

Exploring the Role of Technologies in Building Syrian Refugee Community Resilience

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Abstract

We are witnessing the largest humanitarian crises occurring within the digital age. The ubiquity of digital technologies has created a space for digital humanitarianism. Digital humanitarianism has been tied to concepts of community resilience by critics of both fields. Humanitarian academics call for a critical investigation of these concepts that accounts for the socio-political, cultural and economic contexts in which they are applied. However, empirical research at the intersection of digital humanitarianism and community resilience is lacking.

In this thesis I explore how digital technologies may contribute to refugee community resilience, using an Experience-Centred Design (ECD) research approach to engage with Syrian refugee women residing in an informal settlement in Lebanon. Through the issue of food security, I engage in an exploratory study using focus groups, dialogue cards and the co-creation of an advocacy artefact to explore refugee participants' understandings of community resilience and how a technology designed for improving refugee food insecurity can contribute to their community resilience. I further use paper prototypes to engage with participants to mimic potential future experiences of technologically mediated collective purchasing. The data collected with refugee participants is augmented by interviews with other stakeholders in the food aid system. Additionally, I use autoethnographic methods to reflect on the value of ECD within this context.

I highlight the potential for community-designed humanitarian technologies to increase refugee agency, facilitate self-mobilisation and consequently contribute to refugee community resilience. I also emphasise the need, when designing technologies for community resilience, to account for subcommunities that form within geographically defined refugee communities. My findings extend the concepts of community resilience and digital humanitarianism by envisioning refugee-community-driven technology and using ECD as a methodology for designing with refugee communities.

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List of Acronyms

AFN: Alternative Food Network

DFID: Department for International Development

ECD: Experience-Centred Design

FCR: Framework for Community Resilience

HCI: Human-Computer Interaction

IFRC: International Federation of Red Cross and Red Crescent

NGO: Non-Governmental Organisation

SLA: Sustainable Livelihood Approach

TA: Thematic Analysis

UNHCR: United Nations High Commissioner for Refugees

WFP: World Food Programme

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Chapter 1. Introduction

The world is currently experiencing the largest humanitarian crises since World War Two (UNHCR, 2019a). The United Nations High Commissioner for Refugees (UNHCR) estimates that there are 25.9 million refugees worldwide, with around a quarter of them fleeing the Syrian conflict that erupted in 2011 (UNHCR, 2019a). A refugee is defined as “someone who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion is outside the country of his nationality, and is unable to, or owing to such fear, is unwilling to avail himself of the protection of that country” (Howard et al., 2012, p.19). As digital technologies have become more ubiquitous, we are witnessing a turn towards the digitisation of aid in an attempt to increase the efficiency and effectiveness of the delivery aid: this is referred to as digital humanitarianism (International Federation of Red Cross, 2013; OCHA, 2017). This has been coupled with the introduction of community resilience as a concept to guide humanitarian organisations (IFRC, 2008; Department for International Development, 2011).

The research presented in this thesis lies at the intersection of community resilience, digital humanitarianism and Human-Computer Interaction (HCI). I use food insecurity as a stressor experienced by a Syrian refugee community to explore how technology may contribute to refugee community resilience. I conducted the research with a community of Syrian refugees residing in the rural Bekaa region, which contains 36% of the Syrian refugees registered with the UNHCR in Lebanon (Yassin, 2019). The research presented in this thesis is guided by the International Federation of Red Cross and Red Crescent Societies’ (IFRC) Framework for Community Resilience (FCR) (IFRC, 2014). Throughout the thesis, I draw on previous research on (1) HCI conducted with refugees and/or issues around food poverty and sustainability, (2) digital humanitarianism and (3) Experience-Centred Design (ECD).

1.1 Research Context

1.1.1 Syrian refugees in Lebanon

The influx of around a million Syrian refugees (UNHCR, 2019b) into Lebanon, a neighbouring state, resulted in a 30% increase in the population of this relatively small country (UNHCR, 2015a). Lebanon is not a signatory of the 1951 Refugee convention and at the time of the start of the Syrian crises, the country lacked any national legislation regarding refugees (Janmyr, 2016). The lack of a formalised national response to the refugee crises in the first three years was exacerbated by the existing political stalemate within the Lebanese parliament (Janmyr, 2016). Refugee policies in Jordan and Turkey allowed the UNHCR to set up formal camps for Syrian refugees to reside in as well as to engage with humanitarian aid (Achilli et al., 2017).

