson, 2006; Wright & Stickley, 2012). However, social inclusion is achieved by concentrating not only on engaging in a community, but also on the improving individuals’ characteristics. For instance, being a competent individual, engaging in productive activities, moving towards achieving empowerment, and ensuring the leisure of individuals (Cobigo, Virginie, et al., 2012; Jansen et al., 2014; Liscandru & Cui, 2018; Martin & Cobigo, 2011; Wright & Stickley, 2012). It is worth mentioning that several researchers indicated the importance of considering the economic and culture inclusion as vital dimensions for social inclusion (Cobigo et al., 2012; Gidley et al., 2010; Liscandru & Cui, 2018; Martin & Cobigo, 2011; Raffo & Gunter, 2007; Wright & Stickley, 2012).

**Table 1. Summary of Literature on Social Inclusion Theory**

Authors	Context	Methodology	Construct				
			Community Participation	Social Capital	Individual Factors	Economical Aspects	Cultural Inclusion
Cobigo, Virginie, et al. (2012)	People with Disabilities	Synthesis Review	X	X	X		X
Davey and Gordon (2017)	Mental Health	Conceptual Analysis		X			
Gidley et al. (2010)	University/Community Engagement	Literature Review		X		X	X
Jansen et al. (2014)	Psychology	Online Questionnaire		X	X		
Liscandru and Cui (2018)	Marketing	Conceptual Analysis	X	X	X		X
Martin and Cobigo (2011)	People with Disabilities	Retrospective Analysis	X	X	X		X
Raffo and Gunter (2007)	Education	Literature Review				X	X
Wilson (2006)	Socio-economic Disadvantaged	Literature Review / Survey	X	X			
Wright and Stickley (2012)	Mental Health	Literature Review	X		X		X

In our research on social disruptions caused by the refugee crisis and COVID-19, we are interested in investigating which constructs contribute to (1) the social inclusion of the refugees' population into the host society, and (2) feeling more included into the workplace while working from home. The research done for this thesis contributes to the theorization of social inclusion by investigating the social inclusion in two contexts: refugees [Articles 1-6] and workers from home [Articles 7 and 8].

This chapter presents the research context to show how this dissertation fits into the scope of related social inclusion research. The discussion of the research context is organized into two sections: Section 2.1 highlights the role of ICT in the context of refugee social inclusion, and Section 2.2 highlights the role of ICT in the context of WFH during COVID-19.

## 2.1. The Role of ICT in Refugee Social Inclusion

We began by conducting a systematic literature analysis to investigate how topics related to social inclusion and exclusion, refugees, and immigrants have been tackled in top IS journals. The list of journals included the Senior Scholars' Basket of Journals<sup>2</sup> introduced by the Association of Information Systems (AIS). We consider this particular list because these journals are highly ranked in the field of IS and have high impact factors. The considered journals are (in alphabetical order): European Journal of Information Systems (EJIS), Information Systems Journal (ISJ), Information Systems Research (ISR), Journal of the Association for Information Systems (JAIS), Journal of Information Technology (JIT), Journal of Management Information Systems (JMIS), Journal of Strategic Information Systems (JSIS), and MIS Quarterly (MISQ).

We developed a comprehensive list of related keywords, which we used to identify related research articles. Our list of keywords was as follows: *social inclusion, social integration, social inclusiveness, social cohesion, inclusive society, society integration, society inclusion, society cohesion, digital inclusion, digital integration, digital exclusion, social exclusion, social isolation, refugee, asylum seeker, asylum-seeker, immigrant, migrant, and newcomer.*

The literature review was conducted in November 2020. Whenever possible, we used the outlet's advanced search settings to query all publications that contained one of the predefined keywords in the title, abstract, or keywords. If no search settings allowed for such requests, the request was modified to query all publications that contained one of those keywords anywhere in the article, either in the outlet's database or on Google Scholar. The search requests used the following structure: ["Asylum seeker" source: "European Journal of Information Systems"]. All resulting publications were then scanned for the respective keyword in the document. If the keywords appeared in the title, abstract, or keywords of a publication, we considered the paper to have met our requirements and added it to our list.

Our search resulted in 26 hits: 24 research articles and two editorials, the latter of which were later removed from the final results because we tackle theoretical and methodological articles. We individually checked all 24 articles to determine the context of each paper and its relevance to the research topic (social inclusion or exclusion of refugees and immigrants). We found that 21 papers were in different research contexts (e.g., organizations and the workplace, children, online communities, smartphone gaming). Table 1 shows the results of our search. Only three articles fell within the scope of our research area, which we analyze next.

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<sup>2</sup> <https://aisnet.org/general/custom.asp?page=SeniorScholarBasket>

**Table 2. Results of Literature Search in Top IS Journals on Social Inclusion / Refugees**

Context	Authors	Title	Journal
Social Inclusion / Refugees	Díaz Andrade & Doolin, 2019	Temporal enactment of resettled refugees' ICT-mediated information practices	ISJ
	Haj-Bolouri et al., 2016	How Habermas' Philosophy Can Inspire the Design of Information Systems	ISR
	Díaz Andrade & Doolin, 2016	Information and Communication Technology and the Social Inclusion of Refugees	MISQ
Digital Inclusion / Divide (disabilities, children, natives, health)	Newman et al., 2017	Applying a critical approach to investigate barriers to digital inclusion and online social networking among young people with disabilities	ISJ
	Iivari et al., 2018	Exclusions in social inclusion projects: Struggles in involving children in digital technology development	ISJ
	Vodanovich et al., 2010	Digital Natives and Ubiquitous Information Systems	ISR
	Fox & Connolly, 2018	Mobile health technology adoption across generations: Narrowing the digital divide	ISJ
	Díaz Andrade & Techatassanasoontorn, 2020	Digital enforcement: Rethinking the pursuit of a digitally-enabled society	ISJ
Online Communities	Campbell et al., 2009	Conflict and identity shape shifting in an online financial community	ISJ
	Kraut et al., 2008	Beyond Information: Developing the Relationship between the Individual and the Group in Online Communities	ISR
	Ren et al., 2012	Building Member Attachment in Online Communities: Applying Theories of Group Identity and Interpersonal Bonds	MISQ
Governmental Context	Grimsley & Meehan, 2007	e-Government information systems: Evaluation-led design for public value and client trust	EJIS
	Maldonado, 2010	The Process of Introducing FLOSS in the Public Administration: The Case of Venezuela	JAIS
Organization / Work Context	Aladwani, 2002	An empirical examination of the role of social integration in system development projects	ISJ
	Lyytinen et al., 2016	Digital product innovation within four classes of innovation networks	ISJ
	Annabi & Lebovitz, 2018	Improving the retention of women in the IT workforce: An investigation of gender diversity interventions in the USA	ISJ
	Saldanha et al., 2020	Turning Liabilities of Global Operations into Assets IT-Enabled Social Integration Capacity and Exploratory Innovation	ISR
	Riemer & Klein, 2008	Is the V-form the Next Generation Organisation? An Analysis of Challenges, Pitfalls and Remedies of ICT-enabled Virtual Organisations Based on Social Capital Theory	JIT
	Carillo et al., 2017	What makes a good contributor? Understanding contributor behavior within large Free/Open Source Software projects – A socialization perspective	JSIS
	Silva & Hirschheim, 2007	Fighting Against Windmills Strategic Information Systems and Organizational Deep Structures	MISQ
	Ludwig et al., 2014	Take Their Word For It: The Symbolic Role of Linguistic Style Matches in User Communities	MISQ
Others (IS, Blockchain, ICT and Mobility, Gaming)	Vidgen et al., 2007	What sort of community is the European Conference on Information Systems? A social network analysis 1993–2005	EJIS
	Rieger et al., 2019	Building a Blockchain Application that Complies with the EU General Data Protection Regulation	MISQ
	Chen et al., 2020	Decreasing the problematic use of an information system: An empirical investigation of smartphone game players	ISJ



Díaz Andrade and Doolin's (2016) work investigating the role of ICT use in social inclusion of refugees in the current refugee crisis harmonized well with our research—for instance, their emphasis that the social inclusion of newly resettled refugees is a significant issue that confronts both refugees and their host societies (Díaz Andrade & Doolin, 2016). The authors also investigated how ICT use contributes to refugees' social inclusion. In the context of resettled refugees in New Zealand, they identified five valuable ICT-derived capabilities: participation in an information society, communicating effectively, understanding a new society, social connectedness, and expressing cultural identity (Díaz Andrade & Doolin, 2016). We identified similar capabilities in the context of Syrian refugees in Germany, as shown in [Article 1]. Furthermore, our research findings resulted in expanding the capabilities enabled by ICT to include social connectedness, effective telecommunication, safety and emergency services, mobility, translation services, participation in an information society, communication with the government, participation in educational programs, crowdsourcing, and maintaining a cultural identity, as illustrated in [Article 1].

In a follow-up study, Díaz Andrade and Doolin (2019) investigated common patterns of ICT use among refugees, including learning about a new environment, keeping informed, transacting online, communicating with others, managing everyday life, sustaining support networks, maintaining transnational ties, and expressing cultural identity. Similarly, we identified ICT usage patterns among Syrian refugees in Germany, as shown in [Article 2]. Mainly, we found that refugees' ICT use enabled them to maintain social connectedness with family and friends back home and with the local community. In addition, we analyzed the effects that this social connectedness had on their social inclusion, particularly with respect to their agency (social networking, employment, education and learning, culture, health, government and citizenship, and housing) and well-being (positive affect and self-assurance), as illustrated in [Article 2]. Moreover, we introduced future opportunities for theorizing by discussing how IS researchers can enhance existing theories or develop new theories for ICT design and use in the refugee context [Article 3]. As a desired outcome, we introduced a research model that differentiates between ICT usages (Internet, smartphone, and social media) as causal conditions of refugee empowerment (including community participation, control, and self-efficacy). Also, we discussed how refugee empowerment could lead to achieving social inclusion benefits (in terms of agency and well-being) [Article 4].

Our further research derived guidelines to design ICT solutions to facilitate social inclusion. In this context, our findings recommend using digital and open learning to provide mass learning opportunities to refugees while optimizing overall costs [Article 5]. We also recommend adapting the design of ICT services to refugees' needs [Article 6]. Haj-Bolouri et al.'s (2016) research validates our recommendations based on a use case in Sweden. Specifically, they investigated inspirations for the design of IS services and the requirements for a web-based open learning platform to afford social integration. Interestingly, their research extended an open learning platform that had previously been developed for civic orientation in Sweden with the goal of designing a more inclusive open learning platform for social integration. They concluded that web-based open learning platforms are one means of achieving the social integration of immigrants and refugees (Haj-Bolouri et al., 2016).

We position our research for this thesis within the boundaries of the IS field and following previous research by fellow scholars Díaz Andrade and Doolin (2016, 2019) and Haj-Bolouri et al. (2016). We appreciate the knowledge generated by previous research, particularly as it provides the foundations for our work. In essence, we build on the knowledge, findings, and perspectives of (among others) these three research articles to expand the knowledge on ICT usage to promote the social inclusion of refugees. In particular, our research extends previous research along the following dimensions: context, integration stage, asylum process, living conditions, employment status, ICT literacy, support for ICT infrastructure, ICT communication channels, sample, and refuge journey, as shown in Table 2. Finally, we discuss the dark and bright aspects of ICT usage by refugees and immigrants with regard to the integration process [Article 6], aiming to move towards the generalization of constructs and models of ICT use for the social inclusion of refugees and to contribute to the recent movement to make the digital inclusion of immigrants and refugees more visible in the IS community.

The corresponding findings of our research activities compared to previous research are presented in Chapter 3.

**Table 3. How Our Research Expands on Previous Research**

<b>Dimension</b>	<b>Previous Research:</b> (Díaz Andrade and Doolin, 2016; 2019; Haj-Bolouri et al., 2016)	<b>Our Research</b>
<b>Context</b>	New Zealand and Sweden, respectively	Germany, with different rules and regulations being applied compared to other countries.
<b>Integration Stage</b>	Refugees are already engaged in integration opportunities	We included refugees from different integration stages based on their arrival to the host country: <ul style="list-style-type: none"> <li>• Beginner: 6-12 months after arrival</li> <li>• Intermediate: 1-3 years after the arrival</li> <li>• Advanced: longer than 3 years after the arrival</li> </ul>
<b>Asylum Process</b>	Refugees have already been resettled	We included refugees from different stages of the asylum process: <ul style="list-style-type: none"> <li>• During the early application process</li> <li>• Applied and still waiting for the final decision</li> <li>• Received the confirmation on their application (either with 1 year or 3 years residency)</li> </ul>
<b>Living Conditions</b>	Participants received statehouses and have access to government support services	We included refugees in different living conditions: <ul style="list-style-type: none"> <li>• Living in shelters and camps</li> <li>• Living in a shared but private residence</li> <li>• Living in non-shared apartments (with family)</li> </ul>
<b>Employment Status</b>	Most participants were employed	The majority of our participants are still unemployed and cannot resume their career or educational paths until they receive their residence permit or prove proficiency in the local language.
<b>ICT Literacy</b>	Most participants had no or very limited ICT knowledge	Most of our participants have advanced knowledge of ICT and possess smartphones.
<b>Support for ICT Infrastructure</b>	Additional ICT equipment has been purchased for the participants and their family members	Our respondents have invested a lot of money to buy their smartphones. However, they often lack basic infrastructures, e.g., Wi-Fi connection at residences, laptops, etc.
<b>ICT Communication Channels</b>	The email was the primary communication tool.	Our respondents heavily use Social Media applications, WhatsApp, Facebook, and other emerging ICTs. Most of this use is smartphone-based.
<b>Sample</b>	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.
<b>Refuge Journey</b>	Mostly, participants arrived via legal ways	The majority of our participants arrived via illegal means and went through a tough and risky journey by crossing the borders of many countries from Syria to Germany for over a month on the road.

### *2.1.1. Social Inclusion of Refugees*

The social inclusion of underrepresented and underserved groups, often referred to as vulnerable groups, has gained significant attention in different fields in recent decades. However, there is no unified definition of social inclusion across disciplines and contexts. Researchers have introduced several definitions that view this concept from several aspects. For instance, 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). In the case of refugees, we adopt Wilson and Secker’s (2015) definition, who describe social inclusion as “having the resources and opportunities to participate fully in economic, social, and cultural life” (p. 52).

In our research, we tackle the social inclusion aspect through the IS lens, through which social inclusion is considered the effort invested “to develop a greater understanding about aspects of human diversity as they relate to underrepresented and underserved groups in relation to the development, deployment, management, use, and impact of information systems and technologies” (Trauth, 2017, p. 10). By applying this view, we can examine how ICT could be employed to foster and promote the social inclusion of refugees in their host societies, which addresses our initial research question.

For refugees, social inclusion is a multifaceted concept that consists of refugees’ perceptions of well-being and sense of agency (Díaz Andrade & Doolin, 2016), where agency refers to the freedom to set and pursue one’s own goals and interests (Sen, 1985). In contrast, personal well-being describes one’s own quality of life (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 their new environment.

In the context of refugees in Germany, Esser (2001) addressed inclusion from a higher-level perspective, namely the point of view of integration. He defines integration as the inclusion of actors in a given society through (for instance) the granting of certain rights, the improvement of language skills, participation in educational systems and labor markets, the emergence of social acceptability, the initiation of inter-ethnic relations, participation in public and political life, and emotional identification with the receiving society (Esser, 2001, p. 8). Thus, he views integration as having two main streams: system integration and social integration. The former describes the cohesion of a social system in its entirety, whereas the latter refers to the inclusion of the actors or groups within it. Esser (2001) suggests that collective identification with the respective society can only be expected if belonging to it is also experienced as profitable, especially compared to possible alternatives. An important prerequisite here is its embeddedness in social relationships that are experienced as enjoyable and otherwise interesting. This can only happen if the necessary cultural skills, especially linguistic skills, are mastered and if the relevant contacts are also experienced as attractive by potential partners.

The social inclusion of refugees is the primary goal of governmental efforts and a major area of concern for participating stakeholders. As such, the notion of social inclusion goes beyond a

simple rejection of exclusion and encompasses the goal of granting opportunities to people to settle, integrate, and prosper in the new environment. Social inclusion has a powerful impact on individuals' health and on the cohesion of society (Waddell & Burton, 2006). It is a bilateral social process in which newcomers secure their place in the social networks of the host society, while incumbents provide them with ample space and opportunity to do so. Hence, in the context of our research, social inclusion is a two-way process that places demands on both refugees and host societies.

On the international level, research has revealed several aspects that contribute to the social inclusion of any group in a particular community:

- Social contacts with friends, family, and community groups make individuals feel connected, cared about, and part of a community (Board, 2012). Such participation is essential for creating a sense of belonging and identity (Flanagan et al., 2006; Sánchez-Franco et al., 2015). There are two types of social networks in terms of the social connectedness of refugees: (1) social connectedness with family and friends back home and (2) social connectedness with the local population in the host country. Although networks with locals can promote a sense of belonging among refugees, engagement with family and friends back home is also important, as it contributes to feelings of being settled and potentially supports engagement in the local community and society more broadly (Aumüller & Bretl, 2008; Beiser et al., 2015).
- Social networks can provide emotional support, especially in times of challenges. They can prevent someone from slipping into multiple disadvantages when one crisis (e.g., unemployment) occurs (Board, 2012). For refugees, a social network offers practical and emotional support and is important for social inclusion (Beirens et al., 2007).
- Equal access to quality education, educational achievements, and language learning enables social inclusion and improves well-being (Stanley et al., 2011), which in turn leads to an inclusive society (Berman & Phillips, 2000; Council of Europe, 2001; Farrington & Farrington, 2005). Research has shown that active participation in education and language learning is essential to refugees' successful integration (Ives, 2007). Due to the importance of speaking the local language, refugees are often required to attend language courses upon arrival (Ager & Strang, 2008; Aumüller & Bretl, 2008; Yu et al., 2007). However, the main barriers that hinder refugees' participation in education and language learning are legal formalities and limitations, as well as a lack of information about the host country's education system (Ager & Strang, 2008; Morrice, 2007; Papillon, 2002).
- Active participation in the labor market, access to paid employment, equal opportunity in the labor market, and high-quality employment (Ives, 2007) are essential for social inclusion. Employment is vital in promoting economic independence, planning for the future, restoring self-esteem, and encouraging self-reliance (Ager & Strang, 2008). It enables refugees to attain economic self-sufficiency, regain a positive sense of identity, and assume control over their lives (Beiser et al., 2015; Fozdar & Hartley, 2013).
- Access to and participation in cultural activities are essential for social inclusion, as they make people feel welcome in society, improve their well-being (Farrington & Farrington, 2005; Stanley et al., 2011), and enhance their understanding of the host

country's culture (Ives, 2007; Stewart et al., 2011), all of which support their social inclusion.

Previous research has identified many other factors that contribute to the social inclusion of refugees in host countries, including access to good health, high life satisfaction, and healthcare services and information (Atkinson et al., 2004; Berman & Phillips, 2000; Board, 2012; Farrington & Farrington, 2005; Saunders, 2013; Stanley et al., 2011). Having citizenship status or a residence permit—and therefore access to political, social, and civic rights—leads to social inclusion (Council of Europe, 2001; Farrington & Farrington, 2005) and promotes a sense of safety and security in one's new country (Ager & Strang, 2008; Haggis & Schech, 2010), as does having adequate and appropriate housing in a civilized, stable neighborhood, including a stable home, affordable housing, and equal access to housing (Atkinson et al., 2004; Board, 2012; Hutchinson & Lee, 2004; Huxley et al., 2008).

We investigated the introduced social inclusion components through qualitative and quantitative research and identified the core attributes of social inclusion for refugees in Germany and how ICT enables them to achieve these attributes. The refugee crisis in Germany has revealed that several European governments are not yet ready to handle crises, not only with respect to local logistics (e.g., shelters, healthcare) but also in terms of processes and services (e.g., asylum applications, social integration; Schrieck et al., 2016). Most of these are still paper-based processes, with no proper communication channels between involved governments across borders or even in the same country (AbuJarour et al., 2016). There is a clear need for significant improvement in citizen services through digital transformation in Europe, especially Germany. For instance, ICT services could be used by involved governmental offices to exchange data, thus speeding up the asylum process and reducing the amount of manual work required. Against this background, we introduce the use of ICT by refugees and how it could alleviate the refugee crisis by fostering social inclusion capabilities.

### *2.1.2. ICT Use by Refugees*

With the amount of forcefully displaced people reaching record numbers, there is a pressing need for more research on how emerging technologies can be used to address the short- and long-term challenges of social inclusion. As described earlier, refugees struggle with a range of issues before and after their arrival in host countries, including learning a new language, overcoming their disrupted education, negotiating family relationships, and dealing with discrimination (Correa-Velez et al., 2010; Gifford & Wilding, 2013; Gifford et al., 2009; McMichael et al., 2011). Moreover, they face the double challenge of finding ways to maintain existing relationships with family and friends at home and establishing new social ties in their host country (Damian, 2014).

ICTs can play a significant role in addressing these issues (Díaz Andrade & Doolin, 2016). The Internet has changed how refugees interact, helping them to overcome time and distance (Navarrete & Huerta, 2006). ICTs have emerged as the main method of fulfilling the need for connection to social groups through the new capabilities for communication that they create (Christensson, 2010). Especially in cases of forced migration, ICT-enabled tools and solutions

are vital in assisting people on their journeys—for instance, communicating with social networks, locating and requesting help, and ensuring general safety during the risky journey to the destination country (Gillespie et al., 2018). Therefore, smartphones are considered the only tool that will help immigrants reach the destination country (Brunwasser, 2015). In some cases, lack of mobile phone coverage could lead to dangerous threats, thus, connections with previous migrants who know the route to Europe are crucial in the migration journey (Dekker et al., 2016). Many refugees rely mainly on mobile-based ICTs, with smartphones emerging as an instrumental piece of technology in the process of building new lives in host countries (Fitch, 2016). In general, ICTs play a unique role in refugees' lives. Today's refugees are the most tech-savvy population of migrants in history, with smartphone penetration rates of up to 90% (Maitland & Xu, 2015; Rutkin, 2016) and an unprecedented reliance on ICT tools (Mason & Buchmann, 2017). Researchers have shown that refugees typically use ICTs—in particular, smartphones and social media—during their journeys to host countries as well as after their arrival for integration and social inclusion purposes (Díaz Andrade & Doolin, 2016; Fitch, 2016; Mason & Buchmann, 2017; Ramadan, 2017).

However, little has been done to investigate the role of ICTs in the current refugee crisis and to identify meaningful offerings to serve as refugees' interaction points with the local population. This gap could be filled by ICTs (e.g., mobile apps, matching platforms, social startups; Choudrie et al., 2017; Díaz Andrade & Doolin, 2016). We believe that the unique characteristics of the current refugee population lie in their use of ICTs as an enabler of social inclusion. In this section, we are interested in uncovering how ICTs can help overcome the social inclusion challenges introduced by the current and particular situation of the refugee crisis.

Modern ICTs can be the right tool to promote integration and social inclusion, enhance well-being, and promote an individual sense of agency (Díaz Andrade & Doolin, 2016, 2019). For instance, social networking sites (SNSs) are one of the main ICTs used by migrants during their journeys and after reaching their country of destination. SNSs are no longer simple personal tools used for entertainment but have rather evolved into a key source of information; a primary way for refugees to communicate with their families; and a tool to access services such as translation, guidance, and navigation facilitation and learn about legal and organizational structures in the host country (Díaz Andrade & Doolin, 2016; Schreieck et al., 2017a). Online groups that have been created on SNSs like Facebook and WhatsApp (Gillespie et al., 2016) have helped migrants report their migration journeys, routes, transportation, risks, and helpful advice (Dekker et al., 2016), which could help future migrants in their journeys to destination countries.

Refugees' reliance on SNSs and other ICTs has increased due to factors related to forced migration from conflict zones and the needs to communicate with (geographically dispersed) families and friends, collect information, and seek assistance during migration journeys (Dekker et al., 2016; Gillespie et al., 2016). In this context, refugees' social networks represent trustful and reliable environments which they can call upon for support whenever needed. These networks typically consist of family members and friends. The larger and more diverse one's network, the more reliable it is. Thus, using SNSs like Facebook is associated with better quality of social relationships among migrants, both in home and host countries (Damian, 2014; Lee et

al., 2016; Ogan & Ozakca, 2010). These social networks contribute to decision-making regarding the choice of destination country based on the information and experiences of previous refugees who have arrived in host countries (Dekker & Engbersen, 2014; Dekker et al., 2016; Gillespie et al., 2016). SNSs help establish social ties that could not be otherwise achieved between refugees in the country of destination and prospective refugees who are still waiting to start their migration journey. It is important for refugees to expand their social networks via modern SNSs. Therefore, it is not surprising that refugees rely largely on SNSs to digitize and expand their social networks. SNSs appear to empower refugees by giving them space to speak about their experiences; present themselves to their community, friends, and host country; and enhance their feelings of “fitting in” (Gifford & Wilding, 2013; Nunn, 2010).

### *2.1.3. Digital Integration of Refugees Through Education*

Our research revealed key dimensions of refugees’ social inclusion through ICT (as shown in Figure 2). As education is one prominent example, we decided to investigate this aspect further.

One way to achieve an inclusive society is equal access to quality education, educational achievements, and lifelong learning (Berman & Phillips, 2000; Council of Europe, 2001; Farrington & Farrington, 2005). UNESCO (2005) has recognized education as a basic human right, with inclusion achieved through providing “access to free and compulsory education; equality, inclusion and non-discrimination; [and] the right to quality education, content and processes.” Therefore, education and language learning are among the main dimensions of social inclusion; these include individual literacy and numeracy as well as language and dialect skills (Australian Social Inclusion Board, 2012; Chan et al., 2014).

Providing refugees with access to education and opportunities to learn the local language is among the highest priorities for refugee integration and social inclusion (Da Costa, 2006; Eurostat, 2018; Stanley et al., 2011). A good command of the local language is essential to successful social inclusion; thus, refugees are encouraged to attend language courses upon their arrival (Ager & Strang, 2008; Yu et al., 2007). Eurostat (2018) indicates that “mastering the host country language is the single most important skill refugees need for integrating into the host country” (para 1). Thus, refugees are often required to attend language courses upon their arrival (Ager & Strang, 2008; Yu et al., 2007). Learning and speaking the local language is not only crucial for daily interactions with the host society but is also a requirement for almost all integration activities—for example, finding a suitable job generally requires mastering the local language.

However, it is not always possible to access education and language learning opportunities in the host countries. Only 3% of refugees enroll in college or university; in comparison, the worldwide enrollment rate is 37% (UNHCR, 2019). Moreover, many refugees are still traumatized by their experiences fleeing their home country; others lacked the necessary “learning culture” and may never have attended school in their native countries (Jones, 2018). Here, ICT emerges as a way to alleviate these issues, with open online courses as a key tool.

Online courses have been growing in popularity and are attracting millions of online learners worldwide by providing easy and ready access to education (McAuley et al., 2010). ICT can



change the nature and improve the quality of teaching and learning (Reynolds et al., 2003). In particular, an open education approach seems relevant here because online modes of pedagogy are scalable and can empower learners with control over where, what, how, and with whom they study (Kop & Fournier, 2010). Empirical studies have revealed several reasons that digital education can work better for refugees—for example, not being affected or distracted by other group members; being able to repeat online lessons or review certain sections as many times as needed to grasp the knowledge; having the flexibility to plan learning according to their schedules and family situations (especially important because refugees frequently have official appointments that cannot be postponed); and pursuing education anytime and anywhere due to the mobility of open education (AbuJarour & Krasnova, 2017).

Many universities and educational institutions offer special courses for refugees to help engage them in the education system and prepare them to enter traditional educational programs at later stages. However, because refugees spend most of their time at language schools (which are obligatory after obtaining a residence permit in Germany), it is sometimes difficult to join (higher) educational programs. This highlights the necessity of e-learning and open education opportunities. For instance, Kiron Open Higher Education (<https://kiron.ngo/>) is an educational institution in Berlin that enables access to higher education and successful learning for refugees through digital solutions. Kiron University facilitates flexible access to higher education from any location. As of October 2020, it has more than 10,000 students from more than 45 countries of origin and 145 partner universities.

Research has shown that refugees prefer video and audio recordings for consuming e-learning material through ICT tools, such as smartphones (Schreieck et al., 2017b). There is an enormous number of channels that teach local languages through videos on YouTube in an easy-to-understand way, sometimes in the mother languages of refugees. One example of such a YouTube channel is that of Syrian refugee Deiaa Abdullah ([www.youtube.com/c/DeiaaAbdullah](http://www.youtube.com/c/DeiaaAbdullah)), who has 154,000 subscribers and a particularly popular playlist called “German minutes with Deiaa” that has reached millions of viewers. Another popular example is Syrian refugee Khaled Bozan, who has a YouTube channel ([www.youtube.com/user/SyrerInDeutschland/](http://www.youtube.com/user/SyrerInDeutschland/)) with 300,000 subscribers and more than 78 million views that teaches the German language and educates refugees about life and regulations in Germany.

In light of the above, we believe that online platforms should be designed to suit refugees’ requirements and expectations. Haj-Bolouri et al. (2016) have emphasized not only enabling communicative action but also the context where such action occurs, distinguishing between goals (e.g., social integration of immigrants) and the means of achieving those goals (e.g., a web-based open learning platform) in the design process.

Figure 4 gives an overview of our research performed in the context of social inclusion of Syrian refugees in Germany.

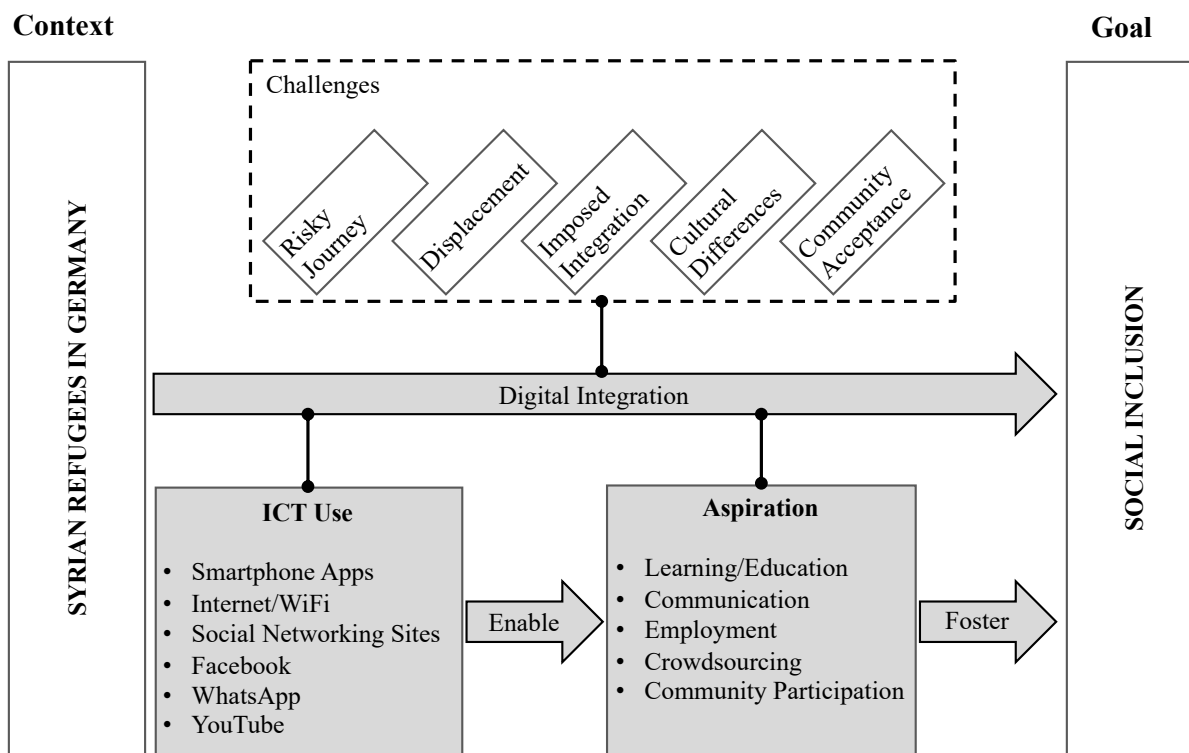


Figure 4: Summary of Our Research on Social Inclusion of Refugees

## 2.2. The Role of ICT in Working From Home During COVID-19

The COVID-19 pandemic, as a social disruption, has forced an extensive and sudden digital transformation in society. The unexpected and rapid lockdown produced significant challenges for all members of society due to the pressure to adapt to a new online- and home-centered life (Pan et al., 2020). In particular, the “always-on” aspect of technology-based tools makes it difficult to “switch off” work while working from home (McKeown, 2016).

