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# Refugees and ICTs: Identifying the Key Trends and Gaps in Peer-reviewed Scholarship

Suzana Brown<sup>1</sup>, Faheem Hussain<sup>2</sup>, and Ali M. Masoumifar<sup>3</sup>

Stony Brook University (at SUNY Korea), Department of Technology and Society, Korea  
suzana.brown@stonybrook.edu

<sup>2</sup> Arizona State University, School for the Future of Innovation in Society, USA  
faheem.hussain@asu.edu

<sup>3</sup> Stony Brook University (at SUNY Korea), Department of Technology and Society, Korea  
ali.masoumifar@gmail.com

**Abstract.** The goal of this paper is to identify existing literature in the field that encompasses one contemporary crisis and one prevailing developmental implement: refugees, and the use of ICT in the development arena. A total of 35 research studies were identified that address these two topics. In the process, several main themes that dominate the field are identified. These themes are the assessment of refugee status and position, education, empowerment and identity, health, and risk of ICT for refugees. Subsequently, a discussion of the missing areas in this research domain is presented. In the authors' opinion, the missing themes that are urgently needed are ethics of ICT for refugees, longitudinal studies, engendering of ICT, comparative research, and entrepreneurial aspect of refugees. This missing research would help humanity to get a better understanding of this immense challenge and to design appropriate solutions that leverage ICT to alleviate the current refugee crisis.

**Keywords:** ICT, refugees, metastudy.

## 1 Introduction

The multifaceted challenges faced by refugees and displaced populations, are on the rise worldwide. Even before the latest Rohingya refugee crisis that worsened in mid-2017 [1], the total number of displaced people worldwide was 65.6 million. Among these people, around half are formally designated as refugees, and they spend up to 1/3 of their household income on ICT connectivity<sup>1</sup>. According to Hussain [2], globally refugees are 50% less likely to have access to internet-enabled phones in comparison with the general population, and 29% of refugee households have no phone connectivity. "Where is the Wi-Fi?" and "Where do I get a SIM card?" are two of the top five questions asked by refugees landing in Europe. Researchers have also reported that refugees use net and mobile networks more than the respective host communities [3]. Numerous initiatives are being taken to include different ICTs to address various challenges faced by refugees and displaced population in different parts of the world.

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<sup>1</sup> UNHCR "Figures at a Glance 2018", <http://www.unhcr.org/figures-at-a-glance.html>

In academia too, researchers have seen the emergence of an array of investigations looking at the refugee issues and relevant ICT-centered solutions. However, until now, there has been no significant work that focuses on examining the key trends of such scholarships. Such research is needed to better understand the relevance, applicability, and impact of ICTs to address the refugees and displaced population related current and future challenges. In this paper, the authors have tried to provide a comprehensive snapshot of the key trends as well as disconnections in the scholarship domain of “ICTs for refugees and displaced population”. Afterwards, the paper highlights some of the major areas where more academic research is needed. For the future reference within this paper, by using a term refugee, we intend to understand the situation of both: refugees as well as people being displaced from their homes for other reasons.

## **2 Research Methods**

In this paper, the authors have conducted a meta-literature review, which is accomplished by identifying existing literature in the field that encompasses one contemporary crisis and one prevailing developmental implement: displaced population, mainly refugees, and the use of ICT in the development arena. The authors of this paper searched the existing literature using the following search engines: Google Scholar, Web of Science, IEEE xplora database. The terms of search were: refugees, displaced population, ICT applications. A surprisingly limited number of high-quality scientific papers that have found and almost no compelling results identified. In total 35 research studies were identified that address both topics: ICT applications and refugees. In order to analyze the direction in which scientific community is moving several main themes that dominate the field are identified. Subsequently, a discussion of the missing areas in this research domain is presented.

## **3 Review of Existing Literature**

The literature about refugee and ICT is in a germinal stage and not as developed as topics addressing refugees independently of ICT tools. Therefore, the number of high quality papers is limited. However, it was possible to find existing literature and generalize the themes of the research. The themes are presented in the next five sub-sections.

### **3.1 Using ICT tools in the assessment of Refugee Conditions and Status**

The largest portion of the literature on refugees and ICT is about assessing conditions of refugees; however, the assessed conditions vary significantly. The topics vary from performing the infrastructure assessment by examining the mobile network service quality, particularly in the type of service provided and its reliability in terms of being able to access the network on the first try [4]. The same study [4] has an over-

view of refugee youth mobile phone and internet use by surveying 157 youth in Za'atari Refugee Camp on the border of Jordan close to Syria.

Another two assessments are about service delivery of ICT [5] [6]. One study [5] explores how UNHCR Malaysia and other refugee assistance stakeholders could integrate mobile ICT innovation into their standard operating procedures for improved service delivery. The other study [6] identified a huge gap in the provision of relevant, reliable and timely digital news and information for refugees on their journeys and upon arrival in Europe.