Lebanon, however, experienced political resistance to the setting up of formal Syrian refugee camps (Achilli et al., 2017). This was mainly due to Lebanon's difficult history with hosting Palestinian refugees and the previous Syrian military presence in the country (Janmyr, 2016). Consequently, 19% of Syrian refugees in Lebanon have set up informal settlements on rented land and properties in rural areas. Informal settlements are places (e.g. buildings or pieces of land) which are exclusively inhabited by Syrian refugees (Sanyal, 2017); they are often in suboptimal condition (e.g. leaking roofs, rotting walls and unsealed windows) (Yassin, 2019). Of the Syrian refugees registered with the UNHCR in Lebanon, 36% reside in the rural region of Bekaa (Yassin, 2019). Humanitarian and social workers visit the Syrian refugee informal settlements to conduct assessments and deliver services under the co-ordination of the UNHCR and the Lebanese Government (Sanyal, 2017).

The restrictions placed on refugee rights in Lebanon have resulted in experiences of limited access to public services such as healthcare (Doocy et al., 2016; Reese Masterson et al., 2014a) and education (Dryden-Peterson, 2011), along with difficulties in acquiring employment (Ott, 2007; Ott & Montgomery, 2015). These restrictions, coupled with poor living conditions, not only propagate poverty within the refugee community but also, in turn, increase health inequalities between them and host communities (Doocy et al., 2016; Lyles & Doocy, 2015). In 2018, 69% of Syrian refugee households were living below the poverty line and 52% were reliant on informal debts as a form of income (Yassin, 2019). Several socioeconomic and political factors contribute to Syrian refugees' continued economic and social marginalisation within Lebanon. Only 18% of Syrian households report having legal residency in Lebanon (Yassin, 2019). Without legal residency, refugees' mobility within the country is restricted due to fear of being stopped at government checkpoints, where they would be asked to present their papers (Janmyr, 2016). This makes accessing educational, health and medical services more difficult (Yassin, 2019); it also presents challenges for Syrian refugees in obtaining reliable forms of employment (Achilli et al., 2017). Indeed, the relatively high cost (US\$200) of obtaining legal status within Lebanon (Yassin, 2019), has left Syrian refugees in a precarious position in which they are faced with the option of returning to Syria or accepting underpaid work under exploitative conditions (Janmyr, 2016). 32% of Syrian households in Lebanon have no source of income (Yassin, 2019). Furthermore, economic policies in Lebanon restrict Syrian refugees' employment options to manual labour, mainly working in the seasonal economic sectors of agriculture and/or construction (Turner, 2015; Janmyr, 2016).

Lastly, recent political rhetoric in Lebanon has contributed to the social marginalisation of Syrian refugees. The Syrian military occupation of Lebanon for 30 years left Lebanese host communities with a general animosity towards Syrians (Janmyr, 2016). That is further compounded by Lebanese communities, who often are also living in poverty, perceiving refugees to be competing for their jobs (Turner, 2015). Furthermore, anti-refugee sentiments have been publicised by Lebanese politicians, who portray Syrian refugees as a security threat that may also put at risk the fragile religious sectarian balance within the country, since the majority of Syrian refugees are of the Sunni Muslim faith (Habib, 2019).

1.1.2 Food security

One of the pillars of humanitarian response is providing food aid to refugees in response to their experiences of food insecurity (The Sphere Project, 2011). The Food and Agriculture Organisation of the United Nations defines food security as existing “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Food and Agriculture Organization, 2006). This multifaceted definition of food security, which encompasses both availability and accessibility of food, has led to the development of several tools that are used to assess food security (Pingali et al., 2005). Understanding the coping strategies employed by households when they are food insecure is a widely used way of assessing food insecurity from an experiential perspective. Experientially assessing coping strategies is done by asking individuals and/or households what they do when they are unable to purchase food (Maxwell et al., 2008). Commonly maintained coping indicators have been identified, validated within Arab contexts and applied in food security assessments for refugees in Lebanon. They include (1) reducing food quantity and/or health and education expenditures, (2) eating cheaper foods, (3) relying on savings, (4) borrowing money, (5) skipping loan payments, (6) sending family members to eat outside of the house and/or borrowing food, (7) increasing income through working more and/or sending children to work, and (8) not being able to do anything (Sahyoun et al., 2014). In protracted crisis situations, such as that of Syrian refugees in Lebanon, coping strategies become more permanent; therefore, they do not reflect changes in food security but rather the severity of the situation (Maxwell et al., 1999).

More than 50% of Syrian refugee households in Lebanon are unable to meet their food needs (UNICEF et al., 2018) and 34% are classified as moderately to severely food insecure (UNICEF et al., 2018). Furthermore, nine out of ten Syrian refugee households are employing several food-related coping strategies, the most commonly used being reducing portion sizes and/or the

number of meals per day (UNICEF et al., 2018). Additionally, 40% of households were found to be borrowing food (UNICEF et al., 2018). Higher levels of food insecurity are associated with higher economic vulnerability due to economic and social policies that restrict Syrian refugees' ability to legally join the Lebanese workforce (UNICEF et al., 2018). With the persistence of such policies imposed by the Lebanese government, efforts at improving refugee food security through improving refugee livelihoods are ineffective. Consequently, the provision of food aid by humanitarian organisations has been the main pathway to addressing Syrian refugee food insecurity in Lebanon (UNICEF et al., 2018).