The rapid transition to working from home caused by COVID-19, for which the majority were unprepared, demonstrates the need to prepare future workers for a remote working environment wherein employees work remotely but still manage to maintain their productivity.

### 2.2.1. Working From Home (WFH) During COVID-19

Although the idea of WFH is not new (e.g., Nilles et al., 1974) and appealed to many even before COVID-19 (Kelly et al., 2020), it has never been so widely adopted as during the COVID-19 pandemic. This social disruption has forced employers worldwide to allow their employees to work from home while advanced ICT tools and services have enabled the sustainability of this model, in particular because these tools give workers the flexibility to select where, when, and how to accomplish their work (Curzi et al., 2020).

WFH—also known as telecommuting, telework, or teleworking—was an early World Health Organization (WHO) recommendation to employers and workers to prepare their workplaces for COVID-19. Explaining the benefit of this model in the context of fighting the pandemic, the WHO (2020b) stated that “teleworking will help your business keep operating while your

employees stay safe” (p. 7). In response to this call, many businesses required eligible employees to shift their daily business activities to their homes very early in the COVID-19 pandemic as a powerful mechanism of controlling the spread of COVID-19 (Anderson et al., 2020; Bodewits, 2020).

However, the transition to WFH has not been smooth. For instance, Hutzler (2020) showed in a recent survey that over 70% of employees reported struggling to shift to remote work, of whom 80% cited the transition to a digital work environment as a challenge. Several factors contribute to this situation, including insufficient time or capacity to effectively manage trade-offs among work, social, and home roles (Choudhury et al., 2020) and working too much rather than too little while at home (Nickson & Siddons, 2004). WFH during the pandemic can make workers more vulnerable to symptoms of stress, causing negative impacts on their emotional well-being (Golden, 2009). Moreover, increased job flexibility and autonomy requires greater effort from workers at home that is channeled into their work, causing adverse effects and work-related stress (Curzi et al., 2020).

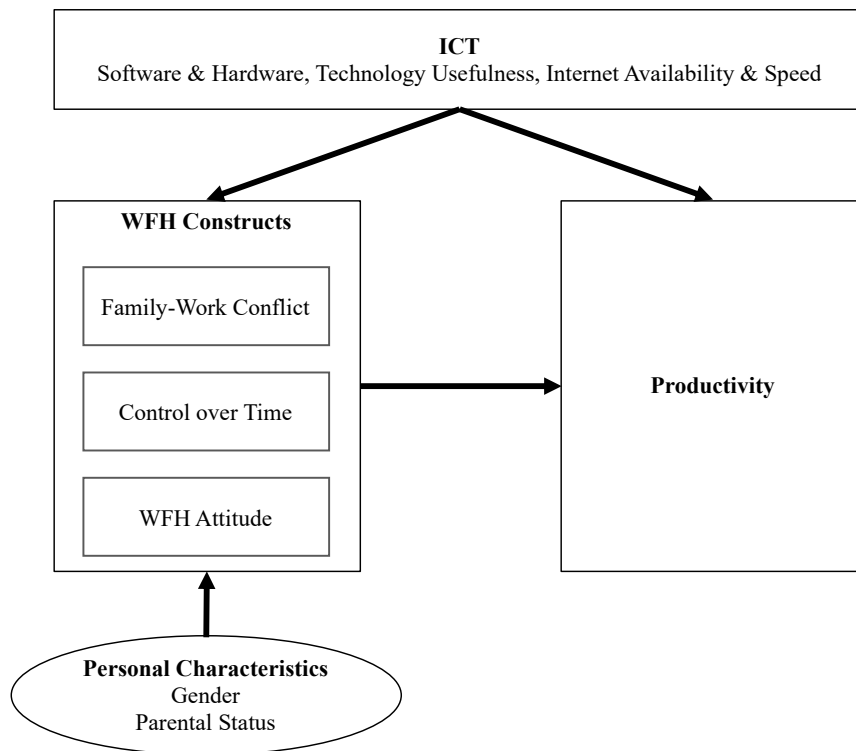
### *2.2.2. The Use of ICT While Working From Home*

In response to the COVID-19 lockdown orders, millions of employees, students, and other individuals were forced to instantly adopt digital technologies that facilitate communication, data acquisition, research and development, and management to remain productive and efficient in this disruptive environment (Kamal, 2020). In this sense, ICTs play a significant role in managing work–home boundaries (Cousins & Robey, 2005; Gerlach, 2018; Golden & Geisler, 2007; Kreiner, 2006)—for instance, by disabling push notifications from enterprise social systems (e.g., Slack, Skype, Microsoft Teams) on personal phones to avoid interruptions while at home or using different devices for work and home digital activities (Gerlach, 2018). While this can be applied in normal times, it is hardly manageable during the COVID-19 pandemic, especially because work is being done from home nowadays.

Different ICT services are the main enabler of WFH, as they enable employees to accomplish daily work tasks from alternative locations (Curzi et al., 2020). Remote teams rely on ICTs to communicate and collaborate on shared documents (McKeown, 2016). Essentially, all digital technologies and tools—including the Internet, mobile devices, teleconferencing applications, collaboration support, and cloud-based file storage—facilitate information exchange and help ensure a productive virtual team environment (Winterfeldt & Roestel, 2019).

During the COVID-19 crisis, work practices were suddenly and completely altered, dramatically changing the nature of work-based interdependencies between people and the technology with which they accomplish work (Lamb & Kling, 2003).

In Figure 5, we summarize our research on the use of ICT to alleviate the COVID-19 pandemic with the focus on Work From Home.



**Figure 5: Summary of our Research on Work From Home During COVID-19**

Summaries of our research articles, including our methodologies and findings, are presented in Chapter 3.

### **3. Summary of Articles**

In the context of this dissertation project, several research articles have been published at major IS venues and journals. We have selected eight articles that constitute this dissertation. The full text of these articles is included in Part II of this dissertation. In this section, we summarize the methodology of the conducted research and the key research findings of each article.

#### **3.1. The Role of ICT in the Context of Refugee Social Inclusion**

##### **Article 1: Understanding the Role of ICTs in Promoting Social Inclusion: The Case of Syrian Refugees in Germany**

Existing research offers limited insights into the process by which ICTs may contribute to greater social inclusion of technology-empowered refugees (Diaz Andrade and Doolin, 2016). Contributing to this field, we have analyzed the mobile-based ICT usage patterns of Syrian refugees in Germany to understand how ICTs can promote social inclusion.

Towards this goal, we build on the qualitative analysis of fifteen interviews with Syrian refugees in Germany and utilize the capability approach as a theoretical framework. Our findings reveal dependencies between properties of ICTs and their use, ICT-enabled capabilities relevant for refugees, and the corresponding contribution of ICTs to social inclusion processes. Our analysis of data has revealed that refugees are not relying on “traditional” ways of communicating with others – e.g., emails or landline phones. 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, to name a few. Hence, our analysis is focused on smartphones at the entry point of refugees for their ICT use.

Our research findings revealed a direct impact of ICT usage by refugees on their social inclusion into hosting societies. Following our analysis, we break down our findings along the lines of the capabilities framework. 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. Nowadays, refugees rely on technology (especially smartphones) to communicate with families and friends they have left behind, access geo-location services, and learn the host country’s language and culture. For many refugees, smartphones represent the only information access point at their disposal. On the theoretical level, our findings extend the current understanding of the ICT effects on social inclusion processes in the refugee context.

##### **Article 2: ICT as an Enabler: Understanding the Role of Online Communication in the Social Inclusion of Syrian Refugees in Germany**

Following recent calls for papers in the Information Systems field, this 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. 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 using 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 refugees' social inclusion allows us to uncover the process by which social inclusion is achieved.

Based on a thorough literature review, we conducted comprehensive research using 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 relationship 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 the social inclusion of Syrian refugees in Germany. We use these insights to construct our hypotheses that are validated through 135 participants in our questionnaire. Our hypotheses (see Figure 8, page 97) capture the relationship between 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. While focused on the integration of Syrian refugees in Germany, our findings could also be applied to alleviate the situation of many disadvantaged people in developing countries (Walsham, 2012; Qureshi, 2015).

### **Article 3: ICT-enabled Refugee Integration: A Research Agenda**

In this paper, we try to understand how refugees use information and communication technology (ICT) in different regions of the world to understand how ICT is supporting refugees' desperate journey to safety, their stay in temporary settlement camps, and their post-settlement inclusion in host countries. With this goal in mind, we reviewed extant literature on marginalized groups' ICT use, especially the few works that touch on the role ICT plays in refugee integration (Díaz Andrade and Doolin, 2016; Caidi, Allard, and Quirke, 2010).

Through our literature review, we could more deeply understand how asylum seekers and resettled refugees exploit ICT. We used this understanding to assess the current state of knowledge on ICT-enabled refugee integration and, thus, formulate a future research agenda. Based on that foundation, we conducted 15 face-to-face interviews with Syrian refugees living in Berlin, Germany, in March 2016, to gain real-world insights from refugees about their ICT usage. We used the preliminary findings we gained from thematically analyzing the interview transcripts to obtain key directions for structuring two-panel discussions. The two organized panel discussions took place at leading conferences: the 37th International Conference on Information Systems (ICIS 2016) (AbuJarour et al., 2016) and the 25th European Conference on Information Systems (ECIS 2017) (AbuJarour et al., 2017). The panelists included Safa'a AbuJarour, Antonio Díaz Andrade, Jane Fedorowicz, Sebastian Olbrich, Chee-Wee Tan, Cathy Urquhart, Viswanath Venkatesh, and Manuel Wiesche.

The panel discussions revealed seven key research themes: accessibility to information; availability of education and linguistic resources; admissibility to labor markets and entrepreneurship opportunities; communicability with the home country; connectedness with

the local population; interactivity with host government; and volunteer coordination. We discuss how ICT might help address issues related to each theme, present research questions relevant to each theme, and supply an illustration of how ICT has been employed to address an aspect of each theme. Insights gathered lead to revealing theoretical implications and future opportunities for research in the field of Information Systems; practical implications to be considered by different stakeholders interested in refugee integration; and social implications related to the refugee crisis that cannot be ignored.

#### **Article 4: Social Inclusion of Refugees Through Digital Learning: Means, Needs, and Goals**

In this study, we tackle the aspects of education, e-learning, and language learning by Syrian refugees in Germany as an essential driver of refugee integration and social inclusion into the hosting society. According to Ives (2007), active participation in education and language learning is essential to a successful integration process. Our research has been inspired by the observation of the wide adoption of e-learning among Syrian refugees in Germany, as observed by the author in the context of previous interactions with the target group (AbuJarour and Krasnova, 2018). For instance, the wide acceptance of e-learning content on YouTube targeting the refugee population.

To achieve our goal, we use a qualitative research approach to examine the extent to which digitization can create an inclusive society. We conducted face-to-face interviews with Syrian refugees in Germany, with the main focus being on their use of e-learning opportunities and how these services contribute to their social inclusion into the community. Our study applies qualitative research methods as part of the Grounded Theory Method, as Urquhart (2013) suggested. This study is the third interview round, including eight interviews, following two previous interview rounds of 28 interviews reported in a previous publication (AbuJarour and Krasnova, 2018).

Our analysis shows that refugees are not relying solely on traditional ways to learn the German language and pursue further education. We introduce our findings along the following dimensions: means (ICT and smartphone), needs (education, e-learning, and translation), goals (integration and social inclusion, and self-development). We also introduce intermediate factors that affect the adoption of e-learning by refugees (gender-differences and integration phase).

#### **Article 5: Technology as a Source of Power: Exploring How ICT Use Contributes to the Social Inclusion of Refugees in Germany**

While initial evidence suggests that ICTs can contribute to the empowerment of refugees, thereby facilitating their social inclusion in the host country, the mechanism behind these effects is little understood. Specifically, it is not clear which features of ICT have an empowering influence on refugees and how this influence subsequently translates into social inclusion.

As the phenomenon being studied has not received significant theoretical research attention, we chose a qualitative research methodology to obtain initial insights into understanding how

ICT usage leads to empowerment formation and how feeling empowered leads to social inclusion. To gain an in-depth understanding of ICT usage by refugees, thirteen face-to-face interviews with Syrian refugees were carried out in the area of Berlin, Germany to investigate the mechanics of ICT-enabled empowerment and its interaction with the refugees' perception of social inclusion.

Results from our qualitative study revealed that the ability to use the smartphone functionalities anytime and anywhere gives refugees an empowering feeling of global connectivity, which is critical for refugees as they cope with uncertain and continually changing circumstances. In our findings, we identified two types of social inclusion benefits that refugees can gain from ICT use in terms of agency and well-being. Furthermore, we showed that ICT contributes to empowering refugees on three levels; community participation, sense of control, and self-efficacy, which are the most crucial empowerment components and drivers that subscribe to refugees' social inclusion in the new society.

### **Article 6: ICT Support for Refugees and Undocumented Immigrants**

In this paper, we moved from tackling ICT support and integration-related topics from the refugees' perspective to a broader level by tackling these topics from the immigrants' perspective. Immigrant integration has risen to the top of the political agenda of leaders in Germany and the U.S. The information systems community has begun to research how information and communications technologies can assist immigrants and especially refugees by understanding how to facilitate social inclusion processes better. Migrants face the challenge of joining closed communities that are incapable of or afraid to integrate.

To tackle these topics, we held a panel discussion at the Twenty-Fifth Americas Conference on Information Systems (AMCIS 2019) in August 2019 in Cancun, Mexico. The panel tackled the topic "Turning the Dark Side of Social Media Bright! The Case of Immigration in the USA and Germany" (AbuJarour, et al., 2019a). Panelists include Safa'a AbuJarour, Haya Ajjan, Jane Fedorowicz, and Antonia Köster. The panel discussion's focus was on the challenges of integrating immigrants by seeking to understand better how ICT is used to facilitate social inclusion processes. The panel provided multiple viewpoints on the topic of immigrants' technology usage, including showing how technology can both support and prevent immigrants from succeeding in their quest. The panel aimed to stimulate a thoughtful and dynamic discussion on best practices and recommendations to enhance the discipline's impact on alleviating the challenges that occur for immigrants in their host countries. In this summary, we introduce the topic of ICT use for immigrants' integration and identify differences between Europe and North and Central America. We also discuss the usage of ICT by immigrants, particularly refugees, for connection, a sense of belonging, and maintaining their identity. We uncover the dark and bright sides of ICT usage by governments seeking to deter illegal immigration. After analyzing the panel material, we derived topics to form this panel report, including (1) ICT solutions for social inclusion of refugees, (2) using ICT to assist with immigration in the U.S., (3) using ICT to deter immigration in the U.S., and (4) using ICT for information acquisition.



Our discussion reveals useful implications for several target audiences, among others, (1) academics, especially information systems researchers, who are interested in ICT usage for immigration, social inclusion, e-government, and refugee integration, (2) assimilation facilitators, including industry partners, governmental offices and NGO members, (3) ICT developers and designers, who seek to develop culturally sensitive digital solutions, and (4) fundraisers keen to financially support projects and initiatives to alleviate the current refugee crisis.

### **3.2. The Role of ICT in the Context of Working From Home During COVID-19**

#### **Article 7: Working from Home During the COVID-19 Crisis: A Closer Look at Gender Differences**

Working From Home (WFH) during COVID-19 diminishes the boundaries between work and home life and can create obstacles for those suddenly forced to accommodate working and living in the same place. In this context, Information and communication technology (ICT) enables many workers to work from home during the COVID-19 pandemic as it provides the data and tools needed to accomplish tasks and communicate with other employees or business partners outside their residential work location. Workers now must function in a residence that doubles as an office and engage in a series of Zoom meetings interrupted by home-life demands, all the while monitoring an ever-extending date for returning to a “normal” work situation.

The purpose of this study is to investigate home-office conditions by studying employees who were forced to WFH during the COVID-19 crisis. We focus on gender differences and parental responsibilities in work-life trade-offs related to home-office conditions during the COVID-19 crisis. We look at how work and household responsibilities affect the working conditions of affected employees by examining their control over time, WFH attitude, and work-life conflicts. We study whether home-office ICT is equally useful to all workers, regardless of gender or parental status.

Towards this goal, we developed an online survey that combines demographic questions characteristic of a WFH situation with items depicting the work environment (e.g., tasks, space, time, technology). It also measures the respondents’ ability to accomplish work expectations and how they handle the division of work and personal life under co-location. Data was collected early-crisis to obtain in situ reactions from a cross-section of workers currently working at home. A total of 870 responses were collected, of which 545 were complete and valid for analysis.

Findings of this study show that gender and the presence of children under the age of 18 affect workers’ control over time, technology usefulness, and WFH conflict, but not their WFH attitude. Of note, women experience more lack of control over their time and find technology to be less useful than their male counterparts. Also of interest is that women with children at home report much higher WFH conflict and even less control over time than men who have children at home.

## **Article 8: How Working from Home during COVID-19 Affects Academic Productivity**

Soon after its sudden appearance around the world, the COVID-19 pandemic caused almost all universities worldwide to temporarily shut their doors and send all students, faculty, and staff home to work. The indefinite working from home period led university employees and especially faculty to alter their work methods, schedules, and responsibilities dramatically. The unusual circumstances that COVID-19's rapid spread created provides a unique opportunity to study the role that information systems play in supporting people through this pandemic and beyond. Topics worth studying include the pandemic's impacts on jobs (including job loss, job changes, and job outcomes), on home life (including home-life changes, effects on children, social life, and life-related outcomes), and in different contexts, population groups, and countries (Venkatesh, 2020).

In this paper, we identify factors that influence academics' productivity while working from home during the mandate to self-isolate. Additionally, we explore the dramatic changes to individual work-life balance that the COVID-19 pandemic caused as families juggle childcare, instructors teach remotely, roommates vie for Wi-Fi bandwidth and office space, and employees adapt to a raft of new technologies to work and communicate.

We employed an online questionnaire to collect data from employees who have had to move their jobs home due to the COVID-19 pandemic. Items captured characteristics of respondents' home and work environments to measure circumstances and conditions that enable or compete with WFH demands. We also measured how they handled the dual demands of work and personal life under co-location. We recruited participants over 18 years old and who had newly begun working from home due to the pandemic. In total, our sample comprised 221 academics.

From analyzing the results of our survey, we found that both personal and technology-related factors affect an individual's attitude toward working from home and productivity. We found that both personal and technology-related factors affect an individual's WFH attitude and productivity. Moreover, our findings reveal that academics' WFH attitude is a key contributor to their productivity means that helping them establish a positive WFH attitude plays a critical role in universities' ability to survive and thrive until the pandemic's threat subsides.

## 4. Thesis Contributions

### 4.1. Theoretical Contributions

This thesis 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 and those working from home during COVID-19, our findings could be applied to alleviate the situations of many disadvantaged people in developing countries (Qureshi, 2015; Walsham, 2012). Additionally, the research in this thesis follows recent calls for similar research, such as Sajda Qureshi's (2019) call for more inclusive research, with the aim of "improvements in the lives of people" (pp. 381-389). Moreover, the motivation for our research on social inclusion is the need to "open up the 'black box' of data that shows demographic differences, structural barriers in society, and other evidence of inclusion issues," as explained by Eileen Trauth (2017, p. 15) in her research agenda for social inclusion in the IS field.

On a higher level, we contribute to a better understanding of ICT's effects on individuals and societies, which positions our study within the domain of enriching bright ICT research (Lee, 2015, 2016; Fedorowicz et al., 2015). Uncovering the beneficial uses of social media and other ICTs is the first step in promoting the bright sides of existing technologies in the digital inclusion context.

The existing research has revealed limited insights into the process by which ICTs may contribute to greater social inclusion of refugee populations who are heavy technology users. This thesis therefore makes a theoretical contribution to the research field in that it adds to the body of knowledge in the fields of ICT usage for development, education and e-learning, e-government, working from home, remote work, and social inclusion by introducing valuable insights from qualitative and quantitative research.

By observing how ICT enables social inclusion or by participating in related projects, IS researchers can find many opportunities to enhance existing theories or develop new theories on ICT design and use in the refugee context. In discussing ICT-enabled social inclusion, we address recent calls to extend IS research to cover grand challenges (such as those addressed by the AIS Grand Vision Project for the ICT-enabled Bright Society), calls to address societal challenges (Ketter et al., 2017; Oh et al., 2018; Sahay et al., 2017) and social aspects (Davison, 2016; Qureshi et al., 2018), and calls for new theorizing (Burton-Jones et al., 2018; Lee, 2015).

These insights should be considered in contextualizing existing theories on relevant topics. Specifically, we have made the following contributions:

1. Our findings extend the current understanding of the effects of ICTs on the processes of social inclusion of refugees by exploring ICT usage patterns of Syrian refugees in Germany to investigate how ICTs can facilitate their social inclusion in their host countries.
2. This research aimed to uncover the benefits of ICT solutions related to digital learning in the context of refugees. To this end, we studied education, e-learning, and language learning among Syrian refugees in Germany as an essential driver of refugee integration and social inclusion in the host society.

3. Our empirical study contributes to the body of knowledge on empowerment (as discussed in Research Article 6) by showing how ICTs are driving empowerment dimensions by facilitating two directions of community participation specific to the context of refugees, allowing individuals greater control over their lives, and positively contributing to self-efficacy.
4. Our studies on the role of ICT in WFH during COVID-19 [Articles 7 and 8] make the theoretical contribution of contextualizing COVID-19's impacts on individuals and society—in this case, those working from home—by providing a contextual understanding of established concepts of WFH constructs and job performance. These studies also contribute to the body of research on COVID-19, following Venkatesh's (2020) call for research in different areas during COVID-19 (for example, topics that have impacts on life and work).
5. Our studies [Articles 7 and 8] support gender role theory, where an emphasis on work—and specifically time allocated to work—is incongruent with female gender role expectations (Wood & Eagly, 2010). Eddleston and Mulki (2017) found that when women can integrate their family and work, they seem to express less family–work conflict than when men integrate these two roles. This matches our finding of no significant gendered difference in WFH conflict, with women reporting slightly less conflict than men. However, WFH conflict increases much more for women with children at home, perhaps signaling that traditional caretaking roles have more often fallen to women during the pandemic.

#### **4.2. Practical Contributions**

This thesis also offers practical implications for different stakeholders, including governments, industries, educational institutions, NGOs, and local communities [Articles 1–6]. Moreover, it has benefits for industries and other stakeholders relevant to WFH topics, including governments and policymakers, educational systems and institutions, and employees, especially through supporting their efforts to tackle the challenges caused by COVID-19 [Articles 7 and 8].

This thesis provides actionable recommendations and reveals useful implications for several target audiences that can be applied in their efforts to achieve refugees' integration and social inclusion in host countries.

1. For governmental offices and NGO members, we recommend applying and supporting e-government solutions and providing required training for relevant users (i.e., employees or volunteers) when needed. We also suggest educating refugees and locals on possible usages of ICT to foster the inclusion process—for instance, providing online courses to teach refugees the local language or to teach locals foreign languages. Moreover, we emphasize the need for governments and NGOs to provide robust and reliable Wi-Fi hotspots to enable refugees to use the Internet for integration and social inclusion purposes.
2. For industries and ICT developers and designers who seek to develop culturally sensitive digital solutions, we recommend first investigating refugees' needs and requirements for ICT solutions by asking them directly through workshops, focus

groups, and interviews. We then suggest engaging refugees in the development of these solutions and acquiring their feedback throughout the phases of development. Finally, we emphasize the need to consider developing tools to identify misinformation and deter its spread on social media.

3. For fundraisers keen to financially support projects and initiatives to alleviate the current refugee crisis, we recommend first investigating refugees' needs and requirements for using ICT by conducting workshops and focus groups, then providing financial support for ICT training programs for refugees. Additionally, it would be helpful to financially support institutions that offer ICT training programs to refugees.
4. For educational institutions, we recommend considering the needs and requirements of refugees, the necessity of including them in the education system, and their extraordinary characteristics with respect to cultural, psychological, and economic situations when preparing and offering educational opportunities for them.

In the context of WFH during COVID-19, this thesis provides actionable recommendations and reveals useful implications for the following audiences.

5. For policymakers during COVID-19, this thesis provides policy and practical recommendations to create solutions for more inclusive WFH experiences.
6. For employers, we recommend acknowledging personnel differences (such as gender, parental status, age, race, and ethnicity) and the impact of these differences on the abilities and challenges of individual employees, including educating employees to expect and respect their colleagues' differences.



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## **Part II: Dissertation Publications**



# 1. The Role of ICT in the Context of Refugee Social Inclusion

## Article 1:

### Understanding the Role of ICTs in Promoting Social Inclusion: The Case of Syrian Refugees in Germany

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#### Outlet:

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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 4). 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.

**Table 4: Comparison of Our Study with Existing Research by Andrade and Doolin (2016)**

<b>Dimension</b>	<b>Andrade and Doolin (2016)</b>	<b>Our Research</b>
Asylum State	Refugees have been already resettled.	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.

### 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 6). 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.

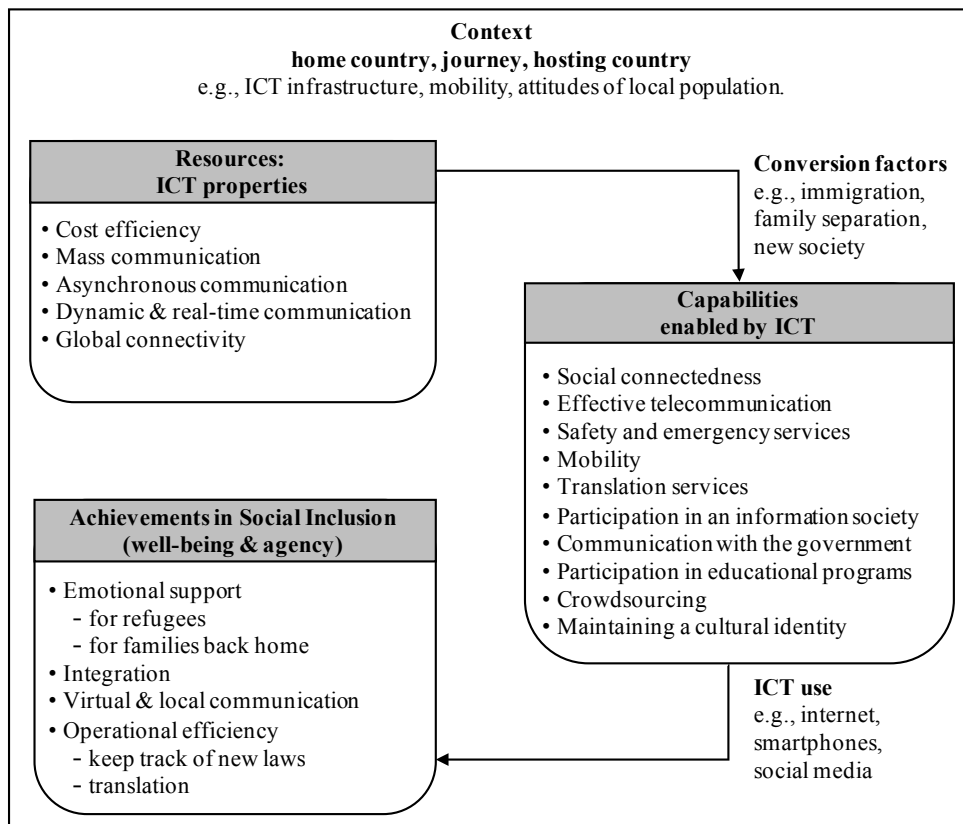


Figure 6. The Role of ICT in Promoting Social Inclusion of Syrian Refugees in Germany

#### 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.”*

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.”* 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 infrastructure 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 Meiritz, 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 to 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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## Article 2:

### ICT as an Enabler: Understanding the Role of Online Communication in The Social Inclusion of Syrian Refugees in Germany

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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 connected-ness, 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:

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

### **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.

#### **3.1. 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 5, we show selected comments from our respondents, describing their connectedness to the different social groups and how this connectedness contributes to their social inclusion.

**Table 5. Example comments from respondents in our qualitative study**

<b>Groups of Social Connectedness</b>	<b>Example Comments from Respondents</b>
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>

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.

### **3.2. Conceptual Model**

Based on the insights that we gathered from our qualitative study, we developed our conceptual model (Figure 7) 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.

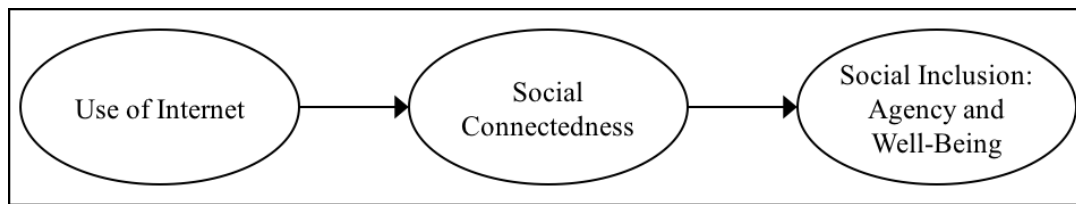


Figure 7. Conceptual Model of Refugees Social Connectedness

### 3.3. 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.

#### 3.3.1. 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**.

#### 3.3.2. 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)**.

### 3.3.3. *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 8, we summarize our research model, including all the hypotheses introduced above.

## 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



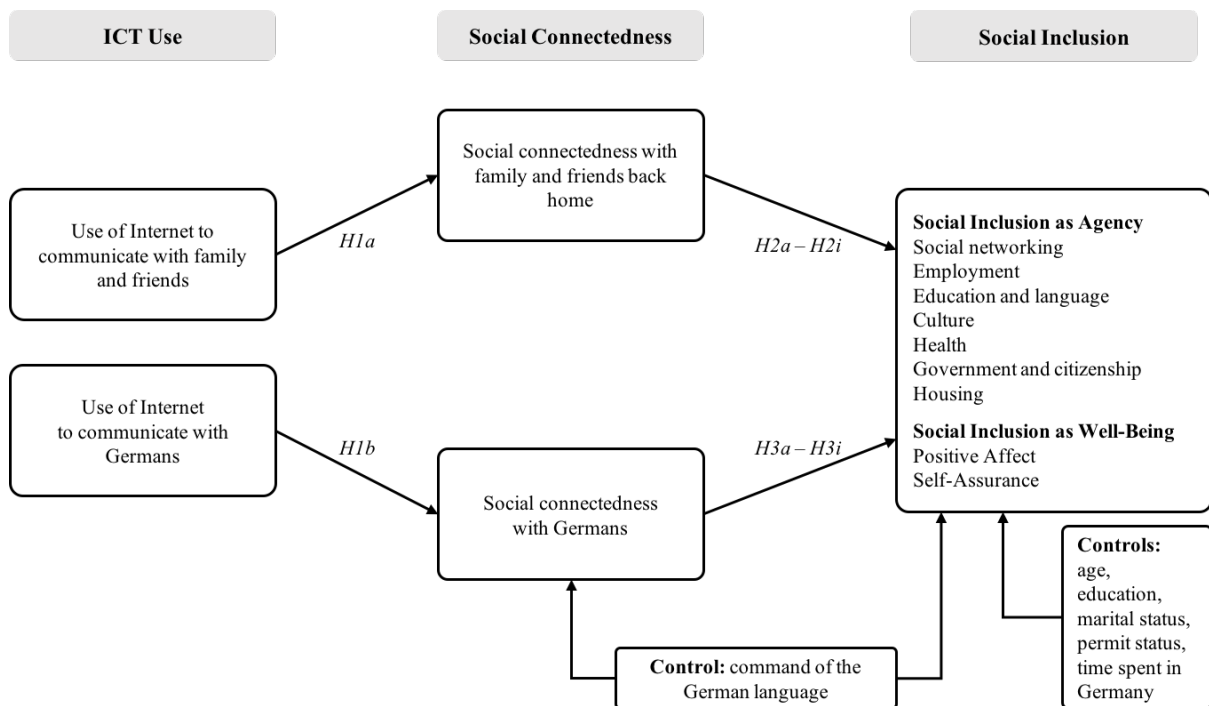


Figure 8. Research Model Refugees Social Connectedness

(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 6). 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.

**Table 6. Standardized path coefficients and respective significance levels**

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>
Education → SI	-0.092	-0.038	<b>-0.188*</b>	-0.134	-	<b>0.181*</b>	-0.040	-0.102	0.051
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

*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.

### **5.1. 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.

### **5.2. 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 adaptation to the new culture is highly correlated to overall satisfaction of refugees (Colic-Peisker, 2009).