Assessment of ICT support for refugees was topic in many conferences and one panel on a conference of the Association of Information Systems in 2017 discussed [6] refugees' empowerment with technology by talking about best practices. A research by New Zealand researcher [7] explains how resettled refugees use information and communication technology to respond to their changed circumstances. The authors identify eight patterns of ICT use: 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 [7].

As a part of SDG #10 (Reduce inequality) GSMA launched the Refugees and Connectivity portal to demonstrate how mobile technology is making a difference to the lives of refugees [8]. Another report claims that "so much is written about refugees but little by or for them" [9]. That report [9] aim was to assess whether the provision of news and information for refugees was adequate to their needs.

Impact of ICT technologies on refugees is investigated by a case study [10] about Iranian refugees' settlement in Australia. The authors performed a thematic analysis of interviews with two groups of participants (51 Iranian refugees and 55 people with a role in assisting refugees).

Since mobile applications are dominating mobile development, research on refugees is no different, and as an outcome there is literature regarding mobile applications and refugees. For example, a paper that surveys mobile applications aimed to help refugees in Portugal [11], an Atlantic article how technology helps in a humanitarian crisis [12], and the importance of mobile technology and applications for refugees [13].

A technical approach is represented by a study [14] that develops a framework for the design of refugee camp which considers the requirements needed and allows the participation of refugees in the design process; while another study [15] looks at factors and practices that influencing the resilience, which people develop in response to disruption—an emergent phenomenon dubbed transition resilience. A more specific approach is about technology-enabled social innovation regarding acceptance of

refugees in Canada [16] and a paper on ICT design to help refugees navigate new communities [17].

### **3.2 Using ICT Tools for Refugee Education**

The next most common topic is education, and this section reviews the literature related to ICT and education. The critical need to address interruptions in schooling caused by displacement, has driven a large number of existing studies in the broader literature to examine the increasingly heavy interest in the potential of mobile services to overcome the many challenges of providing education to refugees [18]. Previous studies have shown that the use of smartphones and other mobile devices, abundant even between impoverished refugees, can offer a platform that educators can leverage to reach marginalized children and youth [19] [18]. A number of authors have recognized the use of mobile technology as the starting point for refugee use of, and interactions with, ICT [18]. The main focus of such research has been to provide a clear and concise view of the role that ICT has played, the potential it holds, the projects that are currently under preparation, and what more might be done [19] [18].

Assessments of these programs have found that digital education services need to be planned with care and require appropriate commitments of time and money to deliver [18]. ICT can replace teachers and organized learning only in rare instances; but it can provide effective support to education, especially when supplemented with teacher training [19].

Alternatively, a different approach taken by researchers has been to explore the potential of innovating technology-assisted teaching methods to engage with refugees in identifying and combating barriers to employment. For example, a recent study by the University of Nottingham, presented a framework on how to optimally use the previously developed platform of resources using a blended pedagogical framework to maximize learning and to provide a package that caters for the needs of a wide variety of users.

However, most studies have relied on projects in the early stages and have not provided rigorous external evaluations, making it difficult to identify and replicate best practices. Many seek evidence that technology-assisted approaches are effective, but little has been gathered with respect to ICT in education generally, let alone in emergency situations [19]. The present situation affords numerous opportunities to build the evidence base necessary, even carry out randomized control trials, and thereby improve ICT interventions and bring them to scale.

### **3.3 Empowerment and Identity**

In the context of our civilization experience today, apart from individual identity, we have developed the concept of a broader identity, something that fixes us to our regional, cultural and social roots. Advances in digital technology and ICT have

prompted researchers to look at this topic in a new light. Numerous studies have set out to investigate the role ICT technology can play in empowering refugees and internally displaced persons through digital identity.

Previous research showed that ICTs opened up opportunities for some of the youth to resist more assimilationist expectations of positive settlement. However, positive settlement and identity making are far more nuanced and arguably often in tension with dominant expectations held by those working in the youth settlement sector [18]. In this regard researchers believe that for refugee youth settlement policy and practice to embrace more global perspectives, digital literacy and opportunities to engage in digital media production and distribution should be recognized as an essential component of settlement policies and services [18], [19].

Several theories have proposed that in realizing five valuable capabilities through ICT use, refugees exercise their agency and enhance their well-being in ways that assist them to function effectually in a new society and reclaim control over their interrupted lives. These include: (1) to participate in an information society, (2) to communicate effectively, (3) to understand a new society, to be socially connected, and (4) to express a cultural identity [20] [21] [22] [31] [24].