### **5.3. 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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## Article 3:

### ICT-enabled Refugee Integration: A Research Agenda

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#### Abstract:

The recent phenomenon that has come to be known as the European refugee crisis is in reality a global problem. Accordingly, issues regarding refugee integration have become a central topic of debate worldwide. In this paper, we try to understand how refugees use information and communication technology (ICT) in different regions of the world to understand how ICT is supporting refugees' desperate journey to safety, their stay in temporary settlement camps, and their post-settlement inclusion in host countries. With this goal in mind, we first conducted a series of interviews with Syrian refugees in Berlin, Germany to collect preliminary insights. Then, we organized panel discussions at two key information systems conferences (ICIS 2016 and ECIS 2017) involving participants from various countries. The panel discussions revealed seven key research themes: accessibility to information; availability of education and linguistic resources; admissibility to labor markets and entrepreneurship opportunities; communicability with home country; connectedness with local population; interactivity with host government; and volunteer coordination. We discuss how ICT might help to address issues related to each theme, present research questions relevant to each theme, and supply an illustration of how ICT has been employed to address an aspect of each theme. Insights gathered lead to: theoretical implications and future opportunities for research in the field of Information Systems; practical implications to be considered by different stakeholders interested in refugee integration; and social implications related to refugee crisis that cannot be ignored.

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

## 1. Introduction

The global refugee crisis that has erupted in the last few years presents a formidable challenge to the international community. According to the United Nations High Commissioner for Refugees (UNHCR), the number of people who left their countries or become internally displaced due to conflicts, human right violations, persecution, or violence amounted to approximately 67 million in 2016 (UNCHR, 2017a). This massive number of forcibly displaced individuals not only poses significant economic consequences but also comes with moral and ethical implications that we cannot ignore. Although the international media has labeled this issue as the European refugee crisis, it is a global problem. According to the UNHCR (2017b), by mid-2016, the host countries with the largest number of refugees were Turkey (2.8 million), Pakistan (1.6 million), Lebanon (one million), Iran (978,000), and Ethiopia (742,700), Jordan (691,800), Kenya (523,500), Uganda (512,600), Germany (478,600), and Chad (386,100). From the above figures, we can see that non-European countries carry the heaviest burden, especially with respect to the disproportionate number of refugees they shelter relative to their own population and the potential disruptive impact on their economy and society. However, the number of refugees that different countries host only partly tells the story of the struggles that confront these forcibly displaced individuals. Though the media has widely shown images that depict overloaded boats crossing the Mediterranean Sea, for refugees who managed to complete the odyssey, landing on southern European shores marks only the beginning of a much longer and treacherous journey en route to their final destination. Approximately 2.3 million Venezuelans have experienced a similar predicament: they have had to relocate to other South American countries (primarily Colombia, Peru, Chile, and Argentina) where they live under a form of “alternative legal stay” that allows them, at least temporarily, to live and engage in economic activities in their host countries (Freier & Parent, 2018). When in transit, refugees are in a state of legal limbo, which the terms to which the media refers to them reflect, such as “asylum seekers”, “persons in need of international protection”, “transit migrants”, and “vulnerable migrants” (Kilibarda, 2017). As such, refugees, who live in settlement camps and await relocation to a host country, do not enjoy “the legal protections enshrined in international, regional, and domestic laws” (Holzer, 2013, p. 865).

Against this backdrop, we delve into how refugees leverage information and communication technology (ICT) in various regions across the world. Particularly, we focus on gleaning insights into the role that ICT plays in supporting refugees’ desperate journey to safety, temporary refuge settlement camps, and post- settlement inclusion in host countries. To sensitize the information systems (IS) community to the relevance of this topic, we organized panel discussions at two leading conferences: the 37th International Conference on Information Systems (ICIS 2016) (AbuJarour et al., 2016) and the 25th European Conference on Information Systems (ECIS 2017) (AbuJarour et al., 2017). We were pleased with the enthusiastic response from our colleagues who engaged in a candid and fruitful academic conversation that focused on addressing this pressing societal challenge.

This paper proceeds as follows: in Section 2, provide background information about how marginal groups in general and refugees in particular use ICT. In Section 3, we describe the

panel discussions. In Section 4, we explain the seven derived research themes. In Section 5, we highlight implications for theory and practice and avenues for future research. In Section 6, we conclude the paper.

## **2. Background**

In preparation for our panel discussions, we reviewed extant literature on marginalized groups' ICT use, especially the few works that touch on the role that ICT plays in refugee integration (AbuJarour & Krasnova, 2017; Díaz Andrade & Doolin, 2016; Caidi, Allard, & Quirke, 2010). Through our literature review, we could more deeply understand how asylum seekers and resettled refugees exploit ICT. We used this understanding to assess the current state of knowledge on ICT-enabled refugee integration and, thus, formulate a future research agenda.

### **2.1. ICT for Marginalized Groups**

With the increased ubiquity of ICT, research into how ICT can aid marginalized groups has gained momentum (Qureshi, 2015, 2017). Even though researchers have conducted most IS research on this topic in Western settings (De Vreede, Mgaya, & Qureshi, 2003), which limits the transferability of lessons learnt to marginalized groups in developing countries or to refugees settling into non-Western host countries, some notable and recent work has focused on shedding light on the role that ICT plays in helping marginalized groups in developing countries. Specifically, we identify three primary research streams on the effects that ICT has for marginalized groups according to whether they emphasize how ICT can: 1) bolster the accessibility of services for marginalized groups or people from remote communities 2) enable marginalized groups to exchange information and collaborate, and 3) bridge social divide and promote social inclusion.

Past studies have attested to the importance of ICT in enhancing the accessibility of services for marginalized groups or people from remote communities. Coupled with advances in mobile technology, ICT can empower individuals—especially people from rural communities in developing countries (McGrath, 2016)—through enhanced access to education, healthcare, and/or other governmental services (Oreglia & Srinivasan, 2016; Venkatesh, Shaw, Sykes, Wamba, & Macharia, 2017). Through affording better accessibility to services, ICT has the potential to not only boost a country's productivity but also contribute to individuals' wellbeing (Ganju, Pavlou, & Banker, 2016). For example, eHealth kiosks (Venkatesh, Rai, & Sykes, & Aljafari, 2016) and information sharing among midwives (Niemöller et al., 2016) can reduce infant mortality, a major challenge in rural communities in developing countries

Additionally, ICT facilitates communication and collaboration in marginalized groups and between marginalized groups and the broader society (De Vreede, Mgaya, & Qureshi, 2003). By granting access to accurate and timely information and facilitating communication among individuals, ICT holds substantial promise for marginalized groups, especially in developing countries (Ahmed, 2007). For example, with ICT, farmers can not only access information on farming practices (Venkatesh & Sykes, 2013) but also share experiences with their peers (Jha, Pinsonneault, & Dube, 2016). Likewise, ICT can facilitate interaction and cooperation not only between marginalized groups and governmental agencies but also among governmental

agencies and other focal stakeholders (Lim, Tan, & Pan, 2007). E-government projects entail significant collaboration challenges where ICT can serve as part of the solution (Fedorowicz, Gogan, & Culnan, 2010; Fedorowicz, Gogan, & Williams, 2006).

Finally, ICT can bridge the social divide and promote social inclusion by allowing individuals to develop to their fullest potential and become active members of society. The social divide has multiple facets that differ between developed and developing countries. For instance, ICT can encourage entrepreneurship in rural communities and developing countries, which one can see in the Taobao Villages in China (Leong, Pan, Newell, & Cui, 2016) and in Uganda (Betts, Bloom, and Weaver, 2015). However, women and African Americans continue to experience career difficulties in the ICT industry and the IS community (Cain & Trauth, 2015; Trauth, Cain, Joshi, Kvasny, & Booth, 2016). Consequently, concerted efforts have to be undertaken to improve the inclusivity of the community of IS professionals and researchers and the design of ICT itself (Olbrich, Trauth, Niederman, & Gregor, 2015).

## **2.2. ICT in the Context of Refugee Integration**

We recognize that the term refugee does not always refer to a homogeneous group of individuals. The forcibly displaced individuals in refugee camps and resettled refugees in host countries often come from diverse countries, belong to diverse ethnic groups, have diverse religious beliefs and educational backgrounds, and so on. Nevertheless, all refugees share the burden of stigmatization because the media generally portrays them as vulnerable individuals or welfare recipients (Ludwig, 2016).

Regardless of the legal status that refugees have in the country that temporarily shelter or permanently resettle them, countries have the paramount moral imperative to respect their human dignity. Far from devising interventions or policies to acclimatize refugees to local traditions, countries should uphold their right to belong in a new society and, at the same time, to maintain their cultural identity (Gifford & Wilding, 2013).

We posit that ICT can play an instrumental role in easing refugees' integration into their host countries and in helping them to build a new life for themselves. Diaz Andrade and Doolin (2016) demonstrated that using ICT culminates in greater opportunities for refugees "to exercise their agency and achieve improvements in their well-being that enhance their participation in society and control over their circumstances" (p. 412). Thus, ICT delivers conditions conducive to social inclusion by empowering individuals "to fully participate in society and control their own destinies" (Warschauer, 2003, p. 8). Through information accessibility, refugees have more opportunities to engage in the social, economic, and political activities of their host countries while maintaining a connection to their past that reinforces their cultural identity (Díaz Andrade & Doolin, 2019).

## **3. The Panels**

In this section, we explain: 1) why we organized the discussion panels, 2) the panelists we invited, (3) the format that the panel discussions adopted, and 4) how we analyzed the panel discussions to derive research themes to guide future studies on ICT-enabled refugee



integration. The two panels built on each other. The first panel raised awareness about how technology can bring about refugee integration. After the first panel and in preparation for the second panel, we empirically validated the developed ideas and questions and augmented them with best practices to structure the topic area and develop an agenda to discuss in the second panel.

### **3.1. Organizing the Panels**

We organized the first panel, titled “Leveraging Technology for Refugee Integration: How Can We Help?” (AbuJarour et al., 2016), at ICIS 2016 in Dublin, Ireland. In the panel, we focused on generating discussion among experts about how one could harness knowledge accumulated in the IS community to design targeted technological solutions to tackle the refugee crisis and avert potential risks that accompany it. In preparation for this panel, the first author conducted 15 face-to-face interviews with Syrian refugees in Berlin, Germany, in March, 2016, to elicit insights from refugees on how they have used various types of ICT and their needs for technological solutions. We used the preliminary findings we gained from thematically analyzing the interview transcripts as obtain key directions for structuring the panel discussion. We carefully selected panelists with expertise in the areas of e-government, ICT adoption, refugee integration, and social inclusion to fit the panel’s scope.

We organized the second panel titled “Empowering Refugees with Technology: Best Practices and Research Agenda” (AbuJarour et al., 2017), at ECIS 2017 in Guimarães, Portugal. In the panel, we focused on formulating a research agenda to guide future studies on refugees’ ICT use on a deeper level and to solicit best practices on how one can leverage ICT to effect integration and social inclusion. To do so, we carefully selected panelists with expertise in e-government, ICT adoption, refugee integration, and social inclusion to fit the panel’s scope. Moreover, despite logistical constraints, members in both panels not only represented diverse backgrounds and geographical regions but also held broad opinions about ICT’s societal impact.

### **3.2. Panelists**

Table 7 lists the people, in alphabetical order, who participated in one or both panels.

**Table 7. List of Panelists During ICIS 2016 and ECIS 2017 Panel Discussions**

<b>Name, Field, Affiliation</b>	<b>Role</b>	<b>Panel</b>
<b>Safa'a AbuJarour</b> Business Information Systems, University of Potsdam and Weizenbaum Institute for the Networked Society, Germany	Panelist	ICIS 2016, ECIS 2017
<b>Antonio Díaz Andrade</b> Business Information Systems, Auckland University of Technology, New Zealand	Panelist	ECIS 2017
<b>Jane Fedorowicz</b> Information and Process Management, Bentley University, USA	Panelist	ICIS 2016
<b>Hanna Krasnova</b> Business Information Systems, University of Potsdam and Weizenbaum Institute for the Networked Society, Germany	Moderator	ICIS 2016, ECIS 2017
<b>Sebastian Olbrich</b> Information Systems and Digital Business, European Business School, Germany	Panelist	ICIS 2016, ECIS 2017
<b>Chee-Wee Tan</b> IT Management, Copenhagen Business School, Denmark	Panelist	ICIS 2016, ECIS 2017
<b>Cathy Urquhart</b> Operations, Technology, Events and Hospitality Management, Manchester Metropolitan University, UK	Panelist	ICIS 2016, ECIS 2017
<b>Viswanath Venkatesh</b> Information Systems, University of Arkansas, USA	Panelist	ICIS 2016
<b>Manuel Wiesche</b> Information Systems, Technical University Munich, Germany	Panelist	ECIS 2017

### **3.3. Format and Structure**

We held the panels in an interactive format in which both panelists and the audience engaged in an open dialogue.

In each panel, one moderator and six panelists participated in the discussion (see Table 1). The ICIS panel lasted one-and-a-half hours and the ECIS panel lasted two hours. The panels had the same structure. The moderator began by introducing the panelists before outlining the topic for discussion and the panel's goals. Each panelist then presented their opinion on the topic. Subsequently, the moderator invited the audience to interact with the panelists by asking questions and/or sharing their views on the points that the panelists raised. Finally, the

moderator summarized the core findings that emerged from the panel discussion.

### **3.4. Analysis of Panel Discussions**

We audio- and video-recorded the panels in their entirety. We transcribed and edited the recordings for precision. We then coded these transcripts into research themes to structure this report.

For the thematic analysis, we adhered to an iterative comparison method (Strauss & Corbin, 1990) whereby we read through a sample of the transcripts before developing a preliminary codebook. After coding a sample of transcripts, we refined the codebook and clarified ambiguities in interpretation among ourselves. Next, at least two authors independently coded each transcript, which culminated in a list of 88 codes throughout both panels. As we extracted and merged thematic codes into abstract theoretical categories, we paid particular attention to research themes that reflected asylum seekers' and refugees' ICT use, such as how it contributed to their perceptions about integration and social inclusion. Through the thematic coding exercise, we derived seven research themes: 1) accessibility to information, 2) availability of education and linguistic resources, 3) admissibility to labor markets and entrepreneurship opportunities, 4) communicability with home country, 5) connectedness with local population, 6) interactivity with the host government, and 7) volunteer coordination. We elaborate on each of these themes in Section 4.

## **4. Research Themes**

In this section, we elaborate on the research themes that emerged from the panel discussions. For each research theme, we first articulate related issues and how ICT can help to address them. Then, we present relevant research questions. Finally, we illustrate how ICT has been employed in a real-life case to foster theoretical development. Although most examples illustrate German initiatives, other host countries contain many other instances of comparable services.

### **4.1. Accessibility to Information**

The first research theme focuses on how ICT can help refugees access information. Once refugees arrive in a host country, they require timely information on various topics: basic aspects of the daily life such as Internet access or money transfer, the first steps of the asylum process and the relevant points of contact, access to healthcare, their options to learn the local language, and how to access education for adults and children. Unfortunately, this information is distributed among a large number of heterogeneous actors, such as asylum counselors, social assistance offices, youth welfare offices, local non-government organizations, and volunteers. In Germany, due to the federal administration structure, agencies' regulations and responsibilities differ from state to state or even from county to county. In addition to the high heterogeneity of the information sources, the information is dynamic and, in some cases, quickly outdated. Local points of contact change, new offers emerge, and the asylum process changes. Furthermore, once refugees have been relocated from the initial reception facility, they may have partially outdated information. In addition, the fact that refugees cannot access all

information in their native language poses a further challenge to their accessing the right information.

ICT can contribute to solving the information chaos that refugees face. Following the information- management paradigm of providing the right information at the right place at the right time (Krcmar, 2015), ICT can bring together information providers to make information available to refugees through digital channels. Here, the refugees' mobile devices represent a promising channel to distribute information. Furthermore, ICT offers various tools to make information accessible to a larger group of users. For example, frameworks make it relatively easy to implement Web or mobile solutions in multiple languages, and translation engines can support the translation itself.

Given this background, we propose the following research questions related to this theme for researchers to explore in the future:

- What information arrangements can best support unstructured information that a heterogeneous user group uses on an irregular basis?
- How can information be displayed in ways that users with different languages, cultural backgrounds, and information literacies can access?
- What role can government agencies and non-government organizations play in creating information that refugees find relevant?
- What technical architecture best allows one to store and distribute information that refugees find relevant?

### **Illustration**

The mobile app Integreat<sup>3</sup> provides relevant information to refugees via a smartphone application. The app comprises both general and specific information that pertains to the respective municipality. Users choose the municipality according to their location when they open the app. Users can also access the information that the app provides offline. Refugees usually have only sporadic access to the Internet since they use local Wi-Fi hotspots and generally do not have mobile service. The app also comes in several different languages (e.g., English, French, German, and other languages from regions that refugees often originate such as Arabic and Farsi) (Schreieck, Wiesche, & Krcmar, 2017a; Schreieck, Zitzelsberger, Siepe, Wiesche, & Krcmar, 2017b).

### **4.2. Availability of Education and Linguistic Resources**

The second research theme focuses on how ICT can help refugees educate themselves and access linguistic resources. Education and the ability to communicate in the local language represent key requirements for social inclusion. Refugees in particular need to adequately communicate in the local language because the asylum process itself requires them to communicate with different groups such as local authorities, government offices, local citizens, and volunteers. However, asylum seekers typically lack the qualifications to participate in educational programs or language-learning programs until they have completed the asylum-

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<sup>3</sup> <https://integreat-app.de/>

application process and received asylum. Further, refugees who do have educational qualifications and certificates from their home country often face difficulties in obtaining recognition for them in their host country. Therefore, refugees turn to e-learning opportunities to acquire some level of language learning and to participate in open education programs (AbuJarour & Krasnova, 2018).

Here, ICT emerges as a means to alleviate this accessibility challenge since it can provide mobile applications and massive open online courses (MOOCs). MOOCs attract the attention of millions of online learners worldwide by providing easy and ready access to education. These learners include refugees, who use these applications to start learning a local language (e.g., YouTube videos) or to participate in online courses to acquire credits that they may use later at university.

Based on this background, we propose the following research questions:

- What ICT infrastructure(s) can best support refugees in learning a host country's local language?
- How can ICT help to broaden refugees' learning opportunities?
- What role can technology play in motivating refugees to participate in the educational system in their host country?

### **Illustration**

Kiron<sup>4</sup> University for Open Higher Education for Refugees allows refugees to access higher education through digital solutions. The project started with an idea from two initiators during a refugee conference in 2014 where they discussed their vision for a “university 2.0”. This idea focuses on using technology to provide custom-made educational opportunities for individual refugee students.

### **4.3. Admissibility to Labor Markets and Entrepreneurship Opportunities**

The third research theme focuses on how ICT can help refugees access labor markets and entrepreneurship opportunities. Participating in the job market represents a key determinant and indicator of integration success. Having access to paid employment, equal opportunities in the labor market, and high-quality employment improves an individual's inclusion in society. In the refugee context, being able to work enables refugees to become economically independent and allows them to further develop their language skills, enhances their self-esteem and wellbeing, and encourages self-reliance (AbuJarour, Krasnova, & Hoffmeier, 2018; Ager & Strang, 2008). However, multiple obstacles prevent refugees from entering the local job market, such as formal restrictions (e.g., possibility to enter job market only after attaining asylum status), obstacles for social integration (e.g., language), and local community's resistance to foreigners (e.g., only 10% foreign labor allowed).

The entrepreneurial spirit among refugees represents a notable phenomenon in the current refugee situation (Copley, 2016; Parater, 2016). Therefore, businesses should develop

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<sup>4</sup> <https://kiron.ngo/>

specialized programs for refugees that not only shape their skills and qualifications to fit the local job market but also offer skills and information to start their own business. Despite a rising number of initiatives that serve this purpose, many challenges remain. For instance, many refugees struggle with receiving recognition for their qualifications. Furthermore, regulations for issuing work permits remain ambiguous, and many refugees have to wait for their host country to complete their asylum application to obtain a work permit, which can take a long time (AbuJarour & Krasnova, 2017).

ICT can play a crucial role in overcoming the employment obstacles that refugees experience. One solution involves creating platforms to match employers and refugees across country boundaries. Using ICT's matchmaking abilities, we could build platforms that match refugees' CVs with employers via appropriate ICT solutions. However, it remains unclear whether these applications should anonymize individuals to avoid any stereotyping in the matching process. Another challenge concerns compliance with Europe's General Data Protection Regulation (GDPR), which deals with the issue of privacy.

Against this background, we propose the following research questions:

- What opportunities and challenges exist to leverage technology to support refugees in exploring employment opportunities and motivating them to participate in the job market of their host country?
- How can refugees draw on ICTs to participate in economic activities in their host country?
- How can businesses harness ICTs, including mobile applications and social media, to match refugees' skills with available job vacancies?
- What role can technology play in facilitating and fostering entrepreneurship opportunities for refugees in their host country?

### **Illustration**

Backed by the German and Turkish governments, a consortium of ICT companies established a project called the Education Programme for Syrian Refugees and Host Communities<sup>5</sup> in Gaziantep, Turkey. The project focused on promoting employment and entrepreneurship for mainly Syrian refugees in Turkey's digital industry. More tangibly, the project focused on: 1) determining refugees' education levels and, in particular, their IT-related skills; and 2) aligning educational programs with refugees' interests and Turkey's and Germany's market needs. Syrian refugees' language skills (i.e., Arabic) proved to be particularly useful as Turkish IT companies provide many services to the Middle East. Combined with training on how to design IT products, the program (in the refugee camp and via online courses) proved to boost the local IT-sourcing industry.

#### **4.4. Communicability with Home Country**

The fourth research theme focuses on how ICT can help refugees communicate with their home country. ICT creates new capabilities for communication because it enables refugees to better

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<sup>5</sup> <https://www.giz.de/en/worldwide/40562.html>

connect to their friends and family back home. This connection gives refugees much-needed emotional support, a feeling of security, and better social and physical health. In turn, these things help them to better engage with the local community, have a smoother social inclusion process, and have a more successful integration. AbuJarour et al. (2018) found that refugees mainly achieve interpersonal communication through ICT. In particular, refugees widely use mobile applications such as online instant messages and social media to communicate with their families back home because ICT provides cost-efficient synchronous and asynchronous communication capabilities that fulfill their various needs.

Against this background, we propose the following research questions:

- How do refugees use social media applications to connect with their families and friends back home? What distinguishing features do these social media applications have?
- To what extent can one deploy ICTs to help refugees feel socially connected with their home country and, at the same time, maintain cultural knowledge of the host country?
- To what extent do ICTs compensate for lack of face-to-face contact? Can emotional proximity overcome physical distance and other barriers?
- How can one employ ICTs to sustain the cultural identity of refugee communities and, at the same time, assist in their integration in their host country?

### **Illustration**

According to Vernon, Deriche, and Eisenhauer (2016), refugees most often use the apps Facebook Messenger<sup>6</sup> and WhatsApp<sup>7</sup> to communicate with their family members and friends back in their home countries. These two apps facilitate synchronous and mass communication in a cost-efficient manner—a crucial consideration for refugees to fulfill their needs in the new society (AbuJarour & Krasnova, 2017).

### **4.5. Connectedness with Local Population**

The fifth research theme focuses on how ICT can help refugees connect the local population. Humans have a basic need to connect to others, such as their family, friends, colleagues, and other social groups. In the case of refugees, social connectedness strongly relates to practical and emotional support and is, therefore, essential for their social inclusion. Being connected to and making friends with locals and participating in the local community leads to a sense of belonging (Beiser, Goodwill, Albanese, McShane, & Kanthasamy, 2015). By interacting with a network of locals, refugees feel less stressed in the acculturation process and learn more about the host society and its values and cultural practices— features that have positive links to refugees' social inclusion (AbuJarour et al., 2018).

From an ICT perspective, refugees need platforms that allow themselves and locals to find and communicate with each other and to obtain benefits from available resources. For example, a platform could provide a list of locals who have agreed to provide different types of resources

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<sup>6</sup> <https://www.messenger.com/>

<sup>7</sup> <https://www.whatsapp.com/>

(e.g., shelter, food, and financial aid). Then, by using ICT's matchmaking capabilities, refugees and locals could find each other so that whoever needs those resources could access them. As another example, a platform could list joint events that both refugees and locals might find interesting and provide them with the opportunity for to arrange their own personal gatherings.

Against this background, we raise the following research questions:

- How can one use ICT to support integration between refugees and locals?
- How can ICT help refugees better understand the host society, its traditions, and its social practices?
- What impact can ICT have on refugees' long-term integration via interactive platforms that bridge refugee communities with the local population?

### **Illustration**

The charitable organization Start with a Friend<sup>8</sup> helps refugees participate in society. It supports refugees by pairing them with locals into so-called "tandem partnerships". It brings refugees together with locals who can help the refugees "one on one" with the new challenges they face in Germany. The organization believes that integration can only work if people get a chance to play an active role in society. They promote personal and uncomplicated encounters that can lead long-term connections as equals.

### **4.6. Interactivity with the Host Government**

The sixth research theme focuses on how ICT can facilitate interaction and communication between governments and refugees. Refugees usually interact with the host country's government and agencies first when they arrive. They need to register as asylum seekers and follow the formal asylum process. The asylum process involves different governmental institutions at the local, provincial, and federal levels, which leads to a high degree of bureaucracy. In Germany, ICT does not sufficiently support this process. As a result, refugees struggle to follow the steps of the asylum process and often need to rely on asylum counselors. Sometimes, services lack even basic accessibility, such as with forms that exist only in German and English. Such issues do not pertain only to the asylum process: they emerge across virtually all government services that refugees use once they have resettled into the host country and hinder them from, for example, interacting with government agencies, signing up children for school, and applying for housing.

ICT could help host countries provide government services in at least two ways. First, consolidating information and data management across different levels of governments would help to ease the multiple bureaucratic processes refugees must go through. Instead of manually filling out forms with the same information over and over again, the government could have digital files for refugees that all governmental and other authorized agencies could access. Second, the government could provide mobile government services because the large majority of refugees have access to mobile devices. As just two examples, a mobile app could provide

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<sup>8</sup> <https://www.start-with-a-friend.de>



forms that refugees could fill out digitally, and a booking tool could facilitate access to language courses. However, approaches that governments initiate often take a substantial amount of time to implement. In contrast, approaches that third parties such as non-government organizations initiative could provide more readily available bridging technologies.

Against this background, we raise the following research questions:

- What aspects of bureaucratic processes do refugees find most challenging and how ICT help facilitate these processes?
- How can governments enable bottom-up initiatives for ICT-enabled solutions for asylum seekers, refugees, and resettled refugees?
- What insights from providing government service in remote regions through mobile devices can one transfer to refugees' situation?
- How can government services leverage emerging technologies, such as distributed ledger technology or machine learning, for refugees?

### **Illustration**

The app BureauCrazy<sup>9</sup>, which Syrian refugees in Germany designed, helps refugees cope with bureaucracy. The app includes a translation service to translate German official documents into Arabic and English, a multiple-choice decision tree for frequently encountered issues, and a map that shows the location of council offices (Oltermann, 2016).

### **4.7. Volunteer Coordination**

The last research theme focuses on how ICT can assist volunteers who want to help refugees integrate into society. In host countries such as Germany, many volunteers support refugees by, for example, organizing language courses, accompanying refugees to doctor appointments, or organizing joint sports activities. In that context, two major challenges arise. First, volunteers usually do not coordinate their initiatives with one another and, thus, might offer overlapping services that compete for participants where collaboration would be more useful. Second, most volunteers cannot sustain their efforts over time and, thus, some initiatives end abruptly. In particular, the peak of the refugee influx in Germany in August, 2015, triggered thousands of volunteers to organize supporting initiatives. However, when the holiday season ended and the media attention decreased, volunteer engagement decreased.

ICT can help to tackle these challenges and maximize the impact of volunteers' valuable efforts in at least two ways. One, social networks can help volunteers coordinate different initiatives. For example, in 2015, a Facebook group emerged that coordinated activities and initiatives at the Munich Central Station where several thousands of refugees arrived in days. Two, ICT can help team members manage the knowledge in initiatives, which can reduce the negative impact that arises when they lose members.

Against this background, we propose the following research questions:

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<sup>9</sup> <https://www.bureaucrazy.de/>

- How can one manage distributed (i.e., not physically co-located) volunteer teams compared to how can manage distributed teams in for-profit contexts?
- How can non-profit, ICT-enabled initiatives be set up and governed to alleviate volunteer fluctuation?
- What factors contribute to the sustainability of volunteer initiatives and what role does ICT play in sustainability?

### **Illustration**

The project Integreat<sup>10</sup> provides a mobile application with important information for refugees. To develop and maintain the app, Integreat has brought together a group of volunteers. Since the start of the project in 2015, the volunteers (mostly students) have changed frequently mostly because graduated and started working. The project overcame these challenges by establishing knowledge management and an onboarding process for new team members. The team also applied communication tools, such as Slack, to facilitate collaboration in distributed teams such that team members who moved to other cities could contribute to the project.

## **5. Future Opportunities for Theorizing in the IS Field**

By observing how ICT enables refugee integration or by participating in related projects, IS researchers can find many opportunities to enhance existing theories or develop new theories on ICT design and use in the refugee context. In discussing ICT-enabled refugee integration, we address recent calls to extend IS research to cover grand challenges (such as the ones that the AIS Grand Vision Project for the ICT-enabled Bright Society addresses), calls to address societal challenges (Ketter, Padmanabhan, Pant, & Santanam, 2017; Oh, Acquisti, & Sia, 2018; Sahay, Sein, & Urquhart, 2017) and social aspects (Qureshi, Pan, & Zheng, 2018; Davison, 2016), and calls for new theorizing (Lee, 2015; Burton-Jones, Butler, Scott, & Xu, 2018). In this section, we outline several directions as opportunities for theorizing that we consider worthwhile to pursue.

When developing ICT to help refugees integrate into a host society, research and practice lack guidance on designing intercultural systems and using visual aids. Warschauer (2003) points out that computer literacy, information literacy, multimedia literacy, and computer-mediated communication literacy represent different concepts. Alam and Imran (2015) cite in their study that computer literacy, information literacy, and the English language can all form a barrier. For many refugees, the predominance of English on the Internet can cause issues because they cannot completely use that language (Lloyd, Anne Kennan, Thompson, & Qayyum, 2013). If differences in literacy prove pivotal to allowing refugees to use information systems, we suggest intercultural systems design could take a literacy perspective. Further, better understanding how visuals might cross literacy borders could serve as a central tool for intercultural understanding: some symbols are universal; thus, designers can use them in interfaces where literacy may pose an issue.

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<sup>10</sup> <https://integreat-app.de/>

Future research could explore how temporal and spatial proximity affects how refugees use ICT. Bengtsson (2014), in her work on virtual ethnographies, argues that we need to consider distance as having two dimensions: physical and cultural. Similarly, we can understand proximity as physical closeness and emotional closeness. Although ICTs allow temporal proximity in that we can experience things at the same time, temporal rhythms due to different routines (and time zones) also affect the experience (Bengtsson, 2014). How might these dimensions play out for refugees who regularly contact their home country? We can ask a similar question about the interaction among former refugees who shared many years of their lives in refugee camps before they resettled in different countries.

Additionally, governments and not-for-profit organizations need to better use ICT to share data and improve internal communication—particularly to support refugees given the urgency with which they need help and the breadth of help they require. Government systems developers rarely use a user-driven approach to ICT application development, often what researchers might label as a narrow “design science” approach (Fedorowicz & Dias, 2010): they develop applications, test functionality, and hand it off to the requesting agency. They give little consideration to the “socio” element of the sociotechnical implementation process, and great consternation arises when the result proves unsatisfactory (Lyytinen & Newman, 2008; Brooks, Bodeau, & Fedorowicz, 2013). Researchers should not fall into this same trap in designing ICT for refugees. Design science researchers should follow a human-centric approach to ensure they identify a real need before beginning to design a system. When the ICT solution addresses this need and provides value, researchers can build on it to redesign the social process around the ICT to fit with the problem and its proper use.

Given the large number of people forced to leave their countries in the recent refugee crisis, researchers and practitioners currently focus on urgent issues such as coordinating volunteers, helping refugees understand their new country, and helping them undertake the first steps of integration. Future research should also address the long-term consequences, such as how ICT resources help refugees build capability and, thus, obtain agency in their quest for social inclusion, and examine how temporal agentic orientations shape patterns of ICT-mediated information practices among resettled refugees (Díaz Andrade & Doolin, 2016, 2019). Design science research could develop solutions for different aspects of life that refugees experience during their resettlement or focus on a specific aspect, such as learning their host country’s language, finding opportunities for education, engaging in economic activities, accessing public services, and providing options for cultural expression.

Researchers should incorporate future research on ICT-enabled refugee integration into the body of knowledge that the IS field has already acquired. For example, IT adoption, intercultural interface design, and information management represent well-developed research topics in the IS field. Researchers need to work on contextualizing the issues that affect refugees in terms of specific characteristics and using our knowledge of the interplay between technology and people in order to contribute to solutions to pressing societal problems.

From a methodological perspective, both inductive and deductive approaches can shed light on how the process whereby refugees try to regain control over their disrupted lives implicates

ICT. ICT use by refugees is a relatively new phenomenon; it has emerged due to the confluence of the current refugee crisis and the ubiquity of digital technology. Because refugees find themselves in unfamiliar environments and have often suffered from traumatic experiences in their home countries or during their escape, research needs to consider the contextual conditions of ICT use in different stages of their journeys (e.g., en route during their escape or after arriving in their host countries). Studies grounded in empirical data help to explain why and how refugees use ICT. In this vein, grounded theory enables researchers to rely on diverse data from the field such as interviews, observations, ethnographies, pictures, and videos (Urquhart, 2013). Although grounded theory studies ultimately focus on creating theory, intermediate results such as rich descriptions of phenomena or models that provide abstractions of the phenomena can also prove useful as first steps that lead to a theory (Urquhart & Fernandez, 2013; Wiesche, Jurisch, Yetton, & Krcmar, 2017). For instance, Díaz Andrade and Doolin (2016) inductively identified patterns of ICT use among resettled refugees in New Zealand and their meaning in terms of social inclusion based on data they collected through semi-structured interviews. In a subsequent study, Díaz Andrade and Doolin (2019) combined an inductive logic with a deductive approach to map emergent patterns in how resettled refugees used ICT against information practices (cf. Caidi et al., 2010; Savolainen, 2008) to uncover how refugees' agentic orientations towards the past, present, and future shape these ICT-mediated information practice patterns (cf. Emirbayer & Mische, 1998). Similarly, action research suits research that not only examines refugees' ICT use but also contributes to projects to help refugees. Action research refers to "a post-positivist social scientific research method, ideally suited to the study of technology in its human context" (Baskerville & Wood-Harper, 1996). In action research, researchers directly participate in the case or phenomenon under study. By manipulating certain elements, they can directly observe the effects of those manipulations. If necessary, action research can help researchers gain insights into a phenomenon and to directly apply the knowledge in practice to advance a project (Mathiassen, 2002). For example, Schreieck et al. (2017b) conducted an action research study to analyze how one can incentivize information providers to participate in an information platform for refugees. They gained insights by studying and improving the governance strategies that the project Integreat used; thus, the action research study also contributed to the project itself by improving its governance strategies.

No matter what methodology researchers choose, they need to incorporate the context when developing theories. In particular, researchers have shown the value of context for theory development in IS research, such as in increasing richness and relevance to practice (e.g., Hong, Chan, Thong, Chasalow, & Dhillon, 2014; Johns, 2006), especially in the developing-country context. Studying how ICT can support refugee integration clearly constitutes a context-specific phenomenon. Indeed, to be a refugee means that one has settled in a foreign country and, in many cases, away from one's family members and friends and with trauma from previous experiences. Also, host countries differ from one another in that some societies more openly integrate refugees than others. The user population's mobility represents another key confounding factor in many of the themes we identify, and researchers may crucially need to incorporate such contextual factors when developing theory.

Lastly, while encouraging bottom-up research on ICT-enabled refugee integration, we also highlight challenges that we have experienced. Conducting bottom-up research requires insights into refugees' daily life, but obtaining that access is challenging and time consuming. Organizational difficulties arise when, for example, authorities impede access to initial reception facilities or relocate study participants on short notice. Language barriers also make it difficult to gather qualitative data, such as from interviews. Working with interpreters can help assuage such barriers, but still one might lose emotional nuances or a cultural context in the interviews and conversations.

## **6. Conclusion**

Against the backdrop of the recent global refugee crisis, we discuss how ICT can support refugees in different regions across the world. We specifically focus on the role that ICT plays in supporting refugees' desperate journey to safety, temporary stay in settlement camps, and post-settlement inclusion in host countries. We identify seven core research themes: 1) accessibility to information, 2) availability of education and linguistic resources, 3) admissibility to labor markets and entrepreneurship opportunities, 4) communicability with home country, 5) connectedness with local population, 6) interactivity with the host government, and 7) volunteer coordination. Across all themes, we highlight the need to contextualize IS research designs. Research that examines ICT solutions for refugees could shed light on designing intercultural systems since visuals that refugees from different backgrounds can understand could serve as a central tool for intercultural understanding. Researchers should also incorporate future research on ICT-enabled refugee integration into the body of knowledge that several other IS subject areas have already acquired, such as IT adoption, designing intercultural interfaces, and information management. Finally, we call for more empirically grounded studies to enhance our understanding about how refugees leverage ICT.

## **Acknowledgment**

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## Article 4:

### Social Inclusion of Refugees Through Digital Learning: Means, Needs, and Goals

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#### Outlet:

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#### Abstract:

Harvesting the uncountable benefits of ICT advances has been one of the key goals of the Information Systems field, in particular how research findings can inform professional practices and policymakers on how to improve and develop our societies. Teaming up with these efforts, we tackle in this study the aspects of education, e-learning, and language learning by Syrian refugees in Germany as an essential driver of refugee integration and social inclusion into the hosting society. We also discuss gender differences in harvesting e-learning opportunities among refugees in Germany. Towards this goal, we use a qualitative research approach to examine to which extent digitization can create an inclusive society. We conducted face-to-face interviews with Syrian refugees in Germany, with the main focus being on their use of e-learning opportunities and how these services contribute to their social inclusion into the community. This paper contributes not only to the body of education and e-learning research, but it also offers perspectives on development that benefit policy and practice with the aim of “improvements in the lives of people.”

**Keywords:** ICT, e-learning, education, social inclusion, integration, refugees

## 1. Introduction

The recent rapid advances in Information and Communication Technology (ICT) have a profound impact on modern societies. ICT is considered one of the disruptive forces that could enhance fundamental human values, such as liberty, equality, and fraternity (Rowe, 2018). In this research, we investigate how ICT impacts human values, particularly at the societal level, namely, the social inclusion of Syrian refugees in Germany. We follow the suggestion of the UN Refugee Agency that one solution of population equality is the local integration of refugees (UNHCR, 2019b). To ensure an inclusive and equitable society, the process of integration should begin when the asylum seeker or refugee arrives in the host country, as suggested by Eurostat (2018).

Measuring and quantifying local integration in a way that is comparable and consistent across different contexts is challenging (UNHCR, 2019b). Moreover, data availability on the situation of refugees is still very poor (Eurostat, 2018). Thus, our study aims to bridge the gap of refugee integration and what can foster their social inclusion into the hosting society. Trauth and

Howcroft (2006) argue that ICTs can contribute to bridging the gaps of social inclusion in the refugee context. However, existing research hardly offers a wide-ranging study on the role of innovative ICT-enabled services in social inclusion (Choudrie, Kurnia, and Tsatsou, 2017).

Following the research by AbuJarour and Krasnova (2017) and the report by Eurostat (2018), we tackle the aspect of participating in educational programs and learning the language as one of the main contributors to the social inclusion process of refugees. According to Ives (2007), active participation in education and language learning is essential to a successful integration process. Our research has been inspired by the observation of the wide adoption of e-learning among Syrian refugees in Germany, as observed by the author in the context of previous interactions with the target group (AbuJarour and Krasnova, 2018). For instance, the wide acceptance of e-learning content on YouTube targeting the refugee population. Its openness, being one of the main features of modern ICTs, has greatly increased access to information (Bentley, 2014; Smith and Reilly, 2013).

Recently, it has been reported that the number of refugees failing Germany's integration exams and language classes has increased to a 45% failing ratio (Goebel, 2019). This raises questions about the quality of the courses offered to refugees by integration centers: "Germany's migration office has been under fire for the quality of the courses" (Goebel, 2019).

Our study focusses on Syrian refugees only to ensure homogeneity in our sample, especially as Syrian refugees comprise the majority of the refugee population worldwide (UNHCR, 2019). Additionally, this study targets Germany as a hosting society, because most of refugees in Europe are located in Germany, with more than 1.5 million asylum seekers since 2015 (BAMF, 2018).

This paper has both academic and practical contributions. On the one hand, it contributes to the body of ICT usage, education and e-learning, and social inclusion research. On the other hand, it offers contemporary perspectives on development that benefit policy and practice as well. It has benefits for stakeholders relevant to the education of refugee topics, including governments and policymakers, educational systems and institutions, and the refugees themselves. We also follow the recent calls for similar research, e.g., the call of Sajda Qureshi for more inclusive research, with the aim of "improvements in the lives of people" (Qureshi, 2019). Moreover, the aim behind our research on social inclusion is the need to "open up the 'black box' of data that shows demographic differences, structural barriers in society, and other evidence of inclusion issues," as explained by Eileen Trauth in her research agenda for social inclusion in Information Systems (IS) field (Trauth, 2017).

This paper proceeds as follows: we provide background information about refugees, social inclusion, and e-learning. Afterwards, we introduce details on our methodology and sampling. We then present our findings and discuss insights into our research. Finally, we conclude our study and introduce potential implications.

## **2. Related Work**

### **2.1. Refugees and ICT**

According to UNHCR (2019), “a refugee is someone who has been forced to flee his or her country because of persecution, war or violence. A refugee has a well-founded fear of persecution for reasons of race, religion, nationality, political opinion or membership in a particular social group. Most likely, they cannot return home or are afraid to do so. War and ethnic, tribal and religious violence are leading causes of refugees fleeing their countries.” Statistics show that 70.8 million individuals have been forcibly displaced worldwide as a result of persecution, conflict, violence or human rights violations, with today the world “witnessing the highest levels of displacement on record” (UNHCR, 2019). Alone in Europe, almost 4 million asylum seekers applied to European countries since 2015 (Eurostat, 2019).

A notable phenomenon about the current refugee population is that refugees are the “most tech-savvy population of migrants in history” compared to previous refugee populations with smartphone penetration rates of up to 90% (Maitland and Xu, 2015; Rutkin, 2016). With ICT, in particular, smartphone, emerging as an important piece of technology for refugees in all stages of their fleeing journey, starting by preparing their journey, then during the dangerous road toward safe countries, and finally after arriving hosting countries and in the process of building a new life abroad (AbuJarour and Krasnova, 2017; Fitch, 2016). Capabilities related to ICT use, including access, knowledge, skills, support, and literacies, can ease participation in the modern information society (Mansell, 2002; Notley, 2009). For refugees, ICT plays role in promoting social inclusion and enhancing agency because it allows refugees to participate in society and regain control over their lives (Diaz Andrade and Doolin, 2016). Recently, research into how ICT can aid marginalized groups has gained special attention (Qureshi, 2015, 2017). In this research, we focus on shedding light on the role that ICT plays in helping marginalized groups, in particular refugees, in developing countries. Being the country with the highest asylum seeker applications in Europe (Eurostat, 2019), Germany is the target country of our study with 1,5 million asylum seekers from 2015 through 2018 (BAMF, 2018).

### **2.2. Integration and Social Inclusion**

“From a refugee perspective, integration requires a preparedness to adapt to the lifestyle of the host society without having to lose one’s own cultural identity. From the point of view of the host society, it requires a willingness for communities to be welcoming and responsive to refugees and for public institutions to meet the needs of a diverse population” (UNHCR, 2002). In host countries, refugees are establishing themselves and their new lives and are integrating into the new society, which is a complex and gradual process (UNHCR, 2019b).

Since its evolution, social inclusion research has come to be seen as “the effort to develop a greater understanding about aspects of human diversity as they relate to underrepresented and underserved groups in relation to the development, deployment, management, use, and impact of information systems and technologies” (Trauth, 2017). Social inclusion has been of immense interest to technology experts, activists, and policymakers due to the rapidly and largely unexpectedly emerging ICT’s innovations affecting people’s positioning in the society

(Choudrie, Kurnia, and Tsatsou, 2017).

A widely accepted definition of social inclusion in the community is by Beck et al. (1997), who 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.” Wilson and Secker (2015) define social inclusion as having the opportunities and resources to participate fully in economic, social, and cultural life. With the emerge of ICT, it is suggested that it helps community members to be socially included and remaining active within their communities by “supporting participation in everyday activities and help people conduct a life they value by attaining the necessary functioning” (Zamani, 2017). Qureshi (2019) reveals that the implementation, use, or diffusion of ICTs leads to improvements in the lives of people through economic, social and human conditions of a group of people, community, or region (Qureshi, 2019), which in turn leads to achieving a socially included society.

### **2.3. Education and E-Learning**

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). UNESCO (2005) recognizes education as a basic human right, through which inclusion is achieved by providing “access to free and compulsory education; equality, inclusion and non-discrimination; the right to quality education, content and processes.”

In the context of refugees, research revealed that access to education and learning the local language are among the highest priority aspects for refugee integration (Da Costa, 2006; Eurostat, 2018). However, only 3% of refugees enroll in college or university in comparison to the worldwide enrollment rate of 37% (UNHCR, 2019). 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). In Germany, refugees are required by German authorities to take part in integration courses, which include two types of courses: orientation and language learning. The orientation course is aimed at giving participants insights into Germany’s culture, history, legal system, and values and requires participants to succeed at an exam titled “Life in Germany” (Jones, 2018). The language course is aimed at teaching participants a beginner to intermediate level of German. Both courses are funded by Germany’s Federal Office for Migration and Refugees (BAMF). Reports show that these courses have not been quite successful in recent years, with a 40% and 45% failure rate in 2017 and 2018 respectively, which led to some criticism from the BAMF office for the quality of the courses, with inspections stepped up (Goebel, 2019).

Eurostat (2018) indicates that “mastering the host country language is the single most important skill refugees need for integrating into the host country.” Additionally, researchers have shown that education and language enable social inclusion and improve well-being (Stanley et al., 2011). Learning the language is not only crucial for daily interactions with the host society, but it is also a requirement for almost all integration activities. For instance, finding a suitable job requires generally mastering the local language. Also, getting a university admission requires passing the DSH (German higher education entrance examination) exam. Furthermore,

mastering a particular level of language proficiency is an official requirement to obtain a permanent residence permit.

Considering that in Europe 44% of the refugee population was female in 2018 (UNHCR, 2019b), it is alarming that there are gender differences in male and female participation in educational programs, already starting from school education. UNHCR (2019) reports that “for every ten refugee boys in primary school there are fewer than eight refugee girls, and for every ten refugee boys in secondary school there are fewer than seven refugee girls”. This indicates the need to discuss gender differences in education and provide recommendations regarding inequality in educational opportunities, especially that research proved that the Internet could significantly support underprivileged women, in education, social inclusion, employment, and financial aspects (Zamani, 2017).

### **3. Methodology and Sampling**

#### **3.1. Methodology**

Our study applies qualitative research methods as part of the Grounded Theory Method, as suggested by Urquhart (2013). This study is the third interview round including eight interviews, following on two previous interview rounds of 28 interviews that were reported in a previous publication (AbuJarour and Krasnova, 2018). All interviews were conducted following a semi-structured approach. We asked respondents questions related to the usage of ICT, consumption of e-learning opportunities, participation in educational programs, challenges of engaging in educational programs or language training, and social inclusion and integration achievements. The average length of the interview is 82 minutes and 30 seconds. The author initially conducted all interviews in the participants’ native language; Arabic. In the next step, the interviews were audio-recorded, 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 using the completed codebook. In the process of eliciting the codes and merging them into superior categories, we specifically looked for themes reflecting the use of ICTs for educational purposes by our respondents and in which way these uses contributed to their perceptions of social inclusion. A complementary process of selective coding helped us discover patterns across themes as they relate to each other. These themes were used to guide our decisions on the formulation of codes and analysis of the emerging patterns.

#### **3.2. Sampling**

As mentioned earlier, our study targeted refugees coming from Syria because (1) we need to have a homogenous sample with respect to culture, background, and asylum-seeking journey, and (2) because most refugees worldwide, and in Germany in particular, come from Syria (UNHCR, 2019).

Our qualitative study is based on a sample of 8 participants, whom we interviewed face-to-face

in Berlin, Germany. The interviews' duration ranged between one and one and a half hours. Our sample was evenly-distributed with respect to gender; we had four male interviewees and four female interviewees. The ages of the refugees we interviewed varied, with one being participant between 18-24 years old, three 25-30 years old, and four 31-39 years old. One refugee in our sample has high school certificates and two have a college or university degree. Two of our participants had an advanced level of the German language, three had an intermediate level, and three had a beginner level. Three participants in our sample were employed/studying at the time of the interview. All participants already acquired working experience. The majority of our interviewees have been living in Germany for more than three years prior to the interviews. All participants have already acquired their resident permits. All participants have family members both in Syria and in Germany at the time of our study. Six interviewees live in apartments and two live in shared residences.

## 4. Findings

Our analysis shows that refugees are not relying solely on traditional ways to learn the German language and to pursue further education. In this section, we introduce our findings along the following dimensions: means (ICT and smartphone), needs (education, e-learning, and translation), goals (integration and social inclusion, and self-development). We also introduce intermediate factors that affect the adoption of e-learning by refugees (gender-differences and integration phase).

### 4.1. Means: ICT and Smartphone

Our study shows an explicit reliance from refugees on mobile apps to fulfill their needs towards their ultimate goal of social inclusion. For instance, 75% of our sample use their smartphones as a single medium for education and e-learning purposes. The other 25% use their laptops for specific educational purposes in addition to their smartphones.

One participant explained this aspect, stating:

*“Using the laptop, it is easier to search for work or educational training [...]. When I have something to study or when following online courses, I usually use my laptop.”*

Investigating the preferred ICT medium for refugees shows that YouTube comes first. 87.5% of our sample stated that they use YouTube to learn German. One participant explained the benefit of YouTube above classical methods, e.g., books, saying:

*“I prefer using YouTube because videos leave more impact on memory than reading.”*

The YouTube app for smartphones seems to have features that match the needs of refugees in the context of e-learning, including:

- **Liveliness:** YouTube videos on a particular topic provide the audience with lively explanations in contrast to books and other printed material. This is related to the social nature of the learners.
- **Wide range of content:** The content available on YouTube is rich and covers a wide spectrum of topics, ranging from general topics, e.g., German Grammar, to specific ones, e.g., conversation while visiting a doctor. An important aspect here is the content



provided by teachers speaking the same language of the learners, e.g., Arabic in the case of Syrian refugees. This makes it easier for learners to grasp the topic, especially when the teacher relates the new topic to their mother language.

- Flexibility: YouTube provides learners with the flexibility to learn whenever and wherever they want. Learners can pause-and-play, rewind, and repeat the videos as they need.
- Open and easy access: YouTube is free and many users had it already installed on their smartphones. This implies that users do not need specialized training to use the app.

*“[On YouTube] there are many Arab people that teach German in Arabic, and mostly they explain grammar from the very beginning to the advanced stages, and also teach about exams and exams’ types. For instance, Deiaa Abdullah and Khaled Bozan [on YouTube].”*

When it comes to translation, Google Translate for smartphones is mentioned by all of our interviewees. Our participants use Google Translate in their communication with Germans and to translate the many official letters during their communication with governmental offices. One participant explained their use of the Google Translate mobile app saying:

*“I used YouTube and other mobile apps to learn the language. For example, Google Translate became a part of my daily life; it has become a daily necessity [...] especially in communication with my German friends [...]. I translate the official messages and the letters of the Job center. It is used in all aspects of my life.”*

ICTs can also be used indirectly to help refugees learn the German language. For instance, refugees use Facebook to find information about relevant offline events, such as language cafes. One participant described this concrete use saying:

*“[I] posted on Facebook that I’m looking for places to learn the [German] language and some people referred us to language cafes.”*

## **4.2. Needs: Education, E-Learning, and Translation**

Being in a foreign country, refugees have different needs compared to their home countries, which are fulfilled through different mobile apps. This situation has been captured by one of our participants, saying:

*“I used YouTube and other mobile apps to learn the language. For example, Google Translator, it became a part of my daily life, it has become a daily necessity, I wasn’t using it in Syria, but here became important, especially in communication with my German friends. There are many words that I do not understand. I copy them to the translator. I translate the official messages and the endless posts of the Job center. It is used in/for all aspects of my life.”*

Although refugees have several needs towards their goal of social inclusion, the participants highlighted three essential needs:

### *4.2.1. Education*

The German educational system represents another challenge for refugees whose goal is to obtain a university degree. For instance, it is a requirement to pass the German test DSH

(German higher education entrance examination) to qualify for university admission. Here, ICT appears as an essential medium to approach this challenge. For instance, one of our participants stated:

*“[...] During preparations for the DSH exam, I found a YouTube channel for a German teacher who gives instructions about the exam and the way for proper writing and speaking in the exam.”*

Not only do related regulations represent a challenge, but the content also represents another challenge by itself. One of our participants explained how they tackle this challenge with ICT capabilities:

*“During university times, I watch [online] videos related to the subject I study. I watch videos, interviews, and sometimes TED-Talks. The nice thing is the subtitled videos including Arabic subtitles.”*

Our participants emphasized the difference between learning the language and studying at the university in German. One of our participants stated:

*“I finished C1 (advanced) level and already passed the DSH exam, but I’m still using two essential translation apps, especially at the university, where I felt like I don’t speak German at all because the words were all new.”*

#### 4.2.2. E-learning

It is evident that refugees have discovered the wealth of e-learning resources to fulfill their need to acquire new knowledge and develop themselves. The wide range of available e-learning resources makes e-learning popular among refugees as they can use it for specific temporary needs, e.g., DSH test, as well as learning general topics, e.g., university courses. One of our participants summed it up concisely:

*“I signed up for an online course offered by Cisco on Cyber Security. They also provided a website to share the lectures online.”*

#### 4.2.3. Translation

Even after spending a couple of years in Germany, some refugees still face difficulties when it comes to the German language. This explains the firm reliance of refugees on translation mobile apps, with Google Translate being one of the most popular translation apps among refugees. The fact that translation apps can be used on-the-go makes them inevitable for many refugees. One of our participants described their use of translation apps saying:

*“I still use them [translation apps]. Sometimes when I want to go to a place where they speak German only, such as governmental offices, I prepare the sentences I want to say in advance so that I can say it right to avoid annoying the person I’m communicating with.”*

### 4.3. Goals: Integration and Social Inclusion, and Self-development

Our analysis validates the results reported by (AbuJarour and Krasnova, 2018). Participants confirm that using ICT for language learning and educational purposes is helping the integration process and thus makes them more socially included in their host society.

#### 4.3.1. Integration and social inclusion

Language represents one of the main barriers against integration and being able to cross this barrier through ICT is a step in the integration process. Through ICT, e.g., the Google Translate mobile app, the need for translation can be fulfilled to achieve the goal of social inclusion and integration. One of our participants summarized this stating:

*“The smartphone helps me to go along easier with my life in Germany, and to participate and integrate in society. In particular, being able to use the translation service. If I want to communicate with a German person and because my German language is weak, I prepare what I want to say and translate it in advance, especially if I want to visit a governmental office.”*

Another barrier against integration is the lack of knowledge about the German system and culture, which is relatively different from what the refugees are used to. This barrier can also be tackled through ICT. One of our participants highlighted this by saying:

*“The Internet helps me to learn new aspects about the country, which makes me feel that I can participate and integrate more into the society. For instance, I read many articles about German habits such as Sunday is a day for relaxation only [...]. Therefore, I learn how to stick to the rules to avoid troubles.”*

#### 4.3.2. Self-development

Being integrated into German society means for many refugees to be able to find a place in the society, being it in a workplace or educational institution. Nevertheless, the required skillset is not always what the refugees possess, which represents another barrier against the integration process. This situation revealed another critical need for many refugees: self-development. For instance, refugees who cannot visit traditional education opportunities can use ICT to utilize e-learning as a capability to achieve self-development (e.g., self-learning) towards being socially included and integrated.

One of our participants explained this aspect comprehensively:

*“When I was studying B1 (intermediate) level of German, I had to study it alone at home. I was using apps including Google Translate, arabdict, and Deutsch Sprache DS. This latter app was created by a Syrian person. It has about 30 topics and 30 conversations, and all the grammar for my level. It helped me a lot.”*

An interesting observation is augmenting classical education with ICT to achieve some level of self-learning. For instance, one of our participants reported:

*“This book cannot be studied alone at home. Downloading the solution book and the voice book [from the Internet] enabled me to study at home on my own.”*

### 4.4. Intermediate Factors

From our analysis, we identified the following two factors that affect education in the context of social inclusion, namely, Gender Difference and Integration Phase.

#### 4.4.1. Gender differences

Our analysis shows several differences between male and female refugees concerning using ICT towards social inclusion.

**Self-learning:** Our analysis shows that self-learning is one of the goals that refugees work toward. This goal is more prominent in the case of female refugees, because they typically have to take care of their children as Berlin is suffering from a lack of childcare spots. One of our female participants reported:

*“I benefited from studying at home because I have a baby and couldn’t get childcare and couldn’t find a language course with childcare either. So, I have to stay at home with much free time. [Learning on the Internet] was my only option to utilize time, instead of waiting nine months until I could register in a language course with childcare [...]. I managed to learn on my own and save time.”*

**Family situations:** Our analysis shows that harnessing educational opportunities can be affected by the family situation of the refugee. For instance, female refugees typically take care of their children and thus have limited opportunities to visit language classes or related activities. One of our female participants mentioned:

*“I used to join language cafés once a week to learn and talk about various subjects. But currently, and because of my baby, I don’t. Yet, my husband goes every week.”*

**ICT affinity:** Our analysis shows that male participants are more ICT affine, and thus, have more sophisticated needs when it comes to mobile apps. One example is the ability to translate pictures using the Google Translate app without the need to type in the text. One of our male participants reported:

*“Important is that Google Translate translates images. If you take a photo of a page in a book, Google Translate will extract the text and translates the sentences [...]. Translating text from paper-based dictionaries is possible only for Germans, but not for us [refugees]. [...] Google Translate is much easier and there is no need for traditional dictionaries.”*

Another example is a precise comparison among translation apps and the features they provide. One of our male participants reported:

*“I use Google Translate and arabdict<sup>11</sup>, because of the good services they provide. For example, while shopping on Amazon app [...], the translator appears in the form of a floating window above the application, which allows you to continue using Amazon application and translate between any two languages you need. On the other hand, the app ‘arabdict’ is more specialized in scientific terms, which cannot be translated correctly by Google Translate, because it is either wrong translation or literal. The app ‘arabdict’ gives you the correct meaning of each word precisely. However, it translates only single words but does not translate sentences.”*

**University and further education:** Our analysis shows that male refugees are typically more interested in pursuing their university and further education in Germany. One of our male

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<sup>11</sup>arabdict is an Arabic-German translation app

participants reported using e-learning for his university activities:

*“During university times, I watch [online] videos related to the subject I study. I watch videos, interviews, and sometimes TED-Talks. The nice thing is the subtitled videos including Arabic subtitles.”*

Another male refugee stated that he was learning web development as a kind of further education:

*“Currently, I’m learning [online] HTML and CSS.”*

#### 4.4.2. Integration phase

An interesting insight revealed by our analysis is the correlation between the integration phase of refugees and their usage of e-learning offerings. One participant summarized it, saying:

*“[My smartphone use] varied depending on the period of my stay in Germany. In the first period, most of the usage was to search for accommodation, then to search for language schools, then to look for universities, university registration, university loan, and finally for job search.”*

Another participant highlighted heavy reliance on YouTube to learn the German language upon their arrival, saying:

*“I have been using my smartphone to learn the German language through using YouTube [...] I was spending hours daily to learn, especially upon my arrival in Germany.”*

## 5. Discussion

Our analysis emphasizes the need for direct interaction with the community while learning the language. In contrast, other types of education, e.g., domain-specific training, do not particularly need such interaction. The latter case is, therefore, more suitable for e-learning. ICT provides a suitable platform to establish these connections with the local community to boost learning the local language, culture, and system. For instance, language cafés and language tandems have been recommended by our participants where they seem to help. As mentioned earlier, Facebook and other SNSs represent excellent platforms to organize such activities.

It is an interesting observation that the majority of applications used by refugees are not specifically for refugees. However, the purpose and manner by which the refugees use these apps are different. For instance, the number of installations of the YouTube app for Android devices has exceeded 60 million installations, according to Google Play. Neither Google Play nor the Apple App Store classifies the app as an educational app, yet the majority of our participants confirmed using the app for educational purposes.

As mentioned in the Related Work section, refugees are unique and different from traditional migrants. Ignoring this specialty in the integration process might be among the possible reasons for failing exams by refugees. Timothy Jones highlighted this aspect in his article stating: “many refugees were still traumatized by their experiences, while others lacked the necessary ‘learning culture,’ having never attended school in their native countries” (Jones, 2018).

Our analysis shows that both cultural and gender differences play a crucial role in the context of digital integration. For instance, responsibility distribution among men and women is different in Germany compared to the Arabic world. Also, gender differences should be considered when developing apps for refugees. For instance, males are typically more IT-affine. Females are typically more functional oriented, i.e., is the app easy to use, user-friendly, etc.?

One of the key factors to foster the integration process through ICT is to consider the integration phase of the refugees. For instance, the focus of new refugees is mainly on finalizing the official asylum-seeking process, starting learning the language, and finding accommodation. Whereas in later stages, they need to find a place in the job market or at an educational institution. During the intermediate phases, they need to inform themselves about the ‘foreign’ local system to plan their path in this new environment. For instance, the German educational system offers various learning opportunities that range from vocational training to university studies. It is crucial for newcomers to understand the differences among these opportunities to select the most suitable one for them based on their skills, experiences, and interests. ICT, and SNSs in particular, appear to be a suitable medium to distribute this knowledge among refugees, where the information can be provided in their native language, and where a certain form of interaction is possible, e.g., to ask concrete questions to clarify a particular aspect.

Several participants criticized the poor quality of several courses offered for them despite the checks ran by Germany’s Federal Office for Migration and Refugees (BAMF) on nearly 90 percent of course providers in 2018 (Goebel, 2019). Ensuring certain quality standards in the classical learning environments might not be feasible given the high number of course providers. In contrast, ensuring certain quality standards and applying the necessary measures in online platforms is feasible due to ICT capabilities that enable remote verification, control, and correction. This suggests that BAMF should invest more in the direction of e-learning to ensure a certain quality level of the offered courses and to avoid misusing these offers, as has been already revealed that some providers are being sued by the BAMF for fraud and the falsifying of documents (Goebel, 2019).

## **6. Conclusion and Implications**

This study contributes to the field of Information Systems, in particular, how research findings can inform professional practices and policymakers on how to improve and develop our societies. We aim to uncover some of the benefits of ICT solutions related to digital learning in the context of refugees. To fulfill our goal, we studied the aspects of education, e-learning, and language learning by Syrian refugees in Germany as an essential driver of refugee integration and social inclusion into the hosting society. We conducted eight face-to-face interviews with Syrian refugees in Berlin Germany, with the main focus being on their use of e-learning opportunities and how these services contribute to their social inclusion into the community.

This paper contributes to the body of research in the fields of education and e-learning, ICT usage, and social inclusion by introducing valuable insights achieved from a qualitative research approach. These insights should be considered for contextualizing existing theories on relevant topics. Further research will promote further understanding of theoretical implications.

Furthermore, our findings offer practical implications for different stakeholders, including governments, industries, educational institutions, and NGOs and the local community.

For instance, in the context of refugees and their social inclusion into the host society, our study offers recommendations to governments and policymakers to consider the need of refugees for more interactive solutions to engage in educational programs as part of their social inclusion process. These solutions should include both offline and online solutions. Moreover, the government offices that are in contact with refugees should invest more time and effort in informing refugees about the available learning opportunities.

We recommend to software development industries considering unique requirements by refugees when deciding to develop digital educational solutions, e.g., apps and platforms. In a similar context, educational institutions should consider the needs and requirements of refugees, the necessity to include them into the educational system, and their extraordinary characteristics with respect to cultural, psychological, and economic situations. Finally, we emphasize the extra effort required by the NGOs and local community to accept and work together with refugees on helping them to feel socially included in the host society. This could be done by creating (digital) learning communities that target both local communities and refugees.

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## Article 5:

### Technology as a Source of Power: Exploring How ICT Use Contributes to the Social Inclusion of Refugees in Germany

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#### Abstract:

Since the beginning of the recent global refugee crisis, researchers have been tackling many of its associated aspects, investigating how we can help to alleviate this crisis, in particular, using ICTs capabilities. In our research, we investigated the use of ICT solutions by refugees to foster the social inclusion process in the host community. To tackle this topic, we conducted thirteen interviews with Syrian refugees in Germany. Our findings reveal different ICT usages by refugees and how these contribute to feeling empowered. Moreover, we show the sources of empowerment for refugees that are gained by ICT use. Finally, we identified the two types of social inclusion benefits that were derived from empowerment sources. Our results provide practical implications to different stakeholders and decision-makers on how ICT usage can empower refugees, which can foster the social inclusion of refugees, and what should be considered to support them in their integration effort.