Social inclusion is a multidimensional, relational, and dynamic process, in which the agency of those to be included is a central concern. Interventions that ignore this are susceptible to the imposition of dominant societal norms and values in ways that do not recognize diversity in human lives [25]. For many individuals in contemporary society, ICTs facilitate the maintenance of transnational connections and identities that matter to them. The promotion of social inclusion for such people, therefore, needs to recognize that their lives are not restricted to their local context [25] [22]. Furthermore, any consideration of social inclusion in an information society needs to include the ICT-enabled capabilities that individuals value in constructing meaningful lives [25] [26].

Access to digital resources plays a crucial role in the planning and navigating of their dangerous passages, as well as in their protection and empowerment after arrival in Europe. However, notwithstanding their usefulness, mobile phones have a paradoxical presence in the lives of refugees – a resource and a threat at the same time. The digital traces that refugees' phones leave behind make them vulnerable to surveillance and other dangers [21] [23] [26] [27]. E-skills provide opportunities on many different levels, such as education, employment, and housing, and contribute to the refugees' feeling of social inclusion [23].

Prior research suggests that a major contribution of mobile phones was to the development of bridging social capital, and especially with regard to facilitating economic integration. However, indications were strong that even in the initial stages of social capital development and thence integration into the society, there was consider-

able obstruction by both the authorities and the private sector. This lack of integration was also attributable, in part, to the refugees' own attitudes and behavior [28] [29].

### **3.4 Risk of ICT for Refugees (The Dark Side of ICT)**

Very few papers address the risks ICT could present for refugees. However, there are some notable exceptions. One of them is a paper on digital inequalities in the community-level physical access divides in the context of a Syrian refugee camp [30]. The authors find patterns that demonstrate three community level divides: an inter-carrier congestion divide, a spatial distribution divide, and an inter-network divide. They also identify a number of linkages between these divides and the social, organizational and humanitarian context of the camp.

In addition, there is a study [31] on human trafficking enabled by ICT. The authors coin a term "Sinai Trafficking" and it involves the abduction, extortion, sale, torture, sexual violation and killing of men, women and children who are migrants. A tenuous link they make to technology is because the migrants ransoms are collected by mobile phone. Another study [26] that discusses a growing number of digital resources designed for refugees, among other existing issues points out that most of digital resources are unsustainable, and that they can do more harm than good if they disseminate misinformation. They make a strong statement that despite their utility, mobile phones have a paradoxical presence in the lives of refugees – they are both a resource and a threat, mostly because of the digital traces that refugees' phones leave which make them vulnerable to surveillance and other dangers.

Finally, only one study [32] concentrates mainly on risks of ICT to refugees and according to Mr. Barros, who in 2016 interviewed 40 refugees, the main issues are privacy and data risks refugees are exposed by using mobile technology.

Above studies are just scratching the surface of risks ICT presents to this vulnerable population and more should be done to properly assess those risks and recommend solutions.

### **3.5 Health and ICT for Refugees**

There is a myriad of studies that considers health aspect of the refugee crisis. For example, a study [33] looks into oral health status among newly arrived refugees in Germany, while a very recent study [34] considers impact of placement type on educational and health outcomes of unaccompanied refugee minors on health outcomes. There is also a study about mental health of Bhutanese Refugees in Australia [35], and one about risk for chronic hepatitis B infection into care and peer-education [36]. In addition, two studies [37] [38] evaluate community preconceptions about nutritional supplements. One of them [37] about folate supplementation to prevent birth abnormalities and the other [38] about food choices in order to identify nutrition education needs of refugees.

However, not many studies combine all three aspects: refugees, health and technology. To our knowledge, the only in-depth study that looks into digital health for refugees [39] is done in the context of Syrian refugees in Lebanon. That study [39] identifies contextual and cultural factors that can inform the design of digital technologies to support refugee in access to antenatal care.

## **4 Identifying the Missing Themes**

The present meta-literature review on ICTs and refugees related research papers highlighted on the current themes or trends within the relevant scholarships. In authors' opinion, given the severity of this global crisis, more revelatory research needs to be done in this domain, covering issues or themes in addition to the ones documented here. Multiple stakeholders related to different refugee crises worldwide (e.g., development practitioners, humanitarian service providers, refugees/displaced population, host communities, policymakers, etc.) need to be engaged in such knowledge building process. In the following, in accordance with our observations and field experience on enforced human displacement, the paper is going to briefly elaborate on the topics (in no particular order), which the authors believe need to be addressed in the future scholarships of ICTs and refugees/displaced population.

### **4.1 Ethics of ICT for Refugees**

The need of an ethical framework or a set of applied guidelines for using any ICT option ethically has always been important [40]. Availability of such benchmark is even more critical in a challenged environment. The higher than usual level of uncertainty and the customary scarcity of resources make an average refugee crisis to be an exceedingly challenged scenario. Several types of key questions can be asked covering issues related to the privacy, security, and risks (physical and mental, short and long term) for any refugee at a personal as well as at the collective level. Are there any ethical guidelines for ICT applications in a refugee camp? How is privacy of the refugees taking part in any ICT experiment protected? How secure is the private information shared by the refugees about their ordeals? – All these questions need to be addressed to ensure an ethical ICT application and usage ecosystem for any refugee crisis. For example, even though there have been studies on the ICT adaptation issues by the Syrian refugees, no significant academic research has been conducted to define a set of best ethical practices ICT based solution design, development, and deployment phases. This aspect of refugee struggle needs a significant improvement.