**Keywords:** ICT, refugees, empowerment, social inclusion, technology.

## 1. Introduction

Over a million asylum seekers entered Europe in 2015, erupting a state of emergency all over Europe and sparking the need to facilitate social inclusion of the newcomers. Referred to the state of “having the opportunities and resources to participate fully in economic, social and cultural life” [1], social inclusion represents a critical maxim of an equitable and democratic society.

From the very beginning, researchers have observed that this crisis is different from previous ones due to the significant reliance of refugees on technology, with the use of the Internet by refugees and asylum seekers reaching new records [2]. In response, IS studies have focused on

the potential of Information and Communication Technologies (ICTs) in alleviating the ongoing humanitarian crisis [3].

By investigating this new context, first research findings suggest that smartphones may have an empowering effect on refugees, serving as a primary gateway to keep the connection to others and access much-needed information to navigate the new reality [4]. Indeed, ICT-enabled services available on smartphones have continuously enabled refugees during the uncertain circumstances of their journey to Europe, in the first period of applying for asylum, and during the extended process of integration into the new society [5]. For example, [6] suggests that Internet use has helped refugees develop a much-needed sense of connectedness, thereby facilitating refugees' sense of agency and well-being. Additionally, ICT capabilities available to refugees have been linked to greater perceptions of emotional support, operational efficiency, and integration [5]. Overall, while initial evidence suggests that ICTs can contribute to the empowerment of refugees, thereby facilitating their social inclusion in the host country, the mechanism behind these effects is little understood. Specifically, it is not clear which features of ICT have an empowering influence on refugees and how this influence subsequently translates into social inclusion. To fill this research gap, in this study we build on the results of thirteen face-to-face interviews with Syrian refugees from Germany to investigate the mechanics of ICT-enabled empowerment and its interaction with the refugees' perception of social inclusion.

We have chosen to focus on the population of Syrian refugees from Germany for two important reasons. First, Germany is the country of destination for the highest number of asylum seekers in Europe [7], and second, Syrian refugees represent the largest group of asylum seekers in Germany.

The rest of this paper is structured as follows. In section 2, we summarize the related work on the role of ICT use in the social inclusion of refugees and on empowerment components. In section 3, we explain our methodology and describe the data collection and data analysis. In section 4, we present our findings and the research model. In section 5, we discuss the results of our research. We conclude our study, highlight the limitations, and introduce recommendations for future research in section 6.

## **2. Related Work**

Recent studies suggest that modern ICTs can be the right tool to promote the social inclusion of refugees, enhance their well-being, and raise the personal sense of agency [5]. Nonetheless, the mechanisms behind these effects are still little understood (e.g., [4]). In this section, we summarize ongoing research into the role of ICTs in the social inclusion of refugees and introduce the concept of empowerment as a critical mechanism underlying this relationship.

### **2.1. The Role of ICT Use in Social Inclusion of Refugees**

In the refugees' context, the goal of social inclusion is to grant opportunities for people to settle in, integrate, and participate in the new environment [5]. Recent research differentiates between two critical goals of social inclusion in the context of refugee integration: well-being and the

sense of agency [8]. While well-being reflects individual “cognitive and affective evaluations of his or her life” [9, p. 187], agency is defined as the “freedom to set and pursue one’s own goals and interests” [10]. Specifically, recent research stresses social networking, employment, education and language, health, government and citizenship, housing, and culture [5] as critical dimensions of agency in the refugee context.

Taking a closer look at the agency dimensions helps understand the intricacies of social inclusion processes in greater detail. Specifically, social networking underlies the sense of agency as it helps refugees develop a sense of belonging and get the emotional support they need [11]. Further, equal opportunities in the labor market and access to paid employment enable refugees to reach their economic self-sufficiency and regain a positive sense of identity and control over their lives [12; 13]. Equally, active participation in educational and language learning programs is vital to a successful integration process, with refugees often required to attend language courses upon arrival [14; 15]. Access to healthcare services is also viewed as essential, as refugees often lack information about their healthcare options, experience difficulty navigating the complex healthcare and insurance system, and are constrained in their communication abilities because of the limited language skills [16; 17]. In the same vein, the ability to navigate governmental offices and understand regulations as well as refugees’ access to the housing market can further strengthen refugees’ sense of agency on their path to integration. Indeed, refugees face numerous barriers when searching for a new home, including a lack of information about the housing market, limited awareness about the customs and strategies relevant to access housing, and insight into a complicated application process [13; 17]. Finally, participation in cultural activities enhances refugees’ understanding of the host country’s culture, thereby supporting their social inclusion [18; 19]. Generally, adapting to the new culture is highly correlated to refugees’ overall satisfaction [20].

Notably, a growing body of research suggests that ICT solutions can support refugees in their integration journey and have the potential to tap into multiple domains of social inclusion [8]. Indeed, access to the Internet can provide refugees with general information about housing, employment, rights, citizenship, supporting services, language learning programs, and help overcome the feeling of isolation by supporting existing and establish new social connections [5; 21; 22]. For example, by facilitating relationships with others, smartphones can enable refugees to keep their connection to the family back home and help them initiate the first contact with the locals. Together, access to these old and new social networks can lessen refugees’ perceptions of loneliness [23] and help them develop a sense of belonging to the new host country [6; 12; 24]. Similarly, the use of translation applications helps refugees overcome existing language barriers, thereby opening new opportunities in their search for employment, healthcare options, and housing. For example, refugees rely on social media sites to understand and navigate the housing market and understand the local culture by providing useful tools and information [6]. Furthermore, refugees have been shown to actively use technology to connect with authorities to acquire information on regulations [8] as they apply and follow up on their asylum application [6; 25].

To sum up, with smartphone penetration rates among refugees reaching up to 90% [26], ICT can be seen as a fundamental means of empowering refugees on their path to integration [27].

## 2.2. Empowerment

Defined as “a process by which individuals gain mastery or control over their own lives and democratic participation in the life of their community” [28, p. 726], empowerment has been extensively discussed across a variety of different contexts and disciplines [29]. For instance, while the phenomenon of workplace empowerment has been in the focus of organizational studies (e.g. [30]), the concept of female empowerment has been studied in economics (e.g. [31]), and the idea of patient empowerment has gained significant recognition in the medical field [29].

Describing individual actions of those “with lesser power [to] gain control over their lives and influence the organizational and societal structures within which they live” [32, p. 215], empowerment is a multidimensional construct. Accordingly, researchers have described empowerment encompassing different dimensions (e.g., [32]), such as control, the achievement of goals, competence, critical awareness of the sociopolitical environment, self-esteem, and self-efficacy (e.g. [33]). While operationalizations differ depending on the research context and analysis level, three key dimensions of empowerment studied in the prior literature emerge as particularly salient: *control*, *participation in the community*, and *self-efficacy*. The *control* dimension refers to having control over one’s life, future, and destiny, which leads to the feeling of being empowered [29]. The belief that one can control one’s life events compared to the perception that one has no power to control important life outcomes is central to control [29]. The sense of control reflects the constraints and opportunities of one’s position in society. For example, increasing responsibility and perceived control among nursing home residents resulted in happier, more active, and more alert residents [34].

Linked with a subjective sense of empowerment, *participation in the community* is described as being involved in organizations or communities [32]. Participation in communities, such as neighborhood groups, will help individuals develop skills by mimicking others and gaining knowledge through organizing, identifying resources, or developing strategies. [28; 33].

Finally, self-efficacy has been defined as the people’s beliefs about their capabilities to attain specific types of performances and achieve particular results [35; 36]. As tasks vary in their level of difficulty, individuals often choose tasks based on their self-efficacy beliefs. Individuals with higher perceived self-efficacy will set more difficult challenges for themselves [36]. Thus, self-efficacy thinking has been linked to motivation processes and performance [36].

Importantly, empowerment has been associated with several positive outcomes, some of which can be situated in the domain of social inclusion. For example, empowerment has been found to be related to life satisfaction [37] and quality of life [29]. Additionally, researchers have linked a sense of personal control to a greater level of health and well-being [38]. Involvement in community organizations and activities has been found to be linked to feeling less alienated [39]. Additionally, self-efficacy has been shown to significantly impact the enhancement of human accomplishment and personal well-being [36]. At the same time, people with a low sense of self-efficacy also tend to have low self-esteem that may lead to depression [36].

Looking into the role of ICTs, extant IS literature has so far focused on uncovering the means

of crowd worker empowerment (e.g. [40]) and how social media empowers communities during crisis response [41]. However, the empowering potential of ICT in the context of social inclusion has received little attention. For example, it has been indicated that a lack of power can leave refugees in the lowest-paid jobs, working long hours, often isolated, and without any opportunity to contest their situation, which leads them to be socially excluded from the host community [42]. Moreover, refugees are often not able to control their destinies as they have been forcibly displaced [43]. Therefore, it is essential to unravel the means of accentuating refugee empowerment through ICTs.

Building on these research results, and due to the high reliance of refugees on services enabled by ICT solutions, in this study, we set out to explore whether and how ICT use by refugees may contribute to their sense of empowerment, and thereby their perception of social inclusion in the host society.

### **3. Methodology and Sampling**

#### **3.1. Methodology**

As the phenomenon being studied has not received significant theoretical research attention, we chose a qualitative research methodology to obtain initial insights into understanding how ICT usage leads to empowerment formation, and how feeling empowered leads subsequently to social inclusion. Qualitative research is particularly suitable to explore a phenomenon in its natural context [44]. In our study, we adopt the coding-strategies from Grounded Theory Methodology [44]. These procedures helped us analyze the available data systematically and uncover the underlying relationships in the data.

#### **3.2. Data Collection and Sampling**

To gain an in-depth understanding of refugees' ICT usage, thirteen face-to-face interviews with Syrian refugees were carried out in the area of Berlin, Germany. All interviewees were recruited and conducted personally by the first author, who has direct access to refugee networks and communities. Eight interviewees were male, and five were female. Most of our interviewees have arrived in Germany at least 2-3 years prior to the interviews, and only two had been in Germany for less than a year at the time of the interview. Almost every respondent already had a decision on the residence permit, while only one respondent had not yet received a decision. All refugees still had family members in Syria at the time of our study.

The average duration of the interviews was 49 minutes. All interviews were initially conducted in Arabic (the native language of the interviewees and the first author) and audio-recorded. In the next step, they were transcribed into a text document and then carefully translated into English. Two authors of the study did the coding to ensure consistency of the emerging concepts and categories.

The 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. Further questions were related to their feelings when they are able or unable to access or use their smartphone. We asked interviewees open-ended questions that allowed them to provide their perspectives on the dynamics of ICT usage and empowerment. In all interviews, follow-up questions were asked to ascertain the appropriate context and attain a better understanding.

### **3.3. Data Analysis**

We followed the ‘Straussian’ line of Grounded Theory [44] for the coding process, which allows for incorporating prior knowledge of the phenomenon in question into the analysis [44; 45; 46]. In their approach, Strauss and Corbin [44] differentiate between three major types of coding: open coding, axial coding, and selective coding.

We started with open coding, which pertains specifically to the naming and categorizing of phenomena through line-by-line coding of all data. This involves close examination, phrase by phrase, and even sometimes of single words. Initial concepts were identified by looking for patterns in the data through the process of constant comparison [44]. In the next step, the concepts identified during open coding were grouped under higher-order, more abstract concepts, called categories.

The concepts identified were combined to higher-level categories that relate to ICT tools and usages, empowerment dimensions, and social inclusion benefits. We further linked the major categories to develop a coherent perspective on our data. Following the constant comparison principle [47], we returned to the data whenever a relationship emerged in the selective coding to verify its grounding in the data.

## **4. Findings and Research Model**

In this section, we analyze our qualitative data and show quotes (Q) from our interviews with refugees.

### **4.1. ICT Use**

In the current refugee crisis, the high reliance of refugees on the ICT is expected to provide enormous benefits for refugees. Our interviews showed that ICT, especially the smartphone, is an essential part of refugees’ lives in the host country: “[...] *Without the smartphone it would have been a big disaster*” (Q). Another respondent describes the feeling of the increased value of the smartphone: “*My smartphone has a big value and I cannot live without it*” (Q).

Our interviewees revealed several applications that they are using on smartphones, varying from communication applications, language learning and translation, accessing information and expanding knowledge, etc. Some examples include: “[...] *I use Facebook, Viber, WhatsApp, and other applications. I communicate with friends, and I like to follow the news*” (Q). “*I use YouTube a lot. You can find everything you are looking for on YouTube*” (Q).

Moreover, it was clear from the interviews that refugees feel empowered by using ICT solutions, especially smartphones and having an Internet connection. One respondent revealed: “*The smartphone empowers me when I need to know something and it facilitates this*” (Q).



Refugees are also aware of the risks of smartphone addiction. However, the empowerment they receive has a higher value: *“I do not feel that my smartphone controls me. On the contrary, it empowers me”* (Q), or *“There are two ways: the smartphone controls me, or I control it. There are a few important things to me [in life]; to learn the language and to learn about the rules in this country. Here comes the importance of the smartphone. Hence, it can be said that it depends on the way of using the smartphone”* (Q). One respondent summarized the value of the smartphone and its functions: *“I need the smartphone to learn the language, know the roads, and communicate with people here and in Syria. If I were in my home country, I would be among my parents, relatives, and friends, and I would use the smartphone for normal calls only. Besides, I wouldn’t need translation applications and to use Facebook a lot. Here in Germany, on the contrary, it is essential”* (Q).

Our interviews showed that refugees use ICT tools for communication purposes. Firstly, it enables communicating with family and friends in the home country: *“I use it [the smartphone] to communicate with my family via Facebook, WhatsApp, and sometimes I use Viber. I also use it to communicate with my friends”* (Q). Another interviewee noted: *“The smartphone is an essential part for me here (in Germany) as a refugee because I have to communicate with my family (back home). For example, in the past, I used to open WhatsApp once a week, because I was communicating with my friends on the ground and my family were close to me, so I didn’t need it. As for me here, the only way to communicate is the smartphone”* (Q). Secondly, it enables communicating with the local community in the host country: *“I used an app called ‘Berlin Dinner’ on my smartphone. My teacher at school advised me to use it. Through this app, I met a German girl”* (Q) and *“I also use the smartphone to communicate with my German friends”* (Q). Using ICT solutions for communication with family and friends back home as well as with the local community in the host country contributes to the sense of empowerment for refugees and supports their social inclusion efforts.

## **4.2. Empowerment Dimensions**

### *4.2.1. Community Participation*

Participation in the community, expressed in refugees’ willingness to be part of a society and give back to the community, emerged as an important source of empowerment. Our interviews showed that ICTs enable refugees to participate in the community in two ways: first, by connecting them to their friends and family back home, and second, by connecting them to the local community (to Germans in our current study). To reflect refugees’ participation in these two communities, we refer to this construct as “Community Participation” in our model.

Our interviews showed the importance of refugees’ social connectedness with family and friends back home, as it makes them feel connected and cared about [48] and can have a positive impact on their social and health outcomes. For instance, one refugee responded: *“Of course, communicating with my family affects my learning, and it affects everything. For example, [without the communication] if I have an appointment, I don’t feel like attending it, or if I have to achieve some work, I don’t feel able to get it done. I would not be able to do anything unless I communicate with my family”* (Q). Moreover, not being able to communicate has a negative influence on the well-being of refugees in our sample *“The smartphone is very valuable for me.*

*It's something important in our daily life here and for the members of our family to communicate with each other, and without it, I feel lost and lonely” (Q).*

Importantly, being connected to the local community of Germans was also very relevant for our interviewees. Indeed, previous research shows that being socially connected to a network of locals helps refugees feel less stressed in the integration process, enhances their knowledge about the new host society, its social norms and cultural practices [13], as well as promotes one's identity and a sense of belonging [49]. Our interviews confirm that ICT usage facilitates community participation with Germans: *“For instance, I got to know several German friends through the Internet, and we have been in touch, although we did not know each other before” (Q).* As a result, this ability to be connected had an empowering impact: *“In general, one of the sources of power for me is being able to be in touch with Germans” (Q).* Further, another interviewee noted: *“In general, among the things that empower me are communicating with the society, having a desire to work and have a job, but not feeling that I'm a burden on society. I need to be useful to society and participate in its construction because I love to work and consider it a source of strength for me” (Q).* Through networking with others in the local community, refugees can also obtain access to resources contained in these networks. These resources usually relate to getting information or asking for favors, such as accommodation during travel, putting in contact with someone, or helping with finding employment. Thus, our interviewees felt that they could obtain networking benefits by using the smartphone: *“I can say that the smartphone is the means of communication between me and the people that I get to know, who empower me” (Q).*

Additionally, being connected to Germans enabled learning about the values and culture of the host country “[power] is being in touch with Germans to learn about the traditions and customs of the community I am living in. This affects me positively and empowers me because I would love to be an active member in the society and integrate into it to get rid of the feelings of isolation and of being a stranger” (Q).

Our findings show that participation in the community is a vital component of refugee empowerment. On the one hand, refugees need to stay connected to the network of family and friends back home. On the other hand, refugees are being connected to the local community in the host country. Community participation through ICTs contributes to the social inclusion process of refugees in that it facilitates agency-related factors and positively affects their well-being, as we show in section 4.3.

#### 4.2.2. Control

Following our interviews, the ability to use the smartphone functionalities anytime and anywhere gives refugees an empowering feeling of control through connectivity: *“Of course, the smartphone can give me a sense of power and control over my life” (Q).* This feeling is very critical for refugees as they cope with uncertain and continually changing circumstances. Another respondent described the power of the smartphone as follows: *“It [the smartphone] empowers me. Anything that I want to do, the smartphone provides” (Q).*

Moreover, having access to information gives refugees a greater sense of control. Moreover, access to necessary information is also an essential component for achieving social inclusion

[24]. Indeed, refugees need information on various topics, and being informed gives them orientation and a sense of control: *“The smartphone gives me a sense of control and power over the circumstances surrounding me. For example, if I want to go to an area, and I do not know how to do it, I simply put the address on Google Maps, and it directs me”* (Q).

Our interviews show that having the smartphone always available and depending on it when needed gives the feeling of control and safety: *“Well, it [the smartphone] is everything for me. I depend on it to a large extent all the time. Without it, I would get lost. I use it when I move from one place to another. When I use my smartphone for transportation, I feel more comfortable, relaxed, and relieved compared to taking a taxi, where I do not feel that safe”* (Q).

In general, our interviews showed that the functionalities that the smartphone provides are a great source of control over the situation of life, which then contributes to the feeling of empowerment for the refugees: *“Of course, the smartphone provides me with the feeling of control over a lot of situations. For example, by accessing the bank account, providing information about searching for accommodation, and even information about turning the smart TV on and off, also communicating with my family back home. I actually control a lot of things through the smartphone”* (Q).

#### 4.2.3. Self-Efficacy

A strong sense of efficacy enhances human accomplishment and personal well-being because people with high assurance in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided [36]. Our interviews showed that using ICT contributes positively to the sense of self-efficacy among refugees: *“The smartphone gives me a sense of power because through it I can get/do whatever I want”* (Q). Moreover, one interviewee mentioned that the capabilities provided through the smartphone became even more critical after arriving in Germany, indicating the empowering value of smartphones to refugees: *“The smartphone was important to me since I was in Syria and became more important after my arrival to Germany. I use it to communicate with others, for translation services, and to navigate through the city. Without the smartphone, it would have been a big disaster”* (Q). Our interviews showed that refugees had developed a sense of self-efficacy by using their smartphones to cope with various situations: *“Having my smartphone available for me at any moment I need enables me to do whatever I want from wherever I’m”* (Q).

Moreover, the ability to use the smartphone for different purposes might enhance the personal capabilities of refugees [8]. One refugee explained: *“Because using [the smartphone], I learn new things, expand my knowledge and interact more effectively with my surrounding. I’m sure if I’m still in Syria, I wouldn’t have a smartphone, and my house would have been not connected to the Internet”* (Q). Thus, smartphone usage might also broaden the horizon of refugees, that master their lives in a new country with the help of ICTs.

Another very important capability achieved through the smartphone is learning. For instance, language skills are critical for attaining independent social functioning and social inclusion: *“In general, things that give me power or are the source of power for me are learning the German language and getting the certificate of B1 [level] or even the certificate of B2 [level]. Such that*

*I would be able to work. It is important for me to feel strong, being able to work and earn money as I used to do in Syria. Thus, I can do whatever I want without being controlled by anyone else” (Q).*

Taken together, our interviews provide evidence for the ability of ICTs, especially smartphones with their diverse functionalities, access to the Internet and Social Media, to empower refugees with a much-needed sense of control, self-efficacy, and the ability to reach the communities both back home and in a host country. Together, these sources of refugee empowerment provide a fertile ground for the benefits of social inclusion, as explained in the following section.

### **4.3. Social Inclusion Benefits**

#### *4.3.1. Agency*

Our interviews showed that the absence of the family had a negative effect on refugees, which leads to being unable to fully engage in the social inclusion process. The smartphone has helped to smooth the situation, but feeling empowered to be able to build a new life in the host country was still missing. One respondent explained: *“[When] my family was not with me, where I was only able to see the pictures of my kids through my smartphone, knowing they were in a dangerous place, [...] I knew that it could happen any time that I won’t be able to communicate with them. All of this had a big negative impact on me. I didn’t want to do anything, and I wasn’t able to. I wasn’t able to learn like others who have their families here with them, and they go to the school or even when they learn via e-learning channels on YouTube. For me, I had the will to learn, but I couldn’t.”*

On the other hand, our interviews revealed an interesting finding that when refugees feel empowered, also through using the smartphone to communicate, it consequently leads to achieving agency-related aspects that lead to social inclusion. One respondent explained: *“Communicating with my family [via the smartphone] makes me more powerful. My mother always supports me and empowers me to be able to learn the language and work” (Q).* This emphasizes the important role that the feeling of empowerment plays in the social inclusion of refugees in the host country.

Feeling empowered facilitate achieving social inclusion benefits. For instance, the sense of power through communicating with Germans lead to agency-related aspects of social inclusion: *“I communicate with a German woman, who helped us finding a house, enrolling my daughter in kindergarten, and finding spots in the language schools” (Q).*

We find that the smartphone enables refugees to expand their knowledge to enhance their sense of agency: *“It is also possible to get to know the regulations of the country (Germany) in Arabic through the smartphone, as there are explanations about this topic provided online by Arab teachers” (Q).*

In the refugee context, research has shown that active participation in education is essential to their successful integration [18], which also contributes to their sense of agency. Another respondent expressed the capability achieved by the smartphone in learning the language: *“In general, one of the things that empower me is mastering the language. Without mastering the language, one can do nothing here. Although my language level is not that good, during the*

*last five months, I felt a totally different person. I can understand what is going around me and communicate with people. I do not understand all the words, but I can understand the context. Before that, I was so weak, and I experienced several situations where I did not understand what was happening and how things happen in this country” (Q). Moreover, one refugee stated that the smartphone facilitates knowledge building anytime: “During language classes, [...] if I do not understand a particular rule, I would be able to look it up on YouTube and understand it, when I get home. Without a smartphone, it would be very difficult to do that” (Q).*

After gaining some level of the host language skills, refugees also use their smartphones to analyze the labor market and to search for paid employment, which improves their sense of agency, and consequently, their social inclusion: *“It would be possible after getting B1 [level] certificate to look for training, to look for a job and to know what the requirements are to have the job I want. All of that can be done through the smartphone” (Q).*

#### *4.3.2. Well-Being*

Our interviews showed that the smartphone contributes to the community building with family, which is part of refugees’ empowerment while losing this empowerment affects refugees’ well-being: *“Losing my smartphone would be very difficult for me. In particular, as I live in a new country and I can contact my family through the smartphone, only. So, that would have a negative psychological impact on me” (Q).*

Additionally, our interviews showed that using ICT as an empowerment tool that contributes to the social inclusion of refugees leads to a higher quality of life for refugees. This is happening on different levels. For instance, refugees perceive access to information as a necessity in their new lives: *“I would feel lost and depressed if I would lose my smartphone. I can’t live alone and isolated from society. It is a necessity, and it provides me with whatever information I search for” (Q).* Another refugee explained that the smartphone helps them to manage their lives: *“It [smartphone] is very necessary; it has a main role in life management” (Q).* Furthermore, one refugee even described that the smartphone does not only provide value to him through its inherent functions but also spills over to his functioning in life: *“The smartphone is highly valuable for me. Without it, I wouldn’t be able to focus because it is highly connected to my life” (Q)* or as another refugee described: *“I feel lost without a smartphone and Internet, especially while living in a developed country like Germany” (Q).*

Moreover, our qualitative study also showed that the positive feeling is continuing, and refugees even feel that social connectedness via their smartphones enhances their life satisfaction and gives them a positive outlook for the future: *“Communicating with my family through the smartphone affects my positive outlook for the future. As long as there is communication (with my family), positivity prevails—there is no positive life without being able to communicate with them” (Q).* Our interviewees revealed some differences in their current ICT usage in the host country to their usage in their home countries, which contributes to their satisfaction with the current lives: *“Smartphones became an essential part of our daily life. [...] In Arab countries, there is a rich social life that leaves no space for spending a lot of time using the mobile. In Germany, there is much free time that can be invested in learning the language [for example]. The smartphone will facilitate that through translation applications and other applications to*

know how to move from one place to another. They are also essential for communicating with parents in Syria” (Q).

Additionally, the support granted by being connected contains the emotional comfort of other people in one’s network. Engaging with one’s family can contribute to engagement in the local community and broader society because they provide the needed emotional support to refugees, which build new lives in the host country [12; 24]. Communication with the family back home has a positive effect on well-being, as it reduces depression and the feeling of isolation, which can occur when refugees cannot contact their family via the smartphone: “When I try to call my family, and no one answers, the first thing comes to my mind is that something bad happened and I feel depressed. Also, when I speak with my mother, I feel so happy” (Q).

These findings show that having a smartphone can enrich the life of refugees beyond the value of pure smartphone functionalities. It shows how important support is to motivate refugees to achieve well-being as well as agency-related aspects of social inclusion.

Based on extensive data analysis, we formulate a research model depicted in Figure 9, which differentiates between ICT usage as a causal condition of empowerment dimensions that lead to achieving social inclusion benefits.

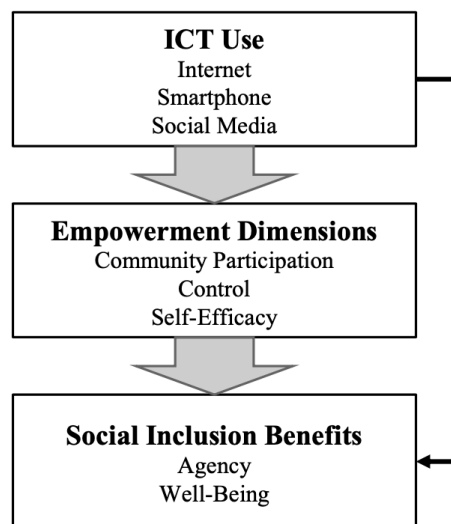


Figure 9. Research Model of Refugees Empowerment Through ICT Use

## 5. Discussion

Results from our qualitative study revealed that the ability to use the smartphone functionalities anytime and anywhere gives refugees an empowering feeling of global connectivity, which is critical for refugees as they cope with uncertain and continually changing circumstances. Literature shows that empowerment is highly related to well-being and life satisfaction, where empowerment has significant positive correlations to quality of life [29] and where greater perceived empowerment leads to higher overall individual life satisfaction [37]. Our results identified the need for refugees to be connected with the family and friends back home and with the local community in Germany because being connected to these groups has a positive impact on the refugee lives, and not being connected to them negatively affects their well-being.

Additionally, our results showed that being connected to the family contributes to the refugees' positive outlook and gives the power to cope with the new situations, and having contacts with German friends positively affects the sense of belongings and, thus, the overall process of social inclusion.

Based on a literature review, we identified seven common dimensions of social inclusion of refugees in terms of agency [6]: social networking, employment, education and language, culture, health, government and citizenship, and housing. Our interviews revealed another dimension to the existing body of knowledge on refugee agency, namely, transportation. This new dimension is important for refugees that describe their ability to use transportation services that can be enabled by the smartphone: *"When I use my smartphone for transportation, I feel more comfortable, relaxed and relieved"* (Q).

Another important aspect is having access to information through ICT, which ensures that refugees can participate in two communities simultaneously. Having access to the needed information on various topics and being informed gives refugees orientation and a sense of control, which are essential for empowering refugees, and consequently, contributing to the social inclusion process. By accessing this source of empowerment, refugees can feel in control and that they have mastery over their lives and decisions. This leads to achieving the desired benefits of social inclusion, such as finding suitable job opportunities, participating in language learning and educational programs, navigating through the bureaucratic system, and coping with the new culture and way of life.

Our findings showed that having a smartphone can enrich refugees' lives beyond the value of pure smartphone functionalities and contribute positively to their higher quality of life and life satisfaction. Our empirical study contributes to the body of knowledge on empowerment by showing how ICTs are driving empowerment dimensions by facilitating two directions of community participation that are specific to the context of refugees, by enabling a higher level of control over one's life, and by positively contributing to one's self-efficacy.

We believe that these findings are important for different stakeholders related to the refugee topic. These include (a) governments; to understand how refugees use the smartphone and try to provide targeted services that can help refugees to navigate through the official systems, and (b) industry; to work on more user-centric ICT solutions that target this specific group of users and offer solutions based on their needs and requirements.

## **6. Conclusion, Limitations, and Next Steps**

In our study, we investigated the role of ICT use, particularly the smartphone, in the social inclusion of Syrian refugees in Germany and its contribution to their feeling of power. In this paper, we identified two types of social inclusion benefits that refugees can gain from ICT use in terms of agency and well-being. Furthermore, we showed ICT contributes to empowering refugees on three levels; community participation, sense of control, and self-efficacy, which are the most crucial empowerment components and drivers that subscribe to refugees' social inclusion in the new society.

Our research is limited in the sample size. Although the analysis of our interviews showed coherency in the sample, further investigation is needed to verify whether the results are generalizable to the entire population of Syrian refugees in Germany. Moreover, since we included only Syrian refugees in our scope, our results did not cover the refugee population from different countries of origin. Considering the urgent need to understand ICT use in the context of refugees, the authors plan to investigate further how ICT-enabled services can contribute to the overall feeling of empowerment with a larger sample.

The next steps of our research include conducting more interviews to gain more in-depth insights into the topic with the purpose to (1) dive deeper into the usage of ICT tools by refugees, especially smartphone apps, (2) find further links between ICT and empowerment, and (3) define the most relevant social inclusion benefits that are derived from feeling empowered through ICT use by refugees. Moreover, in our future research, we will consider community context, culture, and cross-cultural communication barriers as well as facilitators of the ICT usage by refugees.

## Acknowledgment

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## Article 6:

### ICT Support for Refugees and Undocumented Immigrants

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#### Abstract:

Immigrant integration has become a primary political concern for leaders in Germany and the United States. The information systems (IS) community has begun to research how information and communications technologies can assist immigrants and refugees, such as by examining how countries can facilitate social-inclusion processes. Migrants face the challenge of joining closed communities that cannot integrate or fear doing so. We conducted a panel discussion at the 2019 Americas Conference on Information Systems (AMCIS) in Cancun, Mexico, to introduce multiple viewpoints on immigration. In particular, the panel discussed how technology can both support and prevent immigrants from succeeding in their quest. We conducted the panel to stimulate a thoughtful and dynamic discussion on best practices and recommendations to enhance the discipline's impact on alleviating the challenges that occur for immigrants in their host countries. In this panel report, we introduce the topic of using ICT to help immigrants integrate and identify differences between North/Central America and Europe. We also discuss how immigrants (particularly refugees) use ICT to connect with others, feel that they belong, and maintain their identity. We also uncover the dark and bright sides of how governments use ICT to deter illegal immigration. Finally, we present recommendations for researchers and practitioners on how to best use ICT to assist with immigration.

**Keywords:** Refugees, immigration, social inclusion, deterrence, ICT, bright side, dark side.

## 1. Introduction

Recent waves of mass immigration have occurred in several areas across the world, which has displaced millions of people from their home countries. In June, 2019, the world had close to 71 million displaced people. Of that number, about 26 million constitute refugees. An estimated 37,000 people escape from their countries each day due to violence or persecution (UN Refugee Agency, 2019). Many displaced people, especially refugees, leave their homes with few possessions and without visas to legally relocate. As a result, some become undocumented

immigrants in their new homeland. We distinguish the terms that describe individuals who leave their home country for various reasons in Table 8. No matter why migrants—whether refugees, undocumented immigrants, or asylum seekers—risk their lives and abandon their home country, they can all benefit from information and communications technology (ICT) when traveling and adjusting to a new country. We use the various terms to illustrate how ICT can benefit or harm different types of migrants.

**Table 8. Definitions Distinguishing Among Terms Used in this Article<sup>12</sup>**

An umbrella term that lacks a definition under international law, **migrant** reflects the common term to describe people who move away from the usual place they live in (whether in a country or across an international border, temporarily or permanently, and for whatever reason). The term includes various well-defined legal categories of people, such as migrant workers, persons whose means of movement international law defines (e.g., smuggled migrants), and persons whose status or means of movement international law does not specifically define (e.g., international students).

**Immigrants** refer to persons born abroad who have come to settle in a country regardless of their legal immigration status or whether they have become citizens of that country.

**Unauthorized immigrants**, also called **undocumented immigrants**, refer to persons who reside in a country without legal immigration status, which includes individuals who entered without lawful status or who entered with a legal visa that no longer remains valid.

A **refugee** refers to individuals who have been forced to flee their country due to persecution, war, or violence. A refugee has a well-founded fear of persecution based on race, religion, nationality, political opinion, or membership in a particular social group.

**Asylum seeker** describes individuals who have applied for protection as a refugee and are waiting for the relevant authority to determine their status. Asylum seekers can become refugees if the local immigration or refugee authority deems them as fitting the international definition of a refugee.

In this paper, we report on a conference panel on immigrant ICT use with a special focus on refugees. We presented the panel at the Americas Conference on Information Systems in Cancun, Mexico, in August, 2019. We consider two different perspectives on ICT use: one reflects how immigrant-focused ICT has developed, and the other describes the experience of the individuals who use and are affected by technology (Trauth, 2017). We primarily focus on documenting how and recommending that immigrants use technology to gain opportunities for social inclusion and on the efforts that different stakeholders can take to create ICT solutions that foster the social-inclusion process. However, we recognize that multiple viewpoints on immigration exist. Citizens may welcome or reject the notion of open borders or work visas. Technology can help countries monitor borders and process visa applications. For instance, the

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<sup>12</sup> Adapted from <https://disasterphilanthropy.org/disaster/southern-border-humanitarian-crisis/>

United States (US) has recently experienced increased numbers of immigrants seeking asylum and work visas; at the same time, the number of illegal immigrants has increased. Technology now helps countries process asylum and legal entry applications (e.g., using facial recognition, GPS, and AI) and identify illegal immigrants (Nunamaker et al., 2012). Therefore, we present both perspectives in the sections that follow and, in particular, focus on showing how ICT can both support and prevent immigrants from succeeding in their quest.

Against this background, we explore the following key points:

- How immigrants in Germany and the US use ICT
- The role that technology plays in socially including immigrants and refugees
- Using ICT to assist with immigration in the US
- Using ICT to diminish illegal entry and detect unwelcome applicants
- ICT as a critical tool for accessing information and resources, and
- Practical implications for different stakeholders on how to integrate immigrants via technology- driven means.

We illustrate the immigration situation by targeting two destination countries: the US and Germany. We focus on these two countries in particular due to the number of immigrants they both have. In the 2014 to 2018 period, the US accepted the highest number of refugees (1.4 million) and asylum seekers (2.2 million) in North America (UNHCR, 2020). During the same period, Germany hosted the highest number of refugees (3.2 million) and asylum seekers (2 million) in Europe (UNHCR, 2020). We discuss how these two countries have managed immigration, the challenges that refugees and asylum seekers have encountered, and how ICT can help to overcome these challenges.

We believe that highlighting the beneficial ways in which one can use mobile applications, social media, and other ICTs represents an important step toward integrating refugees both economically and socially. Our conclusions can advise governments, businesses, locals, and other stakeholders in their efforts towards finding new ways to socially include successful migrants.

This paper proceeds as follows: in Section 2, we discuss background information on forced immigration, refugees, and social inclusion; ICT use and immigrants in Germany and the US; and ICT research on refugee assimilation. In Section 3, we introduce the panel. In Section 4, we summarize the panelists' views. In Section 5, we highlight implications for relevant stakeholders. Finally, in Section 6, we conclude the paper.

## **2. Background**

### **2.1. Forced Immigration, Refugees, and Social Inclusion**

Over the past decade, the number of people forcibly displaced in the world due to conflicts and persecutions grew substantially from 43.3 million in 2009 to 70.8 million in 2018, a record high. In 2019, every minute, 30 people had to flee compared to six people a decade earlier (UNHCR, 2020). Recently, the number of refugees worldwide increased dramatically, especially since 2014, mainly due to conflicts in the Middle East. As the World Bank (2020)

has reported, low- and middle-income countries hosted the largest share of refugees in the years from 2014 to 2018 because refugees tend to immigrate to neighboring countries and hope to return when they can safely do so.

Despite this overall trend, high-income countries such as the US and Germany saw a surge in the number of refugees and asylum seekers from 2014 to 2018 (over 3.6 million and over 5.2 million, respectively) (UNHCR, 2020). To understand refugees' cultural integration needs, we examined the countries they originated from during the 2014 to 2018 period. As Table 9 shows, refugees in the US commonly came from China, Haiti, and El Salvador, while refugees in Germany commonly came from countries such as Syria, Iraq, and Afghanistan. By accommodating newcomers' personal cultural and social needs, countries can help them integrate into society and better identify and design effective ICT-enabled support mechanisms.

Social inclusion constitutes a critical component of any democratic and equitable society. It involves connecting with others in a host society in various ways, such as finding a job, engaging in education, learning the language, and understanding the host culture. Wilson and Secker (2015) define social inclusion as "having the opportunities and resources to participate fully in economic, social and cultural life" (p. 52). Researchers have linked social inclusion to improvements in mental and physical health on a personal level and to greater levels of coherence on the societal level (Waddell & Burton, 2006).

In the refugee context, social inclusion means granting refugees opportunities to settle in and integrate into a host community. In order to guarantee that refugees can successfully integrate, the host society, as individuals and governments, should assist with assimilating them and have the necessary means to provide them with the space and opportunity to do so. Trauth and Howcroft (2006) argue that ICT can provide tools to bridge gaps in social inclusion in the refugee context. AbuJarour, Bergert, Gundlach, Köster, and Krasnova (2019) show that contemporary ICTs, such as smartphones and social media, can promote integration, enhance the refugees' wellbeing, and increase their individual sense of agency. In Sections 2.2 and 2.3, we describe some specific ICT challenges, opportunities, and solutions that refugees use.



**Table 9. Number of Refugees Based on the Country of Origin<sup>13</sup>**

Year	Number of Refugees and Country of Origin (U.S. vs. Germany)			
	USA		Germany	
2018	China	77710	Syrian Arab Rep.	532065
	El Salvador	22152	Iraq	136463
	Guatemala	17610	Afghanistan	126018
2017				
2016				
2015				
2014				

## 2.2. ICT Use and Immigration

The high ongoing displacement rate has spurred organizations and individuals to rapidly develop creative technology and social media applications to offset the perils of travel and to assist in integrating immigrants into host countries (Alencar, 2017). Marlowe (2019) found that refugee-resettlement programs on a national level constitute a key element of immigrant integration. Immigrants in these programs use ICT to both communicate with family and friends back home and to learn about their host country. They depend on many different smartphone applications and online platforms, such as the social media applications that refugees rely on as they relocate to a new country (Köster, Bergert, & Gundlach, 2018).

### 2.2.1. ICT Use and Immigrants in Germany

In Germany, refugees' Internet traffic exceeds that of major airports (Welt, 2016). Most refugees use smartphones to access the Internet (Fitch, 2016) such that the smartphone penetration rate among refugees reaches as high as 90 percent (Maitland & Xu, 2015). These refugees represent the "most tech- savvy population of migrants in history" (Rutkin, 2016). Thirty years ago, waves of Turkish and Lebanese refugees entered Germany and found it difficult to assimilate into German society mainly due to language barriers. This challenge created parallel societies that prevented them from integrating into the country. Now, despite

<sup>13</sup> According to (UNHCR, 2020) [http://popstats.unhcr.org/en/persons\\_of\\_concern](http://popstats.unhcr.org/en/persons_of_concern)

their lack of German language skills, asylum seekers and refugees can use ICT to communicate with Germans and navigate local processes, which often functions as a first step toward helping refugees integrate into a host society.

Asylum seekers interact with the German Government and agencies directly after their arrival to the country to register and follow the formal asylum process. The asylum process involves multiple governmental institutions at the local, provincial, and federal levels, which leads to a high degree of bureaucracy (AbuJarour et al., 2019). Unfortunately, the government does not effectively use ICT to support this process. Consequently, refugees struggle to follow the asylum process and often need to rely on asylum counselors. Moreover, insufficient German proficiency, typically the only language on official forms, hinders refugees from directly interacting with government agencies.

The German government could better facilitate the asylum-seeking process and help integrate refugees into society by providing ICT solutions. However, systems that governments initiate often take a substantial amount of time to implement in contrast with non-government organizations' initiatives, which provide more readily available bridging technologies. For instance, a mobile application called "BureauCrazy"<sup>14</sup> that Syrian refugees designed helps refugees to cope with German bureaucracy. These apps can consolidate information and manage data across different government levels to ease the complex bureaucratic process or provide e-services that allow asylum seekers to digitally fill out forms or book appointments at governmental offices.

#### *2.2.2. ICT Use by Immigrants to the U.S.*

The situation in Central America differs from the Middle East in that the former has no governmental warring factions that force citizens to abandon their homeland. Rather, mass migration in Central America results from widespread poverty, gang conflict, and frequent kidnappings. Refugees arriving at the United States' southern border from Honduras, Guatemala, and El Salvador have outnumbered Mexicans in recent years as unrest in those countries continues to grow (Center for Disaster Philanthropy, 2020). Migrants from these countries (and others) attempt to enter the US via its border with Mexico.

As we note in Section 2.2.1, refugees who attempt to cross into the US use smartphones more than any other technology platform (Newell & Gomez, 2015). They use smartphones to keep in contact with family and friends or to contact a coyote (slang for the smuggler paid to move people across the US border). This reliance on smartphones has a dark side: it makes migrants more vulnerable to extortion and abuse. For instance, some people attempt to steal migrants' phones to look up details about their family and friends and demand a ransom from them, which puts these family members in danger or financial distress.

Once inside the US, immigrants without visas may lack documentation and legal status to obtain employment, or they may register as an asylum-seeking refugee. The asylum process is extremely thorough and time consuming, and it requires local knowledge and language

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<sup>14</sup> [www.bureaucrazy.de](http://www.bureaucrazy.de)

proficiency at a level that exceeds what typical asylum seekers possess. Accordingly, systems that manage the application process can assist refugees in this regard.

With this background, in Section 2.3, we summarize research findings that identify and explain several defining aspects of ICT use by and for immigrants.

### **2.3. ICT Research into Refugee Assimilation**

ICT boasts many advantages, such as information dissemination, knowledge accumulation, and communication (Ojokoh, Zhang, Oluwadare, & Akintola, 2013). These advantages provide users with the opportunity to mitigate problems associated with time, cost, distance, and, most importantly for refugees, information acquisition (Ojokoh et al., 2013). Refugees frequently face complex informational and communication challenges. They need timely information to resolve everyday problems, to follow laws and regulations, and to adapt to new cultures and societies. ICT benefits refugees in that it supplements traditional information channels such as word of mouth and allows people to transcend geographical borders to create a space of shared experiences and identities (Hamel, 2009). Additionally, research has shown that using the Internet can help refugees apply for jobs, get an education, and obtain access to social networks (Alam & Imran, 2015). Without this information, refugees may be pushed to the margins of society (Diaz Andrade & Doolin, 2016).

Different social groups adopt new technologies in different ways due to their specific preferences and needs (Vancea & Boso, 2015). Host populations and governments often mute refugees and treat them generically (Wilding, 2012). Nonetheless, refugees clearly adopt technologies differently than others, which inspires the need for more research. In studying youth refugees, Wilding (2012) found them open to exploring and embracing new technologies in keeping with the widely held view that youth generally favor technological more than older individuals. The various virtual interactions that young refugees engaged in demonstrated their efforts to preserve the community and culture they had in the past but also a clear link to the present and future as they connected with peers in their new country (Wilding, 2012). This promising research suggests that young people can transform themselves while remaining connected to local and transnational opportunities both online and offline (Wilding, 2012).

Much research has investigated the relationship between technology and users as technology becomes an integral part of everyone's lives. People construct their identity as they interact with the world around them (Carter, Grover, & Thatcher, 2013). Therefore, as technology continues to pervade nearly every part of people's daily experience, they develop an ICT identity—a relationship with technological devices. Some argue that technology is fundamental to how a person sees themselves, what they do in their lives, and how they achieve their goals (Carter et al., 2013). Individuals require an identity in their everyday life because an identity acts as a standard that directs and guides their behavior, emotions, and actions (Stets & Burke, 2000). Some researchers have examined the relationship between technology and identity as if that technology extends the self to support more social interactions and emphasize one's identity (Stets & Burke, 2000), while others have viewed this relationship as an internal bond that impacts one's roles in other parts of one's life (D'Mello & Sahay, 2007). For refugees, the relationship they have with their technological devices helps them build social capital and

transition into their new surroundings.

Social capital bonds created using technologies such as WhatsApp and Facebook provide broader information and opportunities as they more frequently interact with community members with diverse backgrounds (Ellison, Steinfield, & Lampe, 2007). This interaction lends itself to the central idea of adaptability (i.e., how one learns new knowledge and behaviors in new contexts) (Burke, Pierce, & Salas, 2006). In the refugee context, ICTs help them to assimilate into their host communities. This population places the utmost importance in ICTs and an Internet connection. Refugees primarily use their smartphones for communication and information access. Moreover, Facebook, WhatsApp, text messages, video calls, and phone calls represent critical tools that refugees use to communicate with people in their local communities and people in their country of origin (AbuJarour et al., 2019; Alencar, 2017). The literature distinguishes among different forms of social connection: social bonds (with family and co-ethnic, co-national, co-religious, or other groups) and social bridges (with other communities) (Ager & Strang, 2008). The way in which individuals perceive social connectedness can reduce the negative effects that stressful life events have on them and contribute positively to their wellbeing due to, among other things, feeling connected and as though they belong. Individuals with a greater sense of social connectedness are more likely to cope with emotions through their ability to adjust to social environments (Bourgeois, Bower, & Carroll, 2014). In conducting a quantitative survey, AbuJarour, Krasnova, and Hoffmeier (2018) found that, for the refugee cohort they studied, involvement with their own family (bonding capital) influenced their wellbeing. On the one hand, studies have found being connected to family and friends back home has a positive influence on refugees' social and health outcomes (Beirens, Hughes, Hek, & Spicer, 2007; Fozdar & Hartley, 2013). For example, Beiser (1993, p. 221) reports that "research has demonstrated that refugees who do not have a like-ethnic community available to them may suffer a risk of depression three to four times as high as others who have access to this resource". On the other hand, studies have found being connected to local friends and participating in the local community to be associated with a sense of belonging and identity (Beiser, Goodwill, Albanese, McShane, & Kanthasamy, 2015; Flanagan, Garry, & Jason, 2006). Therefore, local governments should focus on ensuring that they provide refugees with access to these ICT-enabled resources and use them to distribute information to this community.

### **3. The Panel**

The panel occurred at the 25th Americas Conference on Information Systems (AMCIS) in August, 2019, in Cancun, Mexico, and tackled the topic: "Turning the Dark Side of Social Media Bright! The Case of Immigration in the USA and Germany". Accordingly, the panel focused on discussing the challenges of integrating immigrants by seeking to better understand how different stakeholders such as refugees, volunteers, governments, industries, non-governmental organizations (NGOs), and so on use ICT to facilitate social inclusion processes. The panel provided multiple viewpoints on how immigrants use technology and showed how technology can both support and prevent immigrants from succeeding in their quest.

We held the panel in an interactive format in which both panelists and the audience engaged in an open dialogue. Safa'a AbuJarour from the University of Potsdam, Germany, served as the moderator, and Haya Ajjan, Jane Fedorowicz, and Antonia Köster participated as panelists in the discussion. The panel lasted for 90 minutes. The moderator began by introducing the panelists before outlining the topic for discussion and the panel's goals. The panelists then presented their perspectives on the topic in turn. Subsequently, the moderator invited the audience to interact with the panelists by asking questions and/or sharing their views on the points that the panelists raised. Finally, the moderator summarized the core findings that emerged from the panel discussion.

We audio-recorded and transcribed the panel. We read through the transcripts to structurally summarize outcome topics. The derived topics included 1) ICT solutions for social inclusion of refugees, 2) using ICT to assist with immigration to the US, 3) using ICT to deter immigration to the US, and 4) using ICT to acquire information. We elaborate on each topic in Section 4.

## **4. Panelists' Views**

In this section, we summarize our views on the negative and positive aspects associated with refugees using ICT in the integration process.

### **4.1. ICT Solutions for Social Inclusion of Refugees**

The sudden and vast refugee wave that arrived in Europe in late 2015 foreshadowed the need to study how to welcome refugees in their host country and to integrate them into society. AbuJarour and Krasnova (2017) have noted that refugees heavily rely on the Internet and ICT-based tools. Accordingly, they investigated how this usage could contribute to their social inclusion in a host country. They began by asking refugees what social inclusion means to them and what could contribute to helping them feel integrated. They found that participating in the community, learning the local language, entering the job market, being connected to locals and family back home, engaging in the education system, understanding the host culture, and being able to navigate through the bureaucratic system as refugees' main social bridge drivers. ICT helps refugees to achieve social inclusion by providing the means to practice local cultural or social activities. For instance, online platforms can help them learn the host country's language, especially when they cannot visit place-based language schools either because the system does not allow it (as in Germany) or because they lack the financial support to do so (as in the US). Germany does not allow refugees to attend language schools until they successfully complete the asylum process, which might take up to two years. The US restricts financial aid. As a result, refugees begin learning the host language via free, accessible, and easy-to-use technology.

Refugees also use ICT to escape social exclusion (i.e., the opposite of social inclusion). Host countries typically socially exclude refugees in shelters and camps when they arrive. They are often alone and unable to communicate with their local community. Walls (whether physical or psychological) surround them, which means they cannot express themselves or live their lives normally. This environment constitutes a harsh initiation to host countries given that have often survived war and a risky journey. Therefore, we face a pressing need to investigate social

exclusion's characteristics in host countries so that we, as researchers, can help local populaces accept refugees. To do so, researchers suggest that countries engage in cross-border cooperation to create social bridges (Bade & Anderson, 1994). Refugee researchers and professionals working with immigrants (e.g., governmental immigration agencies, churches, welfare institutions, unions) frequently warn about the dangers associated with political avoidance and defensive domestic social policies in the host country. Researchers can help identify and address the reasons for why and patterns in how countries socially exclude refugees and recommend ways to achieve a more inclusive society that integrates all its members.

ICT help achieve social inclusion in various ways. As a prime example, in August, 2015, early into the refugee crisis in Germany, researchers tied a five-fold increase in the number of translations from Arabic to German in Google Translate to refugee communication challenges (Lewis-Kraus, 2016). This finding illustrates what refugees require from social inclusion-related applications and suggests that a successful translation tool needs to possess accuracy, synchronicity, user friendliness, and reliability. The success that translation tools have seen illustrates the need to address tool design simultaneously from two perspectives: 1) from refugees' perspective (i.e., how they use the technology) and 2) from ICT developers' perspectives (i.e., how can they create the right technology based on refugees' needs). To date, more ICT-related research has attended to the refugee perspective than the developer perspective. We have encountered numerous applications that purport to target refugees' requirements but refugees do not use because they do not meet their true needs since developers designed the applications without consulting them. Like in any other successful software project, developers should conduct workshops and focus groups that include refugees to investigate their needs and requirements before developing an application.

Another challenge concerns e-government systems. Few countries have e-government systems that register and process asylum applications. Other countries rely only on paper-based processes. E-government services can facilitate the application process, eliminate human errors, and ease the lives of both the applicants and government officials. In Germany, the asylum-seeking process is slow and extremely complicated, and it involves little automation. As a result, asylum decisions can appear capricious in that an official can decide to allow one person to search for a job but not another even though they hold similar qualifications. Australia provides a best practice example: its fast and efficient system applies pre-defined qualifications and requirements for refugees. An automated process would help governments administer their current paper-intensive processes and applications by saving time and effort and assuring the accuracy in processing the applications. Moreover, it helps the applicants by providing clear requirements and feedback on their applications.

Note that, like most ICT users, refugees rely heavily on the Internet. However, unlike most users, refugees, especially those who live in camps and shelters, often cannot obtain an Internet connection. Therefore, refugees in many countries continue to demand for robust and reliable Wi-Fi hot spots to support communication and to enable access to governmental and social systems that can lead to social inclusion. In 2015, only 15 percent of refugee shelters had Wi-Fi hotspots. As a result, refugees often had to sneak connections to the Internet through free Wi-Fi networks in shopping malls and restaurants. As the number of refugees proliferated in

Germany, calls to provide Wi-Fi hot spots in refugee shelters rose. Internet access, which the Human Rights Watch (2016) already considers a human right, constitutes a necessity for refugees.

In Section 4.2, we contrast the German and United States situations.

#### **4.2. Using ICT to Assist with Immigration in the U.S.**

The second author reported on her research on the life of refugees who succeed in their quest for asylum in the US. When refugees arrive in the United States, a representative from the local refugee resettlement agency welcomes them at the airport. This representative often then collaborates with local volunteers to bring refugees to their new home, which the resettlement agency typically pays for. One Syrian family resettled in North Carolina shared a story about how, when they arrived at the airport, the first item they asked the resettlement agency volunteers to help them purchase was a smart mobile phone with Internet access. Moreover, they made their first phone call to their families in their country of origin. One concern that refugees often bring up concerns their feeling that their host countries leave them to figure things out on their own. While describing an event that took place in his first few weeks in the United States, a male refugee said:

*My family [wife and five kids] and I had to figure out the bus system on our own. We took the bus wanting to go to the grocery store and ended up on the wrong street. We couldn't even ask anyone since we couldn't speak English, and we stood on the side of the street crying and wondering how we will get back to the house.*

Refugees also often cite the lack of access to their own vehicles as a barrier to coping the new environment in their host country. In fact, they often describe the automated Department of Motor Vehicle (DMV) driving test that requires language skills as among the biggest stressors that they face. In one interview, one female refugee mentioned that she took the exam 15 times and still needed to retake it. These examples show how ICT language acquisition or translation assistance could impact social inclusion by increasing refugees' ability to work or make connections in their communities.

Smartphone applications and the Internet can bridge the difference between social inclusion and exclusion. During their resettlement programming, refugees often register to take English classes. However, since they lack their own vehicle and since they need work to buy their basic needs, many find it hard to commit to attending the classes. One mother of two young children said that she used "DuoLingo App<sup>15</sup>" to teach herself English since she could not leave the house with her two young kids. Note here that many refugees we interviewed had completed some high school. In fact, few refugees we interviewed could not read. We may attribute the illiteracy in the remaining refugees to the disruption in education in their home country or their socioeconomic status. However, the author reported on how illiterate refugees could still operate their smartphones by using voice commands and voice messages.

While the US Government provides support services to assist refugees it has granted asylum

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<sup>15</sup> [www.duolingo.com/](http://www.duolingo.com/)

status to, many refugees attempt to enter the country illegally or plan to apply for asylum after sneaking into the country. In Section 3, we describe the myriad technologies that the US Government employs to deter them.

### **4.3. Using ICT to Deter Immigration in the U.S.**

The US Government highly regulates immigration. Individuals who seek to escape unlivable conditions in their own country typically try to migrate by seeking asylum at the border or by entering illegally. As a result, many governmental systems focus on detecting illegal immigrants in the United States and returning them to their home country. In this section, we describe some technologies the country employs to assist in their capture and return.

Because many Central Americans attempt to enter the US illegally, one can exploit their smartphones to deter them. Immigration officials may take a migrant's phone at the border and use phone hacking software to identify other undocumented border crossers, which gives them access to families and friends as well (Brewster, 2019). To counter these darker possibilities, some NGOs at the border provide "safe phones" that people in safe houses can use so that they do not put their family and friends in danger by storing their information on a personal smartphone.

For individuals who successfully enter illegally, other challenges emerge related to (among other things) their ability to support themselves by working. The US Citizenship and Immigration Services (USCIS) employs a biometric-based system called E-Verify<sup>16</sup> to check whether an immigrant has legal status to work or lacks a proper work permit. It can detect if a worker applied under a valid name and social security number and uses photo-matching for facial recognition. Other than its intended purpose to weed out individuals who work without a legal work permit, this system can create problems for both employees and employers (Goldstein & Alonso-Bejarano, 2017). They rely on inadequate databases that can potentially engender a false denial due to inaccurate facial recognition or a misspelled name. Employers also must pay to use this system, which places extra burden on them.

When used as intended, E-Verify affects more people than the workers it monitors. Immigration and Customs Enforcement (ICE) agents recently used the system when raiding chicken processing companies. The agents took 680 workers away, which left children in school or families unaware at home (Carcamo & Jarvie, 2019). After some time, the agents released half of the workers after establishing that they had the proper credentials. They fitted others with ankle bracelets or sent to a detention camp. Remarkably, law enforcement agencies did not arrest the owners or managers of the chicken processing plants for hiring undocumented workers, which demonstrates that the ICE agents conducted the raid to deport individuals without legal status rather than punish companies that employ undocumented workers.

Systems such as E-Verify do more than assist in locating undocumented employees. Beyond the fact that undocumented immigrants typically find it more difficult to find work, they will also likely only find less desirable jobs in which they receive poor pay and have no benefits or

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<sup>16</sup> Consult [www.e-verify.gov](http://www.e-verify.gov) for more information on this system.



no job security. In this way, we can see how ICT increases social exclusion. If an employer decides not to pay refugees, they have no recourse or legal reporting options. If they suffer an injury on the job, they likely have no health insurance or paid time off to obtain medical treatment and recover. As such, ICT systems that locate and identify illegal immigrants have far-reaching implications for these individuals to achieve social inclusion.

To control the border between them, Canada and the US use another system that shares immigration data. The system helps the countries expeditiously process visa or passport holders crossing their border (Bronskill, 2018). While doing so, it monitors travelers to prevent fugitives, terrorists, sex offenders, smugglers, or individuals who transport missing children from crossing the border. It also can detect whether an immigrant has overstayed a visa or is subject to an immigrant warrants. As such, once an immigrant enters the US illegally, the immigrant cannot enter Canada, which constraints them in the former. Additionally, if an immigrant is entitled to social benefits as a legal immigrant, the entitlement disappears when the immigrant crosses the border. Thus, we can see that ICT exhibits both benefits and drawbacks in terms of how the US/Canada system could help with immigrants' social inclusion.

The US has developed many and various technologies to deter migrants from crossing its border. Some technologies have succeeded more than others, but they all raise concerns from a travel safety or individual privacy perspective. An early venture involved a virtual fence called Security Border Initiative Network, or SBInet, an ICT-based system intended to locate and deter people from crossing the border in areas where individuals could not officially cross the border. The government spent five years and a billion dollars to develop SBInet but eventually abandoned the project (Chen, 2019). More recently, President Trump authorized a tall physical fence along sections of the border.

The US and Mexican Governments currently employ various types of technology along their border. Some have been in place for a while, while some have been implemented relatively recently. The countries use these ICT for two main purposes: 1) to locate individuals who try to enter their borders illegally and 2) to provide guidance about where to deploy agents, fences, or designs for future deterrence measures. Table 10 lists some deterrence technologies from simple and commonly used ones (e.g., smartphones and analytics) to expensive and complex systems (e.g., satellites or holograms and AI for facial recognition) (Hoffman, 2016). For poor, weary immigrants who travel with no money, few possessions, and often not even a phone, going up against this kind of technology shows that they face tough odds to successfully illegally cross the border.

Strategic awareness systems identify border locations where past migrants gained illegal entry into the country. Authorities then erects physical fences in those popular places, which forces individuals who try to illegally enter the country to try a different (often more dangerous) location. As much of the US/Mexico border follows a river called the Rio Grande, an unfortunate result occurs when individuals crossing the river get swept away. Authorities deem these systems successful in deterring illegal immigration, but they also contribute to increasing the death rate of people who attempt to cross the border.

**Table 10. ICT in Use at the U.S./Mexican Border**

- Mobile communications
- Satellite imagery
- Biometrics
- Big-data analytics
- Drones
- Powerful cameras with thermal (body heat) detection
- Night vision
- Detection devices and sensors with 360-degree radar
- Artificial intelligence looking for faces, body motion, and license plates
- 3D holograms

We do not understand the efficacy of the technologies in Table 10 well due to substandard reliability or inadequate operation. For example, not long ago thermal imaging could not adequately distinguish between human movement and a roaming cat or blowing tumbleweed (Chen, 2019). Newer technology can better identify a moving being with fewer false positives, but the technology's inability to consistently identify human movement remain an impediment to governments that seek to rely on ICT without human oversight to stop illegal immigrants. Similarly, facial recognition software has an unacceptably high false positive identification rate.

Individuals who support border crossing may attempt to disarm the remote parts of ICT on the ground that substitutes for human agents who monitor the lengthy border. For example, individuals have spray-painted or otherwise damaged video monitors, which rendered the technology ineffective. Indeed, this monitoring technology does not distinguish between legal and illegal border crossers—it spies on everyone in its purview. Individuals who live near a border have significant privacy intrusion or civil rights concerns due to this ICT's perpetual spying on citizens who have legitimate reasons to be in the area. In addition, local police departments can often access technologies that border authorities have tested on the border for community surveillance (Herrera, 2019), which again creates a tradeoff between citizens' and noncitizens' privacy.

While borders may be permeable due to governments' inability to patrol them fully, technology improves the likelihood that they will detect illegal immigrants and also act as a deterrent to individuals who wish to cross them. Individuals who try to enter the US have relatively limited access to ICT to assist in their journey, while the governments attempting to secure the border employ vast armies of border patrol agents armed with high-technology deterrents to prevent them from succeeding. The US Government will likely even detect individuals who make it across the border since the country uses ICT to monitor the workforce and control access to social services. As ICT becomes more sophisticated, the path to life in the US will likely become more difficult and dangerous for individuals escaping violence and poverty in their native homes.

#### 4.4. Using ICT for Information Acquisition

During their journey and in the new host country, refugees encounter a new culture, language barriers, and complex bureaucratic processes (Schrieck, Wiesche, & Krcmar, 2017a). For example, in order to build a life in a host country, refugees need practical information related to asylum registration and government requirements, contact points, language, healthcare, education, work, family, and daily life. Therefore, they absolutely require access to information, which makes social inclusion possible (Caidi, Allard, & Quirke, 2010). Consequently, research has identified information acquisition as the crucial first step for social inclusion (Schrieck, Zitzelsberger, Siepe, Wiesche, & Krcmar, 2017b). New immigrants especially suffer from what Chatman (1996, p. 197) calls “information poverty” as they have not had the opportunity yet to form a supportive social network in their host country (Caidi et al., 2010).

Numerous information sources provide refugees with information on integration issues. In Germany, the government, NGOs, local initiatives, and volunteers offer a rich variety of digital solutions, such as websites, applications, and other tools to provide this information to refugees. However, many such platforms do not reach a significant number of users in their target audience. Recognizing the critical importance of information for sustainable social inclusion, one panelist reported on research findings that had been part of a qualitative study to illustrate the processes that refugees follow to detect, judge, and process information using ICT. The research focused on identifying where refugees get the information they need for legal, immigration, asylum, or family reunification topics. We present several interview quotes below from a larger study showcase the experiences of refugees in Germany using ICT to acquire information (Köster, Bergert, & Gundlach, 2018). Notably, refugees in Germany said that they could not understand government websites because they were “a little bit tricky, confusing and not easy to access” or did not present information in their language. Instead, refugees reported that they resorted to social media to get crowdsourced information that other refugees and volunteers provided (AbuJarour & Krasnova, 2017; Diaz Andrade & Doolin, 2016; Gillespie et al., 2016). For example, on Facebook, refugees relied on information that others provide in groups and on pages. Refugees recognized the timeliness of the information that others provide on social media (“I search via Google when I want to search for old laws that cannot be easily accessed on Facebook and sometimes Google leads me to Facebook, but the latest information can be found easily on Facebook”) and the ease with which they could access information and communicate with others (“What I like about Facebook is the speed of access to information and ease of communication, what I do not like about Facebook is addiction at the expense of real communication with people”).