### **4.2 Scarcity of Longitudinal Studies**

Overwhelming majority of the ICT and refugee research papers evaluated in this paper are either short-term impact studies or exploratory studies, scoping out the feasi-



bility of any particular set of ICT-centered options on any given human development dimensions. As researchers have identified, there is a significant need of evidence based, longitudinal research in ICT for Development within the refugee space [41]. This kind of scholarly work would be able to provide a better perspective on the multi-level effectiveness of an ICT solution addressing any refugee crisis. Field studies, both qualitative and quantitative, can then guide the policymakers and the practitioners to avoid the reinvention of the wheel during the time any new crisis emerges. Such works furthermore assist in making sustainable and long-term solutions for the developmental challenges faced by any group of refugees.

### **4.3 Engendering ICTs for Refugees**

Absence of gender equitable ICT solutions, especially in the Global South has always been a challenge for the related development agencies and other stakeholder communities. Research shows that irrespective of the nature, geolocation, and intensity of any refugee crisis, women of all age are always among the most affected groups. Researchers reported the prevalent discrimination against women when it comes to access to humanitarian resources (allocation and planning), information, communication, and other development activities [42]. Women are in general on the backseat in terms of affordable ICT access. Recent reports from the Rohingya refugee crisis in the border of Myanmar and Bangladesh showed the extensive disparity in ICT access and usage between men and women, with the latter being consistently deprived [43]. Despite such findings, there has been no systematic and in-depth research in place to identify the key challenges and opportunities faced by refugee women for accessing and actively using ICTs. There are also no gendered communication or ICT dissemination policies available to address the complexities of the displaced population.

### **4.4 Absence of Comparative Research**

In ICT for Development research, the trend of comparative analyses is common [44], especially to analyze the relative effectiveness of similar ICT interventions in diverse contexts or the other way around. There are many comparative research frameworks in place, backed up by numerous development and economic theories. The primary objective of such research projects is mostly to find the most effective and sustainable solutions for a similar set of challenges across a disparate range of socio-economic and geopolitical backgrounds. However, very few (if any) research studies exist in the domain of ICT for Refugees, which are long-term, cross-sectional, comparative, and can transcend traditional political borders. In order to better address major problems faced by any refugees on healthcare, access, energy, education, etc., it is imperative to coordinate humanitarian and developmental initiatives between multiple refugee populations. Such knowledge and experience sharing can help in avoiding squander resources on duplicating solutions for similar problems, and also assist in avoiding any forced technological adaptation. Given the rapid rise of refugee crisis globally, there is a need for more comparative research to better understand and address this unfortunate phenomenon.

#### 4.5 ICT, Entrepreneurship, and Refugees

Beyond surviving a humanitarian crisis, it's important for a refugee to work with the relevant development stakeholders to design, develop, and deliver livelihood specific solutions. Such outputs would help them to be entrepreneurial, self-reliant, and a part of productive human resources. Until recently, no adequate research has been conducted on the prospect of refugee entrepreneurs. In some refugee camps in Sub-Saharan Africa, refugees are being provided financial aid through mobile money transfers [45]. These people are also legally allowed to be a part of the regular workforce and innovate freely, especially in the ICT space. We need more detailed case studies and long-term research analyzing these initiatives. Findings from these projects can help the policymakers and the practitioners to come up with more innovative, inclusive and entrepreneurial human resource development plans for the refugees, aided by ICTs.

### 5 Conclusions

The goal of this research has been to provide an overview of scholarships related to ICTs and refugees. Authors have found that a significant portion of the existing studies are about initial case studies, exploratory research, and disproportionately about life style adaptability of different ICT options by refugee communities around the globe. In other sectors like Education, Health Care, Communication strategies for refugees, ICT related scholarly studies primarily focus on the supply-side based findings, and hardly had any systematic analyses of the demand-side inputs. Moreover, authors could not locate any considerable number of scholarly works addressing other major issues, i.e. gender, ethics, entrepreneurship, empowerment, etc. The authors believe that such void in scholarship needs to be filled up rather quickly, as the refugee and displacement crises are alarmingly on the rise in all the continents, thus adversely affecting our contemporary socio-economic ecosystems and development cycles. Furthermore, refugees actively need to be the parts of the design and implementation of such future scholarly initiatives, which can help the humanity to get a better understanding of such immense challenges and to design appropriate solutions.

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