Refugees often use Facebook to gather information about processes that enable them to remain in their host country. One refugee stated that they used Facebook for:

*Some simple legal things like making an appointment at the foreigners' affairs office, for example, or the LaGeSo Job center, I can visit Syrian refugee groups on Facebook where people would share their experiences. I ask how I can get an appointment and someone can answer me with a comment, send me a link, email or phone number and then take the necessary steps to make the appointment.*

As this example shows, refugees often prefer to use social media to garner information that pertains to their social inclusion from other refugees in a similar situation.

As an information source, social media can also hide its dark side. As recent research and practitioner reports show, information on social media might not always be reliable since anyone can post anything on Facebook despite its accuracy. In fact, the ability for anyone to post anything can have detrimental effects for individuals in a stressful and new situation. One refugee stated:

*I feel that I must surf Facebook less because it can cause me tension and problems. A while ago one of my Syrian friends has fainted on the street because of the tension he is experiencing because of the news coming from Syria, although his family is here, but he could not stop following what is happening there, it led to depression and eventually to a nervous breakdown.*

As social media can be a prevalent source of information for refugees, they need to recognize the problems associated with fake news and rumors, and governments and other relevant stakeholders need to provide countermeasures to help refugees and other such vulnerable user groups to recognize these problems and provide trusted and accurate sources of information.

## **5. Discussion and Implications**

### **5.1. Social Media Leads the Way**

An estimated 2.95 billion people use social media worldwide (Statista, 2019). In the refugee context, social media continues to be a key mechanism for reducing the travel and assimilation challenges associated with the ongoing refugee crisis. Social media sites help refugees access and share information—especially information about complex topics such as asylum-seeking processes, laws, and regulations in their host country; dealing with local culture; and locating living assistance. To ensure that refugees get reliable information, they need to be able to identify trusted sources. For instance, refugees value the German Government’s social media websites: “when the government has pages on Facebook, we will get the right information from a reliable source” (Köster et al., 2018). The German Government assists via social media in two ways: 1) it moderates fake news and invalidates it before others pick it up and 2) it owns pages or groups that provide valuable and reliable information. Indeed, one refugee validated the significance of the government’s disseminating information via social media as follows: “If [the] German Government can launch a service via Facebook, it will be much faster, more legal and the information will be more reliable and accessible” (Köster et al., 2018).

Refugees with experience in a locale can also supply a social media-based resource. Refugees unused to local customs or with little physical contact with others from their homeland will not likely turn to ICT for comfort and inclusion. For example, an 11,000-member women-only Facebook group helps refugees and immigrants from Syria to maintain social bonds by sharing humor, personal stories, recipes, and more. One of their most recent posts discussed racism and its multifaceted dimensions, and another post encouraged all members to vote in their local precinct.

Authorities in the US have also used social media to monitor and surveil individuals applying for a visa. The US Department of Homeland Security uses automated algorithms to search and flag refugees' and asylum seekers' social media accounts (Patel, 2019). The US Government awarded multi-million-dollar contracts to private analytics companies to complete such monitoring (Harwell & Miroff, 2018). If the authorities flag a person's profile on Facebook, Instagram, or Twitter, they can mark the individual as a security threat and deny them entry to the US. Even though a pilot governmental study that examined refugees' social media accounts did not yield clear results as to whether such practices could identify national security threats (Homeland Security, 2017), the US Government continues to expand the extent to which it uses them (Cimpanu, 2019).

No matter the roles that the bright and darker sides of social media play in the refugee issues among different countries, many stakeholders have access to social media that can assist both immigrants and governments in aiding or diverting migration. Individuals who work with refugees should consider the intended and unintended consequences that may arise from how refugees use social media.

## **5.2. Practical Implications and Recommendations for Relevant Stakeholders**

Our discussion reveals useful implications for several target audiences, such as

1. Academics, especially information systems (IS) researchers with an interest in using ICT for immigration, social inclusion, e-government, and refugee integration
2. Assimilation facilitators, such as industry partners, governmental offices, and NGO members
3. ICT developers and designers who seek to develop culturally sensitive digital solutions, and
4. Fundraisers keen to financially support projects and initiatives to alleviate the current refugee crisis.

Table 11 lists practical implications for relevant stakeholders with an interest in refugee/immigration topics. In Section 5.3, we highlight some common threads in practice and research to help guide these four groups' activity in the future.

**Table 11. List of Practical Implications for Relevant Stakeholders**

<p><b>Academic Researchers</b></p>	<ul style="list-style-type: none"> <li>• Conduct more research on topics related to refugees, immigrants, integration, social inclusion, and ICT for development (e.g., Qureshi 2015; Pethig, Noeltner, Cabinakova, &amp; Krönung, 2017).</li> <li>• Initiate tracks, special issues, and academic events on this domain (e.g., Management Information Systems Quarterly’s special issue on ICT and societal challenges (Majchrzak, Markus, Wareham, 2016) and the digital inclusion track at the 2020 European Conference on Information Systems (AbuJarour, Diaz Andrade, Elgarah, 2020)).</li> <li>• Promote these topics among young researchers and encourage them to investigate important aspects to help include vulnerable groups and how ICT can help.</li> </ul>
<p><b>Governments and NGOs</b></p>	<ul style="list-style-type: none"> <li>• Apply and support e-government solutions and provide required training for relevant users when needed.</li> <li>• Educate refugees and locals on possible ways to use ICT to foster the inclusion process. For instance, providing online courses to learn the local language or to teach locals foreign languages<sup>17</sup>.</li> <li>• Provide robust and reliable Wi-Fi hotspots to enable refugees to use the Internet for integration, social-inclusion, and other purposes.</li> <li>• Consider the human life and privacy risks that border deterrence technologies introduce.</li> </ul>
<p><b>Industries and ICT Developers</b></p>	<ul style="list-style-type: none"> <li>• Investigate what refugees require from ICT solutions.</li> <li>• Engage refugees in the development process by conducting workshops and focus groups.</li> <li>• Consider tools to identify fake information and deter its spread on social media.</li> </ul>
<p><b>Fundraisers</b></p>	<ul style="list-style-type: none"> <li>• Investigate refugees need to use ICT.</li> <li>• Provide financial support to provide refugees with ICT training programs.</li> <li>• Provide financial support for institutions that offer ICT training programs to refugees.</li> </ul>

### 5.3. Research Opportunities

Recent calls to address ICT grand challenges champion our potential to significantly impact both academic research and the broader community in terms of economic development or individual wellbeing (Limayem et al., 2011). In discussing the ICT-enabled integration of immigrants and refugees, we contribute to the call for IS scholars to extend IS research to cover technology’s impact on global social challenges (Lee & Fedorowicz, 2018, Sahay, Sein, & Urquhart, 2017) that the AIS Grand Vision project and the Bright ICT Initiative identified (Lee, 2015).

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<sup>17</sup> <https://www.unhcr.org/news/stories/2020/5/5ebe65b24/want-learn-new-language-refugees-serbia-offer-teach-online.html>

In doing so, we follow Walsham (2012) who offers a unifying vision for the IS field as he suggests more interdisciplinary research to make a better world with ICT. In the specific immigrant and refugee context, we provide support for how ICT enables refugee integration and facilitates their participation in the community. Other IS researchers who recognize the social value of expanding existing research or developing new projects on ICT design and its use in the refugee context have also conducted projects on this topic (AbuJarour et al., 2019; Zimmer & Scheibe, 2020).

Immigrant integration efforts would benefit from research collaboration across borders. Such efforts could aid countries and governments in working together to align their policies and exchange best practices. Immigrants' social exclusion has been a key research topic for over 25 years. Indeed, as Bade and Anderson (1994, pp 37):

*Researchers and professionals working with immigrants, the government deputy for immigration, church and welfare institutions, unions, and a variety of other initiatives had repeatedly warned of the dangers of political avoidance and defensive attitudes. The internal side of migration politics falls essentially under the category of domestic social politics.*

Thus, we need to urgently learn about and support cross-border collaboration. We urge researchers to join with international and interdisciplinary efforts to collaborate on projects to benefit these people who, through no fault of their own, find themselves needing to escape from their home country (e.g., AbuJarour et al., 2019; Trauth, 2017). Given the increasing role that ICT plays in their journey toward social inclusion in a host country, projects monitoring ICT's role in enabling immigration should be more common.

Other research efforts might focus on the bright versus dark side of the ICT that governments use to protect their borders. As we describe in this paper, ICT somewhat effectively deters illegal immigration.

One can identify many justifications for minimizing the number of illegal immigrants in a country, some of which involve fairness or equity for the people who entered legally. However, one can also ask ethical questions about how the means to this end introduces new risks to human life (of those attempting to enter) and privacy (of entrants and residents alike). We encourage researchers to conduct research into the bright versus dark side of ICT that governments use to protect their borders to support appropriate regulation and efforts to monitor their first- and second-order effects. Furthermore, ICTs that refugees use can have downstream consequences in addition to direct benefits. For example, we need more research on user data exploitation (e.g., Guggenmos, Lockl, Rieger, & Fridgen, 2020). In return for access to certain services and applications, users must provide personal data. Research studies might focus on whether and how psychological profiling, targeted advertising, misinformation, and/or algorithmic discrimination affect vulnerable and underrepresented groups such as immigrants and refugees and, subsequently, assess the consequences for social inclusion (e.g., Trauth 2017; Pethig et al., 2017). We encourage researchers to examine the bright versus dark sides of ICT that refugees use to understand how ICT can promote inclusion while fostering exclusion.

We also need more research that observes how immigrants use ICT and to design ICT that support immigrant travel safety, assimilation, and social inclusion. We have seen a recent

movement to make immigrants' digital inclusion and refugees more visible in the IS community. A planned special issue in the Journal of the Association for Information Systems on "Technology and social inclusion: building a dialectic on the role of technology in inclusion and exclusion from societies, organizations, economies, and academe" exemplifies this effort well (Bailey, Carter, Thatcher, Urquhart, & Windeler, 2020). Moreover, IS conferences now feature tracks that tackle this topic. For example, the 2020 European Conference on Information Systems (ECIS) introduced a track on digital inclusion in education, work, and society that covered topics such as immigration; immigrants' and refugees' digital integration; social inclusion/exclusion; and immigrants at work, in education, and in society (AbuJarour et al., 2020).

While various actors have proposed or implemented many technology innovations to assist with various immigration challenges, not all have a foundation in established research paradigms. Clearly, the specific examples we discuss in this paper show that refugees and other migrants confront unique sociotechnical challenges that, if considered, would increase these applications' value for their intended users and use. In addition, we propose that application product designers adopt the design science research (DSR) paradigm with guidance from Van Aken (2004) to outline knowledge that contributes to designing and evaluating ICT for immigrants (see, e.g., Haj-Bolouri, Chandra-Kruse, Iivari, & Flensburg, 2016). The guidance in this paper provides a starting point for using DSR to understand the impact that ICT has on refugees and contributes to new design and evaluation knowledge on how to structure ICT, how to provide enabling processes for immigrants, and how to deliver ICT that serves the desired goals (Baskerville, Baiyere, Gregor, Hevner, & Rossi, 2018). Researchers can couple design science with action research to test out designs for refugee-assisting ICT as is the case in the blockchain-based asylum application that researchers developed for the German Federal Office for Migration and Refugees (Guggenmos et al., 2020). Other researchers could adopt the information economics paradigm to identify and analyze these technologies' first-and second-order effects as one can identify clear asymmetries in the immigrants' personal information that authorities gather and use (Williams & Kind, 2019). We hope that others in the IS community will join in tackling these topics more extensively.

## **6. Summary and Conclusion**

In this paper, we provide several perspectives on refugees' and governments' reliance on ICT. We present multiple viewpoints on immigration and, in particular show how technology can both support and prevent immigrants from succeeding in their quest based on a panel discussion at the 2019 Americas Conference on Information Systems (AMCIS) in Cancun, Mexico. Our collective research activities reveal new and interesting insights about how asylum seekers in Europe and North and Central America use ICT. We also discuss how immigrants use ICT to connect with others, feel that they belong, and maintain their identity. While we predominantly focus on how technology can support immigration in this paper, we also touch on the dark and bright sides of refugees' and governments' ICT use and their effect on the assimilation process. Facilitating the integration process through ICT gives the IS field an important role in this



context. Some IS community members have begun to address this topic in several major venues in order to better understand how to facilitate social inclusion processes.

We provide implications for different stakeholders on how to better help immigrants integrate into host countries with technology. On a practical level, our recommendations offer advice to governments, businesses, locals, and other stakeholders in their efforts towards finding new ways to socially include immigrants. On an academic level, we report on and identify research topics related to ICT adoption by immigrants and refugees. We believe that highlighting beneficial ways to use mobile applications, social media, and other ICT constitutes an important step toward integrating refugees both economically and socially.

As a conclusion, one should consider geographical differences when discussing and investigating efforts to integrate and socially include refugees in any particular country. Each country deals with immigrants and refugees in unique ways depending on their government, people (cultural characteristics and willingness to participate), and industrial and non-profit sectors (offering jobs and social help).

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## **2. The Role of ICT in the Context of Working From Home During COVID-19**

### **Article 7:**

#### **Working from Home During the COVID-19 Crisis: A Closer Look at Gender Differences**

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**Abstract:**

The world faces an unprecedented catastrophe in the COVID-19 pandemic. Working From Home (WFH) during COVID-19 diminishes the boundaries between work and home life. WFH can create obstacles for those suddenly forced to accommodate working and living in the same place. The purpose of this study is to investigate home-office conditions by studying employees who were forced to WFH during the COVID-19 crisis. We focus on how gender and family responsibilities shape worker reaction to WFH. Data was collected via an online survey administered at the height of the COVID-19 pandemic. The study examines differences in control over time, technology usefulness, WFH attitude, and WFH conflict based on gender and whether the worker has dependent children living at home, and notes significant interactions between gender and parental status. Our goal is to suggest best practices on how we can prepare for a next-generation (online) home- office era in consideration of these personal characteristics.

**Keywords:** Work from Home, Gender Differences, COVID-19, ICT, Work-Life Boundaries, Work-Life Conflict.

### **1. Introduction: The Need for Inclusive (Digital) Education**

Information and communication technology (ICT) enables many workers to Work From Home (WFH) during the COVID-19 pandemic. It provides the data and tools needed to accomplish tasks and communicate with other employees or business partners outside their residential work location. Workers now must function in a residence that doubles as an office and engage in a

series of Zoom meetings interrupted by home-life demands, all the while monitoring an ever-extending date for returning to a “normal” work situation. This unprecedented global disruption to the work environment provides the setting for the current study.

The purpose of this study is to investigate gender differences and parental responsibilities in work-life trade-offs related to home-office conditions during the COVID-19 crisis. We look at how work and household responsibilities affect working conditions of affected employees, by examining their control over time, WFH attitude, and work-life conflicts. We study whether home-office ICT is equally useful to all workers, regardless of gender or parental status.

Data was collected early-crisis to obtain in situ reactions from a cross-section of workers who are currently working at home. We developed an online survey that combines demographic questions characteristic of a WFH situation with items depicting the work environment (e.g., tasks, space, time, technology). It also measures the respondents’ ability to accomplish work expectations and how they handle the division of work and personal life under colocation. The paper’s purpose is to document whether workers’ ability to WFH differs by gender and parental status to tailor recommendations on how we can prepare for a next-generation (online) home-office era to those who are adversely situated.

The following sections provide the theoretical underpinnings of the study, outline the research methods and data collection process, present analysis of the data, and discuss the results and their implications for supporting more inclusive WFH practices.

## **2. Background**

### **Working from Home during COVID-19**

Working from home (WFH), also called telecommuting, telework, or teleworking, started as an innovative idea meant to move work to workers instead of moving the workers to work (Nilles et al., 1974). Demand for flexible work practices that help employees perform more effectively in both their private and work lives was appealing to many, even before COVID-19 (Kelly et al., 2020). Notably, digital tools enhance the popularity of this work mode as they “enable [e]workers to choose where, when, and how to perform their daily work activities” (Curzi et al., 2020).

Many businesses required eligible employees to shift their daily business activities to their homes very early in the COVID-19 crisis, as a powerful mechanism to control the spread of COVID-19 (Anderson et al., 2020; Bodewits, 2020). WFH frees workers from the threat of exposure to the virus in the work environment, while giving workers more control over how to manage work and personal responsibilities when both temporarily convene in a single location.

On the other hand, WFH during COVID-19 creates obstacles that workers previously did not have to juggle (Kelly et al., 2020). Choudhury et al. (2020) highlight that managers should consider strategies to mitigate the psychological costs for workers who have made an unanticipated switch to WFH and might have insufficient time to manage the trade-off among their work, social, and family roles. Having children to entertain and educate at home, coupled with “...women’s increasing participation in the labor force and tertiary education, have led to



new challenges for employees at work and at home” (Kelly et al., 2020, p. 2).

Ng (2010) points out that a positive WFH environment depends on being able to provide similar amenities in a home office to those of conventional offices, such as a home office, job equipment (e.g., ICT), and work behavior (e.g., working hours, communication, work autonomy, control, and access to information). Unfortunately, employees forced to move suddenly to WFH may not be able to replicate the tools and behaviors that best support their work responsibilities and patterns.

Our study examines these aspects of the WFH environment, documenting workers’ characteristics, the role of technology in enabling work, and personal challenges and perspectives of workers trying to cope with competing work and home demands. In particular, the confluence of family and work roles has been shown to result in an inability to easily disengage from one role to the other (Ashforth et al., 2000; Desrochers, Hilton, and Larwood, 2005), which is magnified in the current environment of 24/7 collocation. In normal times, the transition between family and work roles requires psychological effort (Ashforth et al., 2000). When role boundaries are obscured, people experience a mood spillover across their family and work lives, causing strain on the individual. A common example during the pandemic finds a parent attending a virtual call while his child is in the same room, where their role boundaries can exhibit blurring and psychological strain.

In the next section, we introduce the model underlying our study and provide background on its component constructs.

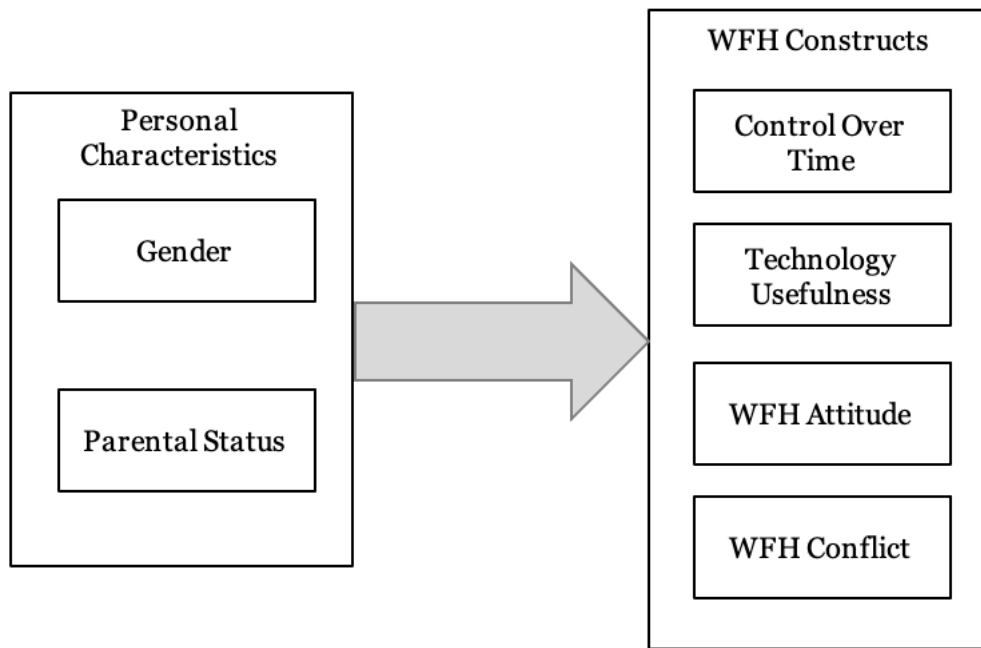
### **3. Conceptual Model**

Our conceptual model (Figure 1) aims to understand the relationship between the personal characteristics of gender and parental status, and how workers respond while WFH during a time of crisis. We include four constructs – *Control over Time*, *Technology Usefulness*, *WFH Attitude*, and *WFH Conflict* to help us understand COVID-19’s impact on work-life balance.

#### **Research Questions**

As shown in Figure 10, the model proposes that two demographic factors, gender and parental status (i.e., the presence of dependent children in the home), are expected to have an impact on four aspects of the WFH experience: control over time, technology usefulness, WFH attitude, and WFH conflict. Based on this model, our study aims to answer the following research questions:

1. Are there significant differences in the four WFH characteristics based on gender?
2. Are there significant differences in the four WFH characteristics based on the presence of children in the home?
3. Is there a significant interaction between gender and having children at home relative to the four WFH characteristics?



**Figure 10. Personal Characteristics Influence on Working from Home**

## 4. Literature Review

In this section, we summarize prior research on each of the constructs in the conceptual model, including background on what is known about their interactions.

### 4.1. Gender and Caregiver Differences

WFH creates unique challenges for parents or caregivers who work remotely because their work role becomes embedded in the family domain, and their home becomes associated with their work role, physically and psychologically (Eddleston and Mulki, 2017). In this context, the new or increased presence of family is particularly harmful to remote work productivity and leads to more family-work conflict (Eddleston and Mulki, 2017).

Gender differences emerge when discussing the ability to manage work and family demands (Eddleston and Mulki, 2017; Kwok, 2016). Gender role theory maintains that an emphasis on work, and specifically time allocated to work, is incongruent with female gender role expectations (Wood and Eagly, 2010). For instance, Rothbard (2001) suggest that females are “integrators” and males are “segmentors.”

Research also shows that although WFH does not create more time for recreational labor, it may help women juggle family and work (Powell and Craig, 2015). However, the wealth of research on WFH has been conducted in normal situations, i.e., not during pandemics or forced colocation. Therefore, our work is unique as we investigate the WFH situation in relation to gender differences and family parenting responsibilities due to the pandemic’s lockdown.

## **4.2. Control over Time**

Perceived control over time has an impact on performance and problem-solving ability (Half, 1997, cited in Kissi, Nat, and Armah, 2018). It is related to better performance evaluations, greater work and life satisfaction, less role ambiguity, less role overload, and fewer job-induced and somatic tensions (Macan et al., 1990, p. 760). However, there is little empirical evidence about the relationship between perceived control over time and behavioral intention (Kissi, Nat, and Armah, 2018).

The ability to manage time may increase job productivity and performance when trying to balance work and household responsibilities in the same environment. The forced WFH setting creates a shift in the process of work and the way that work is performed for those used to working outside the home. Our study directly examines how a worker's gender or responsibilities for dependent children affect one's perceived control over time in the WFH context.

## **4.3. Technology Usefulness**

ICT is essential to be able to perform typical office work while at home. Not only is ICT available 24/7 because work and home are now the same place, WFH also increases workers' dependency on ICT as it substitutes for in-office interaction. As such, its usefulness becomes more important than in pre-COVID-19 times. Because of its critical role in performing work, accessible ICT tends to disrupt the balance between personal and work lives as it blurs prior work-life boundaries. We aim to understand if there is a noticeable difference in perceived technology usefulness between genders or those with dependent children at home. Differences may be attributable to gender-related work styles or patterns, or to conflicting demands placed on parents or caregivers who may find past ICT arrangements do not transfer well to their current situation.

We adopt measures of technology acceptance (TAM2) to the pandemic setting, to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes (Venkatesh and Davis, 2000). In particular, we adopt a tested scale on Perceived Usefulness (the degree to which a person believes that using a particular system would enhance his or her job performance), framing it within the employee's ICT usage during the WFH period (Venkatesh and Davis, 2000).

## **4.4. WFH Attitude**

Having job satisfaction and a positive attitude toward work increases the likelihood of achieving higher levels of productivity (Tenney, Poole, and Diener, 2016). An individual's WFH attitude, or how they view working from home, is dependent on their ability to be productive and complete tasks. The line between work and home life is indistinct while WFH, resulting in boundaries that are often crossed, thus competing for workers' attention in meeting work or personal needs. A negative attitude can create tension between work and home responsibilities and interfere with worker performance. On the other hand, having a positive attitude toward work increases the likelihood of achieving higher levels of productivity (Tenney, Poole, and Diener, 2016).

With this construct, we investigate how people respond when they must simultaneously manage work and household responsibilities in a co-located environment. In particular, we seek to understand if there are differences between genders and for those who have dependent children at home in their WFH attitude. We adapt the WFH Attitude construct from Edwards, Van Laar, Easton, and Kinman (2009).

#### **4.5. WFH Conflict**

WFH conflict may occur because of challenges to work-life balance. Conflicts happen when varied family and work demands cut across each other, resulting in negative consequences (Voydanoff, 2005). Family- work conflict is the degree to which responsibilities from the family and work domains are incompatible (Greenhaus and Beutell, 1985). Studies show that family-work integration increases both family-to-work conflict and work-to-family conflict, and that an inability to disengage from work increases work-to-family conflict (Eddleston and Mulki, 2017).

The family-work-role conflict has been classified into time-based, strain-based, and behavior-based indicating the scarcity of time and energy that a person has (Netemeyer et al., 1996; Greenhaus and Beutell, 1985). Time-based conflict is the time demanded by one's family roles and responsibilities such as children, spouse, parent as compared to time demanded by work-related tasks (Netemeyer et al., 1996; Greenhaus and Beutell, 1985). A strain-based conflict can be understood as anxiety and stress resulting from performing family and work duties (Netemeyer et al., 1996; Greenhaus and Beutell, 1985). A behavior-based conflict is when role demands such as self-reliance and emotional stability make it harder to fulfill other roles such as emotional vulnerability and warmth (Greenhaus and Beutell, 1985).

We include time-based, strain-based, and behavior-based family-work items in the WFH Conflict construct used in our study. While not tied to long-term outcomes of prior studies (such as turnover and career progression), this construct enables us to depict the peculiar challenges and impacts of the unanticipated and involuntary move to WFH during this unprecedented global emergency.

Next, we present the research methods adopted for the study, followed by our analysis and results.

### **5. Methodology**

#### **The Survey**

A survey was developed to gather data about work-time control, WFH attitude, technology usefulness, and family tensions' impact on accomplishing work responsibilities. Perceived control-over-time is measured using a five-item scale adapted from Macan (1994). The four-item scale measuring technology usefulness was adapted from Venkatesh and Davis (2000). WFH attitude is measured using a three-item scale adapted from Edwards, Van Laar, Easton, and Kinman (2009). Finally, WFH conflict was measured using a five- item scale measuring the demands of one role and its impact on the other from Netemeyer, Boles, and McMurrian (1996). Parental Status is based on the number of children under 18 in the home, with details

on their ages collected in ranges. The survey was pilot-tested with a small sample of individuals working from home; minor corrections were made based on the respondents' feedback.

The final questionnaire began distribution on April 27, 2020 and closed on May 8. A total of 870 responses were collected. Of these, 545 were complete and valid for analysis. Completed surveys were received from thirty-eight countries, with the U.S. and Germany accounting for about 75%. Of these, 445 indicated a binary gender and provided data on children at home (i.e., some chose "prefer not to answer" for at least one of these dependent variable items). 38.5% of the respondents were male and 33.9% had children under the age of 18 at home. Respondent age categories were 18-24 (10.5%), 25-34 (23.5%), 35-44 (22.9%), 45-54 (19.1%), and 55 and older (22.8%).

## **6. Data Analysis**

In our analysis, we examine if there is a significant direct effect of gender and having children under the age of 18 at home, and an interaction effect between the independent variables gender and having children under the age of 18 at home on each of the following dependent variables: control over time, technology usefulness, WFH attitude, and WFH conflict. Because the survey was worded to capture a lack of control over time, we rename the construct as such in the remainder of the paper. Table 12 shows descriptive statistics of each of the dependent variables, across gender and across children under 18 (i.e., No Children, Children) living at home during COVID-19.

A two-way multivariate analysis of variance (MANOVA) procedure was used to test the significance of the direct and interaction effects of gender and having children under the age of 18 at home. Using the Box's Test, we evaluated equal variances among groups. Next, we determined the appropriate measure to interpret the multivariate test results. If the multivariate test result is significant ( $p < .05$ ), then the univariate ANOVA is evaluated to determine significant group differences for each dependent variable on the independent variables (F ratios and p values). If the multivariate test result is not significant ( $p > .05$ ), no further test is conducted.

**Table 12. Descriptive Statistics of Dependent Variables**

<b>Construct</b>	<b>Gender</b>	<b>Children at Home</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Lack of Control Over Time</b>	Male (N = 180)	No Children Under 18	96	2.852	0.764
		Children Under 18	84	2.954	0.832
	Female (N = 265)	No Children Under 18	165	2.874	0.784
		Children Under 18	100	3.298	0.776
<b>Technology Usefulness</b>	Male (N = 180)	No Children Under 18	96	3.815	0.722
		Children Under 18	84	4.036	0.680
	Female (N = 265)	No Children Under 18	165	3.788	0.744
		Children Under 18	100	3.725	0.840
<b>WFH Attitude</b>	Male (N = 180)	No Children Under 18	96	3.523	0.918
		Children Under 18	84	3.443	0.883
	Female (N = 265)	No Children Under 18	165	3.554	0.971
		Children Under 18	100	3.297	0.970
<b>WFH Conflict</b>	Male (N = 180)	No Children Under 18	96	2.612	1.056
		Children Under 18	84	3.043	1.039
	Female (N = 265)	No Children Under 18	165	2.353	0.956
		Children Under 18	100	3.658	1.004

To use MANOVA, the dependent variables should be related to each other at a low to a moderate level (Leech, Barrett, and Morgan, 2005). Table 13 shows low to moderate strength among the dependent variables in the study, with correlations ranging from -.178 to 0.624. Thus, the MANOVA assumption of no multi-collinearity is met.

**Table 13. Correlation Matrix of the Dependent Variables**

<b>Measure Name</b>	<b>Control Over Time</b>	<b>Tech Usefulness</b>	<b>WFH Attitude</b>	<b>WFH Conflict</b>
<b>Lack of Control Over Time</b>	1			
<b>Tech Usefulness</b>	-.178**	1		
<b>WFH Attitude</b>	-.500**	.304**	1	
<b>WFH Conflict</b>	.624**	-.188**	-.422**	1

## 7. Results

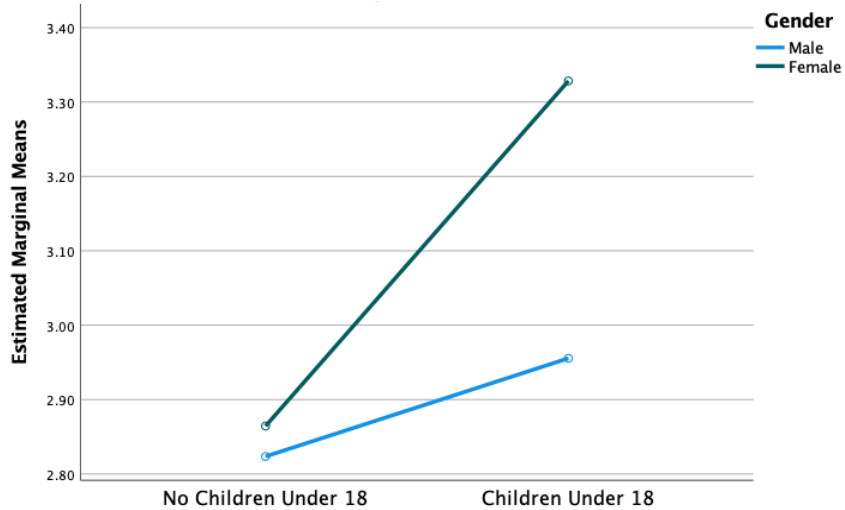
The Box's test revealed the homogeneity of variance–covariance with a value of 24.04 was not significant ( $p = 0.789, > .001$ ); therefore, Wilks' test was used to interpret the multivariate test statistic. The Levene's test revealed that the assumption of homogeneity of variances was met for lack of control over time ( $F(3,441) = .927, p > .05$ ), technology usefulness ( $F(3,441) = .283, p > .05$ ), WFH attitude ( $F(3,441) = .620, p > .05$ ), and WFH conflict ( $F(3,441) = .535, p > .05$ ).

The Wilks' Lambda results for gender indicated significant group differences with respect to the overall dependent variables examined (Wilks' value = 0.977,  $F = 2.587, p = .036$ , partial  $\Omega^2 = 0.023$ ). The results of univariate ANOVA revealed a significant group effect for the independent variable gender on the dependent variables of lack of control over time ( $F = 5.602, p = 0.018$ , partial  $\Omega^2 = 0.013$ ) and technology usefulness ( $F = 5.282, p = .022$ , partial  $\Omega^2 = 0.012$ ). On the other hand, we find no significant group effect for the independent variable gender on the dependent variables of WFH Attitude ( $F = 0.386, p = .535$ ) and WFH conflict ( $F = 3.259, p = .072$ ).

The Wilks' Lambda results for those with children under the age of 18 indicated significant group differences with respect to the overall dependent variables examined (Wilks' value = 0.820,  $F = 24.047, p = .000$ , partial  $\Omega^2 = 0.180$ ). The results of univariate ANOVA revealed a significant group effect for the independent variable children on the dependent variables of lack of control over time ( $F = 11.661, p = 0.001$ , partial  $\Omega^2 = 0.026$ ) and WFH conflict ( $F = 77.744, p = .000$ , partial  $\Omega^2 = 0.150$ ). On the other hand, we find no significant group effect for the independent variable children on the dependent variables of technology usefulness ( $F = 1.151, p = .284$ ) and WFH attitude ( $F = 3.323, p = .069$ ).

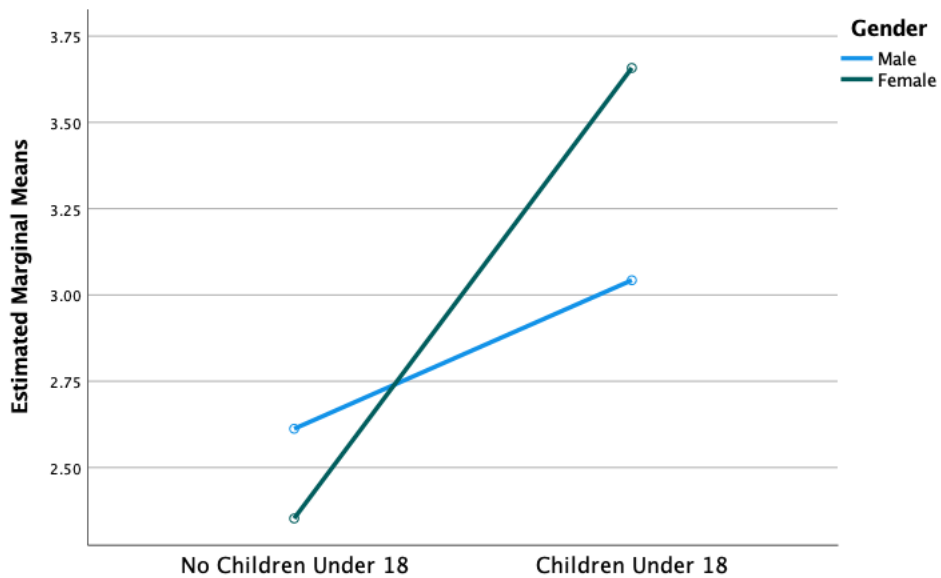
The Wilks' Lambda results for the interaction of gender and having children under the age of 18 at home indicated significant group differences with respect to the overall dependent variables examined (Wilks' value = .951,  $F = 5.681, p = .000$ , partial  $\Omega^2 = 0.049$ ). The results of univariate ANOVA revealed significant group effect for the independent variable of gender and having children on the dependent variables of lack of control over time ( $F = 4.341, p = .038$ , partial  $\Omega^2 = 0.010$ ) and WFH conflict ( $F = 19.755, p = .000$ , partial  $\Omega^2 = 0.043$ ). On the other hand, we find no significant group effect for the independent variable of gender and having children on the dependent variables of technology usefulness ( $F = 3.717, p = .055$ ) and WFH attitude ( $F = .917, p = .339$ ). We visualize the significant interaction relationships of the two dependent variables: control over time and WFH conflict in Figures 2 and 3 below.

Figure 11 shows that females have an overall higher mean for perceived lack of control over time compared to their male counterparts. We see the gap in lack of control over time widens for females with children under the age of 18 compared to their male counterparts.



**Figure 11. Estimated Marginal Means of lack of Control Over Time**

Figure 12 shows that females with no children under the age of 18 experience slightly lower WFH conflict than their male counterparts. However, females with children under the age of 18 experience higher WFH conflict compared to their male counterparts.



**Figure 12. Estimated Marginal Means of WFH Conflict**



Table 14 summarizes the results of this analysis.

Table 14. Summary of Results

WFH Characteristic	Gender	Children in Home	Gender X Children in Home
<b>(Lack of) Control over time</b>	Significant	Significant	Significant
<b>Technology usefulness</b>	Significant	Not significant	Net significant
<b>WFH attitude</b>	Not significant	Not significant	Not significant
<b>WFH conflict</b>	Not significant	Significant	Significant
<b>Group (all four)</b>	Significant	Significant	Significant

## 8. Discussion

*“It’s not working from home. I can do that. It’s working while at home with kids and my spouse during a pandemic that’s the problem.” Survey respondent.*

Working from home has taken on new meaning due to the COVID-19 pandemic. Day-to-day routines and responsibilities have been altered because workers are forced to work in an environment that is no longer shared with fellow employees; rather it is shared with family members of all ages. This way of working has left employees with mixed views about WFH. Our study explored the demographic factors that influence WFH, specifically gender differences and having dependent children at home. In this discussion, we add comments from open-ended questions in the survey to give depth to our findings.

### 8.1. Gender Differences

The findings revealed significant gender group differences with respect to ***control over time*** and ***technology usefulness***, with women experiencing less ***control over time*** and lower perceived ***technology usefulness***. This is most likely due to the sudden and unexpected need to balance ongoing work assignments and demanding household responsibilities in the same environment. Notably, these gender differences were even more significant for those who had children living at home.

The forced WFH order has shifted work processes and the way that work is performed. Technology is essential to be able to perform work at home, and a positive WFH environment depends on being able to provide similar amenities in a home office to those of conventional offices (Ng, 2010). When reviewing the open-ended survey comments, we found that this was a major concern and challenge for employees. Being able to set-up one home office is manageable for some, but having to set up two or more is a challenge: *“[The challenge is] two professionals working from home without an office environment. We started working in the same room but have since moved to separate rooms (me: dining room table, him: desk in living room).”*

Additionally, many struggle with not having needed devices and or high-speed internet to keep

up. Many commented that they had difficulty working 8 hours due to uncomfortable desks, chairs, and lack of technical equipment such as webcams and monitors. While it is unclear why females experienced lower technology usefulness, it may be related to ICT's increased accessibility, further disrupting the balance between personal and workspace. One female called it 'technology tethers': "*Inability to turn off - I commute downstairs from my office, but my technology tethers follow me. Expectation that I am always on*" and another said they missed "*the ride time to switch between work time and free time.*" There is no clear end to the day now.

We found that both female and male respondents experienced a similar **WFH attitude** and **WFH conflict**. However, when comparing the open-ended comments, male respondents had more positive comments about WFH. Consider the following:

Male Respondents:

*"For me it has worked extremely well and has resulted in a much better 'work life balance'."*

*"Working from home really has not been a challenge for me, only that I miss the office environment."*

*"Challenges? None at present. It took about 1 week to fully adjust to working from home."*

Female Respondents:

*"To many things are competing for my attention. There is no separation between private and workspace."*

*"Challenges? To keep the life-work balance. To keep my breaks short. To end in the evening."*

These comments illustrate well the analytical findings of gendered perception differences about WFH.

## **8.2. Dependent Children at Home**

When examining the independent variable, ***dependent children living at home***, the findings revealed that ***control over time*** and ***WFH conflict*** are significant for respondents with children under the age of 18 living at home. We found it was not just young children that create work-life challenges: "*remote working with 12-18-year-old children is challenging, cooperation necessary but not always given*". We also found that females with dependent children living at home experience lower ***control over time*** and exacerbated ***WFH conflict*** than their male counterparts.

Prior to the pandemic, parents who WFH and have dependent children living at home contribute significantly more time to childcare activities than parents working outside the home (Kwok, 2016). Now, however, all parents and all children are home together, and this has increased WFH conflict.

The transition between family and work roles requires psychological effort (Ashforth et al.,

2000). When role boundaries are blurred, people experience a mood spillover across their family and work lives, causing strain on the individual. Employees could be happier if work/life blended and allowed for more breaks and balancing. Thus, it is not surprising that those with dependent children feel less control over time and more WFH conflict. These differences are confirmed when comparing open-ended comments from males and females. Both genders commented that having children at home is difficult; however, females were more likely to mention trying to balance caring for the children and working.

For example, when asked about challenges:

Male Respondents:

*“Space limitation to work comfortably at home because I have 3 kids which have home schooling at the same time during my work time”*

*“Having two very young children home all of the time.”*

*“Raising a 2-year old that needs a lot of attention. Not being able to reason with a toddler that his parents have to work.”*

Female Respondents:

*“The full-time care for a 17-month-old, a husband who believes his job takes priority over mine, hence, there is no sharing of household or childcare tasks.”*

*“The juggling act of providing/supporting home instruction, behavior management and social-emotional supports for my 2 children, while working .... my job.”*

*“childcare and all related to it! being a full-time mommy while trying to work (full time) and teaching online is insane. let alone all the grocery shopping and cooking and cleaning that is sooo much more compared to times when he eats and kindergarten”*

*“Core work hours are also core hours school-age kids need assistance with their schoolwork. Limited hours for me to work. I am main one responsible for providing meals “feeding the zoo animals” constantly and encouraging non-screen activity when these tasks were outsourced to their school.”*

These comments support gender role theory, where an emphasis on work, and specifically time allocated to work, is incongruent with female gender role expectations (Wood and Eagly, 2010). Eddleston and Mulki (2017) found that when women can integrate their family and work, they seem to express less family-work conflict than when men integrate the two roles. This matches our finding of no significant gendered difference in WFH conflict, with women reporting slightly less conflict than men. However, as depicted in Figure 3, WFH conflict increases much more for females with children at home, perhaps signaling that traditional caretaking roles fall more often to women during the pandemic. There is increased conflict because of a strong inability to disengage from work, as supported by Eddleston and Mulki(2017).

Finally, there were no significant differences when comparing the interaction between *gender* and having *dependent children living at home* on the perceptions of *technology usefulness* and *WFH attitude*, as those with children or without children experienced similar *technology usefulness* and *WFH attitude*.

These similarities and differences suggest the need for further investigation into the implications of differing home situations would have for increasing worker productivity and performance when WFH.

## 9. Recommendations

What does this mean? Findings of this study demonstrate that female workers with children under the age of 18 experience less control over their time, and those who also have children report higher WFH conflict than their male counterparts while WFH during the pandemic. While we don't know how long workers will need to continue to WFH or what the future of work will look like in terms of WFH, there are some important considerations for employers.

Employers are urged to provide adequate technical support and office equipment for employees and to enable regular exchange about an employee's technical requirements and problems. Employers must acknowledge personnel differences (such as gender, parental status, age, race, and ethnicity) and their impact on the ability and challenges of individual employees, including educating employees to expect and respect the differences of their colleagues. As one female respondent put it: *"ascertain that working from home does not lead to an increase of household/caregiving duties, especially among female employees, thus impairing their work efficiency and career options."* This suggests that females are quite capable of juggling their work, household, and caregiving obligations when WFH, but the juggling may be more complicated for them. Forced WFH should not affect the career progression of employees.

As the physical organizational landscape is changing, employers might also consider changes to policies and benefits to ameliorate the new challenges employees face. The standard 8-5 workday does not allow flexibility to those with children needing daytime attention. Offering flexible work hours helps caregivers to better integrate family and work within the same environment. *"Can we also finally consider a flexible work week as a nation?"* and – *"do we really need to grind 5 days a week with no breaks?"* Finally, employers should think about improving benefits to support workers. When survey respondents were asked for suggestions, childcare was mentioned often as something employers need to consider: *"organize childcare,"* *"[provide] adequate childcare plans"* -- but interestingly, only by women.

While we may not be able to answer the question of what a "new normal" looks like, these recommendations address some of the work-life challenges of those who must WFH.

## 10. Conclusion and Future Work

This study aimed to investigate gender differences and parental responsibilities in work-life trade-offs related to home-office conditions during the COVID-19 crisis. We presented a conceptual model to understand the relationship between the personal characteristics of gender

and parental status, and four constructs reflecting how workers respond while WFH during a time of crisis. Using survey data and open-ended comments collected from 445 employees who WFH, we explored the relationships among these variables and constructs.

Our findings show that gender and the presence of children under the age of 18 affect workers' control over time, technology usefulness, and WFH conflict, but not their WFH attitude. Of note, women experience more lack of control over their time and find technology to be less useful than their male counterparts. Also of interest is that women with children at home report much higher WFH conflict and even less control over time than men who have children at home.

Additional study is needed to better understand how this lack of boundaries – physical and conceptual - leads to increased WFH conflict, and how it bears out on worker productivity and job performance. In future studies, we will look at how WFH attitude can mediate some of these relationships. We anticipate that an employee's attitude toward WFH will directly affect productivity by mediating the relationship of family-work conflict and technology usefulness

This paper aims to provide an early window onto the challenges and obstacles of working from home during these unprecedented times. The widespread practice of working from home in today's pandemic world will provide insight into the ability of the telecommuters of tomorrow to maintain healthy and productive work- life boundaries.

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## Article 8:

### How Working from Home during COVID-19 Affects Academic Productivity

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#### Abstract:

The coronavirus disease of 2019 (COVID-19) pandemic has forced most academics to work from home. This sudden venue change can affect academics' productivity and exacerbate the challenges that confront universities as they face an uncertain future. In this paper, we identify factors that influence academics' productivity while working from home during the mandate to self-isolate. From analyzing results from a global survey we conducted, we found that both personal and technology-related factors affect an individual's attitude toward working from home and productivity. Our results should prove valuable to university administrators to better address the work-life challenges that academics face.

**Keywords:** Work From Home, Academic, COVID-19, Productivity, WFH, Technology Usefulness, Family-Work Conflict.

## 1. Introduction

The coronavirus disease of 2019 (COVID-19) epidemic had an abrupt and absolute impact on academic life. Soon after its sudden appearance around the world, the pandemic caused almost all universities in the world to temporarily shut their doors and send all students, faculty, and staff home to work. The indefinite working-from-home (WFH) period led university employees and especially faculty to dramatically alter their work methods, schedules, and responsibilities. The unusual circumstances that COVID-19's rapid spread created provides a unique opportunity to study the role that information systems play in supporting people through this pandemic and beyond. Topics worth studying include the pandemic's impacts on jobs (including job loss, job changes, and job outcomes), on home life (including home-life changes, effects on children, social life and life-related outcomes), and in different contexts, population groups, and countries (Venkatesh, 2020).

In this paper, we report the results from a survey we conducted about how academics from around the world have adapted to the WFH period. We explore the dramatic changes to individual work-life balance that the COVID-19 pandemic caused as families juggle childcare, instructors teach remotely, roommates vie for Wi-Fi bandwidth and office space, and employees adapt to a raft of new technologies to work and communicate. We found that both personal and technology-related factors affect an individual's WFH attitude and productivity.

This paper proceeds as follows: in Section 2, we introduce our model and hypotheses, present our research methods, and report on and analyze our survey data. In Section 3, we discuss the results. In Section 4, we provide recommendations for university administrators to address the constraints faculty and staff face to provide needed technology and related resources that ameliorate the impact of the work-life challenges that academics face. Finally, in Section 5, we conclude the paper.

## **2. Research Model**

In recent decades, some employers have promoted virtual offices and working from home as a way to improve organizational performance by providing flexibility to employees (Zhang, 2016; Bloom, Liang, Roberts, & Ying, 2015). However, WFH does not necessarily constitute the panacea its promoters intend as concerns arise when workers find it difficult to balance work and family responsibilities and to deal with growing stress (Dockery & Bawa, 2014). Studies have confirmed that, while WFH increases how flexibly one can achieve work-related tasks and positively relates to overall job satisfaction, it can also lead to more job-induced stress and negative personal wellbeing due to work overload and work-life conflicts (e.g., Anderson, Kaplan, & Vega, 2015; Hayman, 2010).

The pandemic has upended people's work and personal lives (Venkatesh, 2020), much of which one can link to the unexpected move to WFH. From the earliest days in which people began working from home due to the COVID-19 pandemic, we have been inundated with advice on how to manage suddenly juggling personal and job responsibilities while at home and working alongside family members or other cohabitants who also must collocate and manage their own obligations. In this study, we examine the impact that these circumstances have had on the academic community's ability to work effectively.

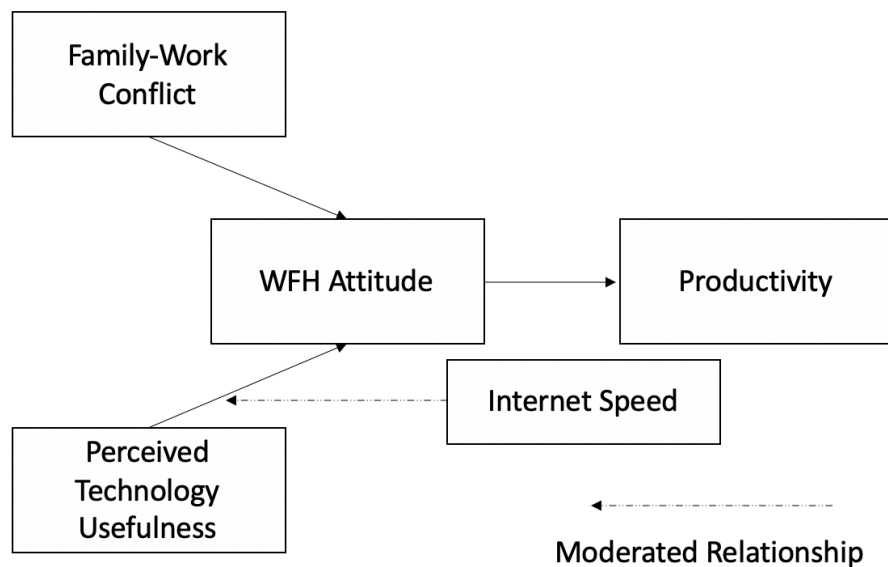
This confluence of roles and temporary working conditions has the potential to reduce worker productivity. Thus, we examine the role of two factors widely thought to affect productivity: 1) family-work conflict and 2) perceived technology usefulness. First, family-work conflict reflects the work-life challenges that WFH exacerbates and refers to the degree to which responsibilities from the work and family domains are incompatible (Netemeyer, Boles, & McMurrian, 1996). Second, perceived technology usefulness refers to how useful workers perceive the technologies that they adopt to work and communicate in their temporary location. No matter the tools workers have access to while WFH, technologies' perceived usefulness may explain changes in productivity (Venkatesh & Davis, 2000). Because workers must communicate from afar, they will rely on access to the Internet to perform much of their work.



Most academics already access the Internet at home; however, not all live in areas or choose plans that provide greater speed or bandwidth to accommodate an increase in their own and/or their cohabitants' workload.

Both factors (family-work conflict and perceived technology usefulness) likely contribute to academics' attitude toward WFH. Therefore, we anticipate that an employee's attitude toward WFH will directly affect productivity by mediating the relationship between family-work conflict and technology usefulness. That is, lower family-work conflict and access to more useful technology (e.g., higher-speed Internet access) should lead to a better WFH attitude. Having job satisfaction and a positive attitude toward work increases the likelihood that workers will achieve higher productivity levels (Tenney, Poole, & Diener, 2016).

We depict these relationships in our model in Figure 13.



**Figure 13. Factors that Affect Productivity While Working From Home**

Below, we present the hypotheses that correspond to the model. We use these hypotheses to assess how academics perceive their productivity in view of family-work conflict, WFH attitude, technology usefulness, and Internet speed.

- H1:** WFH attitude mediates the relationship between family-work conflict and productivity.
- H2:** WFH attitude mediates the relationship between perceived technology usefulness and productivity.
- H3:** Academics with acceptable Internet speed experience a stronger relationship between perceived technology usefulness and productivity.

## 2.1. Procedure and Sample

We employed an online questionnaire to collect data from employees who have had to move their jobs home due to the COVID-19 pandemic. In the survey, we combine demographic

questions with items that characterized the work environment (e.g., tasks, space, time, technology). Items captured characteristics of respondents’ home and work environments to measure circumstances and conditions that enable or compete with WFH demands. We also measured how they handled the dual demands of work and personal life under co-location. We pilot-tested the survey with a convenience sample that we primarily drew from academia. Response times confirmed our estimate that it took approximately 10 minutes to complete the survey. We made minimal wording changes based on feedback from the pilot and dropped or combined two questions due to item duplication.

We recruited survey respondents using our personal and professional networks from 27 April to 8 May, 2020. We recruited participants over 18 years old and who had newly begun working from home due to the pandemic. In total, our sample comprised 221 academics.

To maximize our findings’ generalizability, we recruited participants from various countries for the study: 41.2 percent from Germany, 39.8 percent from the United States, and 18.5 from 25 other countries. Furthermore, 11.8 percent of participants were in management roles (deans and department chairs), while 88.2 percent were in non-management positions (mostly full-time faculty). We show additional demographic information in Table 15.

**Table 15. Participant Demographics in our Survey with Academics Working From Home**

<b>Gender</b>	
Female	66.1%
Male	33.9%
<b>Age</b>	
18-24	14.9%
25-34	21.3%
35-44	19.5%
45-54	21.3%
55-64	16.7%
Over 65	6.3%

In Table 16, we show the main study constructs that we measured using multi-item scales that we adopted or adapted from prior studies and tested in a pilot study.

**Table 16. Survey Constructs: Academics Working From Home During COVID-19**

Survey Constructs	Source
Family-work conflict: five items	Netemeyer et al. (1996)
Perceived technology usefulness: four items	Venkatesh & Davis (2000)
WFH attitude: three items	Edwards, Van Laar, Easton, & Kinman (2009)
Productivity: three items	Belanger, Collins, & Cheney (2001)

The scale for all questions ranged from strongly disagree (1) to strongly agree (5). We coded the moderator, Internet speed, as a binary measure (1 = inadequate speed and 2 = adequate speed). Of the 221 participants, 107 reported their Internet speed as inadequate and 114 reported it as adequate.

## 2.2. Analytic Approach

We used partial least squares structural equation modeling (PLS-SEM) (SmartPLS 3.0) to analyze the data. As we focused on collecting data about academics' perceptions during the COVID-19 pandemic, self-reported measures suited our study. Nevertheless, the potential exists for common method bias when one collects data from a single source. We tested for common method bias using a full collinearity approach (Kock, 2015). The results indicate no common method bias problems occurred as the VIF values at the factor level model estimation were less than the recommended threshold of 3.3 (Kock, 2015). We present a correlation matrix for the survey constructs in Table 17. Next, we assessed the measurement model to ensure the measures' reliability and validity and examined the structural model.

**Table 17. Correlation Matrix**

Survey Constructs	1	2	3	4	5
1) Family-work conflict	1				
2) Internet speed	-0.094	1			
3) Productivity	-0.637	0.174	1		
4) Perceived technology usefulness	-0.144	0.138	0.225	1	
5) WFH attitude	-0.392	0.096	0.532	0.237	1

## 2.3. Measurement Model

Results from the measurement model supported composite validity with all Cronbach's alpha (CA) and composite reliability (CR) values higher than 0.70 (Hair, Hult, Ringle, and Sarstedt, 2017) and convergent validity with all AVE scores higher than 0.5 (Hair, Risher, Sarstedt, and Ringle, 2019). The indicators outer loadings all exceeded 0.7, which indicates good reliability

levels.

We used the heterotrait-monotrait (HTMT) method to assess discriminant validity. HTMT values were all below 0.75, and the confidence intervals did not include zero or one (Franke & Sarstedt, 2019; Henseler, Ringle, & Sarstedt, 2015). We summarize the measures for reliability, convergent, and discriminant validity in Table 18.

**Table 18. Reliability, Convergent, and Discriminant Validity**

Survey Constructs	CA	CR	AVE	1	2	3
Family-work conflict	0.95	0.96	0.83	HTMT		
Productivity	0.87	0.92	0.80	0.69		
Perceived technology usefulness	0.90	0.93	0.77	0.16	0.25	
WFH attitude	0.85	0.91	0.77	0.43	0.59	.28

## 2.4. Structural Model

coefficients, the R2 of endogenous constructs, and the f2 effect sizes of endogenous constructs (Hair, Howard, & Nitzl, 2020; Shmueli et al., 2019). The inner model variance inflation factors for constructs were all below 3.0 (Hair et al., 2020). We used the PLS bootstrapping procedure with 5,000 samples to examine the size and significance of path coefficients.

We found that family-work conflict negatively predicted perceived WFH attitude (path coefficient = -0.37,  $p < 0.01$ ), which, in turn, positively predicted productivity (path coefficient = 0.32,  $p < 0.01$ ). Thus, we found support for H1 and a competitive partial mediation (indirect effect = -0.12,  $p < 0.01$ ). We also found that perceived technology usefulness positively predicted perceived WFH attitude (path coefficient = 0.18,  $p < 0.001$ ), which, in turn, positively predicted productivity (path coefficient = 0.32,  $p < 0.01$ ). Thus, we found support for H2 and a full mediation (indirect effect = 0.04,  $p < 0.1$ ).

We also examined the moderation effect that Internet speed (i.e., inadequate and adequate) had on the relationship between perceived technology usefulness and WFH attitude. We evaluated the relationship using (bias-corrected) confidence intervals and PLS multigroup analysis (PLS-MGA). The bias-corrected confidence intervals for adequate and inadequate Internet speed significantly differed and did not overlap. Similarly, we conducted the PLS multigroup analysis non-parametric Welch-Satterthwait test and found that, for inadequate Internet speed, the path coefficient between perceived technology usefulness and WFH attitude was -0.04. On the other hand, for adequate Internet speed, the path coefficient between perceived technology usefulness and WFH attitude was 0.40. The difference between the two path coefficients (i.e., -0.44 or -0.04 - 0.40) was significant ( $p < 0.01$ ) (Sarstedt, Henseler, & Ringle, 2011). Thus, we found support for H3.

Next, structural model evaluation examines endogenous variables' explained variance. The R2 for productivity was .50 and WFH attitude had an R2 of .19. Furthermore, f2 effect sizes

indicate how much an exogenous construct contributes to the R2 of an endogenous construct. Table 19 shows the f2 values that represent the endogenous constructs; values less than .01 indicate no effect, while values more than 0.3 indicate a medium effect (Cohen, 1988).

**Table 19. F<sup>2</sup> Values**

Survey Constructs	Productivity	WFH attitude
Family-work conflict	.43	.19
Productivity		
Perceived technology usefulness	.01	.04
WFH attitude	.15	

These analyses demonstrate that both personal (family-work conflict) and technology (perceived usefulness as moderated by adequate Internet speed) factors affected academics' WFH attitude and that this attitude had a significant impact on their productivity.

### 3. Discussion

Higher education has suffered greatly from the COVID-19 pandemic. The way academics work has changed as universities face an uncertain future encompassing a return to campus. This “new normal” alters established responsibilities and work patterns. In this paper, we provide university administrators with valuable information to help reduce the impact of the heightened work-life challenges that academics face given their conflicting personal and professional responsibilities.

We found that tool usefulness affected academics' attitude toward WFH, which, in turn, affected their ability to work productively. Of note, academics with acceptable Internet speed experienced a stronger positive relationship between perceived technology usefulness and their WFH attitude, which carried over to productivity. While not a surprising result, it emphasizes the importance of having the proper technical resources readily available, especially good Internet access. Indeed, survey participants corroborated this finding in making comments that identified challenges with hardware and software when WFH. For instance, one respondent wrote: “At my rural location, it was almost impossible to do work. I had to move to a location that had Wi-Fi.” Other comments echoed the need for both hardware and software resources, such as “Provide technical equipment to meet the same conditions an employee would have at the office” and “Make sure that you have good software in place”.

WFH attitude also mediated the relationship between family-work conflict and productivity. Respondents commented on challenges in transitioning to online teaching. They wrote that transitioning to online teaching consumed much time since they had to develop new adequate teaching materials and required more time to prepare. For instance, one respondent wrote:

*As a college professor, making changes from face-to-face to online has been difficult.  
...Working individually with students takes far more time than I would experience in the*

*classroom. I also feel as if I'm on call anytime. I now work many more hours and effectively reach fewer students.*

Their research and writing also suffered. For example, one respondent said: “Writing has been a big challenge for me. 4 kids at home means a lot of time spent helping with homework and generally keeping them happy.”.

Family-work conflict emerged as a common theme that drove a negative attitude to WFH. For instance, one respondent said: “Home is the place to cook and relax. It is not set out for Deep Work. Both functionalities interfere and decrease productivity”. Another said:

*There is the expectation that I am always on, the inability of mid-level management (Deans) to understand work-life balance and need for personal time. Excessive demands from them, while senior management (President / Provost) are saying to pace yourself and don't burn out.*

These findings show that many academics have struggled with work-life boundaries that have become far more complex than before—a challenge that university administrators need to address.

Respondents often found it difficult to achieve a work-friendly home environment. For example, comments included:

*It's not working from home. I can do that. It's working while at home with kids and my spouse during a pandemic that's the problem.*

*When my partner works also from home it is difficult to work: I have teaching duties and need to video/audio-record my seminars.*

*I use an ironing board as a desk and have my folders in bins on the floor.*

Some reported challenges with a full house of people who all conducted simultaneous zoom calls, such as “Finding a quiet space to conduct synchronous online lectures is a problem”. Productive workspaces may not exist for individuals who collocate with others. Schedule flexibility and other support would help faculty and staff who have dual roles at home and must share office space maintain their productivity.

In Section 4, we offer recommendations for university administrators.

#### **4. Recommendations for University Administrators**

No one knows when we will fully return to campus. As COVID-19 cases continue to fluctuate and remain high, university administrators face decisions about when and how to bring everyone back to campus safely. As a result, many faculty will continue to work remotely as we enter another semester. Thus, our finding that academics' WFH attitude is a key contributor to their productivity means that helping them establish a positive WFH attitude plays a critical role in universities' ability to survive and thrive until the pandemic's threat subsides. We offer some recommendations and guidelines for universities to think about as they continue to offer support for remote workers.

#### **4.1. Hardware and Software Resources**

Technology usefulness has a critical role in WFH productivity. Administrators should provide faculty with access to equivalent hardware and software to what they use in their on-campus office to ease the transition and support all aspects of academic productivity. As we look ahead to the future, administrators should plan to supply portable hardware that employees can use in both office and home environments. From a software perspective, faculty need access to the same software they use in the office. WFH highlights the added need for other tools such as video recording and editing software and the microphones and cameras to produce high-quality student interaction. A surprising number of respondents could not obtain adequate Internet access. Where possible, universities should offset this productivity hindrance with enhanced equipment or access to remote sites to ensure academics can safely work in isolation.

#### **4.2. Flexibility and Support**

Several respondents mentioned the need for more time to prepare online teaching materials. Instructors have taken on new roles as video producers, video editors, and learning management system (LMS) specialists. Administrators must acknowledge the additional roles that faculty members have taken on in order to deliver an online or hybrid experience that mimics a face-to-face class and offer support via training, technical assistance during class, and ubiquitous virus-prevention resources.

#### **4.3. Support for a Work-friendly Home Environment**

Family-work conflict emerged as a common theme that drove a negative attitude to WFH. Adequate workspaces, especially for synchronous instruction, may not exist for individuals who collocate with others. While administrators cannot directly impact living arrangements, they can provide support by offering flexible work schedules for individuals who must share office space and/or have multiple housemates who attend online meetings or classes at the same time. Academic managers can also create virtual support groups to bring faculty together to discuss best practices and offer support to each other.

How and when the world's academics return to a "new normal" on campus remains uncertain. Nevertheless, faculty, staff, and administrators must work together to address the challenges that face individuals who must WFH.

### **5. Conclusion and Future Research**

In this study, we examine the impact that personal and technological challenges that the COVID-19 pandemic has created have had on the academic community's ability to work effectively. To provide university administrators with valuable information to help reduce the impact of work-life challenges university members face, we surveyed academics around the world to explore the dramatic changes that COVID-19 has had on their work-life balance.

Our results lead to several important recommendations for universities. First, they should provide workers with the proper hardware and software resources and good Internet access. Second, training and practice with needed technology should assist in improving work attitudes toward an unexpected work situation. Finally, since academics struggle with the absence of

work-life boundaries during the pandemic, universities should accommodate the flexibility and support that faculty and staff who cannot separate their dual home and work-based roles require.

In this study, we conduct an early analysis on our rich data set about academics' productivity while they work from home during the COVID-19 pandemic. In the future, we plan to employ time and boundary- spanning theories to investigate scheduling, personal factors, and home situations that may influence academic WFH productivity and performance. We plan to examine factors (including those linked to technology) that contribute to increased stress levels when academics WFH. Furthermore, we plan to assess whether specific technologies' availability affects academics' performance and productivity.

## **Acknowledgment**

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