Adopting a resilience approach to address food insecurity in humanitarian contexts has been discussed in depth by both academics and humanitarian organisations (Pingali et al., 2005; Béné et al., 2016; Tendall et al., 2015; IFRC, 2012). Building food system resilience has been discussed as a means of ensuring the availability of food during times of crisis (Pingali et al., 2005). However, adopting new approaches such as community resilience has been theorised to enable researchers and humanitarians to understand and address food insecurity more holistically, thus accounting for the multiple socioeconomic and political factors that contribute to refugee food insecurity (Béné et al., 2016; IFRC, 2016). Through the lens of community resilience, we can break down silos in humanitarian response and allow for food insecurity to be explored and addressed through interventions and technologies that address refugee experiences of food insecurity and confront the factors that contribute to the marginalisation of refugee communities (Béné et al., 2016).

1.1.3 Humanitarian technologies for refugee food security

In Lebanon, the World Food Programme (WFP) is currently running several projects that are based on technological advances, such as food e-vouchers and cash assistance provided via bank debit cards as a substitute to paper-based vouchers and distributing food baskets (El-Huni, 2014; Campbell, 2014; Hagen-Zanker et al., 2018). Furthermore, the WFP is currently piloting an app, 'Dalili', to enable refugees to make more informed purchasing decisions (World Food Programme, 2018). In the case of Jordan, where vendors catering to refugees are in proximity to isolated refugee camps, WFP has introduced blockchain technologies to improve the efficiency of providing food cash assistance (Juskalian, 2018).

Cash Assistance and E-Vouchers

Food aid for Syrian refugees found to be food insecure comes in one of two forms: cash assistance (Hagen-Zanker et al., 2018) and, more commonly, an e-voucher system (El-Huni,

2014). In partnership with banks, the WFP has arranged for food-insecure refugees to either receive a debit card that they can use to withdraw cash from ATMs and/or use in any retail store (cash assistance), or a debit card that can only be used to purchase food items (e-voucher) and is restricted to specific shops. To use their e-vouchers, refugees have to go to shops registered with the WFP. Shops selected by the WFP as registered shops have a computer, a barcode reader and an e-voucher/debit card reader installed; these are used when refugees use the e-voucher system to make food purchases.



Figure 1.1 A Syrian refugee in Lebanon holding his E-Voucher. Picture taken from a MasterCard press release (MasterCard, 2013)

Building Blocks

In Za'atari refugee camp (Jordan), the WFP has introduced a blockchain-based system that aims to more effectively and efficiently provide assistance to refugees (Juskalian, 2018). Rather than transferring cash to refugee debit cards (as in the case of the e-voucher system), the system allocates an amount of cryptocurrency to refugees that they can then use in stores to purchase food. The move to use blockchain technologies to facilitate transactions between shops and refugees receiving WFP aid entails more stringent documentation of transactions (Juskalian, 2018). Currently, one of the arguments for the use of blockchain technologies in this context is that it allows refugees to carry with them a digital wallet and financial ID that includes their transaction history (Juskalian, 2018). Similar to the e-voucher system, registered shops use a barcode reader and a computer to input the food purchases made by refugees. In addition, the system uses retina scan recognition (figure 1.2) for verification of the identity of the refugee beneficiary (World Food Programme, 2018).



Figure 1.2 The Building Blocks technology being used to process a purchase made by a refugee in Za’atari refugee camp in Jordan (Juskalian, 2018)

Dalili Smartphone Application (App)

The Dalili app (World Food Programme, 2018) is being piloted in Lebanon and displays the prices of food items in different shops in the vicinity of refugee communities (figure 1.3). It aims to allow refugees to make price comparisons. Refugees can create baskets of items by browsing through food items and selecting the ones they want to purchase. The app then shows them the price of the basket across multiple nearby shops. Alternatively, refugees can browse shops, select one and create a basket from the items stocked in that shop. Each product description includes the brand name and the quantity of the item. The presentation of shops includes the shop name, the town in which the shop is located, the distance (in km) from the user and a picture of the front of the shop. The prices of food items are inputted by shop owners through an app called Matjari that was designed specifically for this purpose.

1.2 Community Resilience and Digital Humanitarianism

Increasingly, community resilience is being explored as a concept to be implemented in humanitarian contexts (IFRC, 2016; Béné et al., 2016). Community resilience and digital humanitarianism have been critiqued by researchers such as Duffield (2012) and Evans and Read (2014) as tools for distancing aid organisations from their beneficiaries. This movement towards the abandonment of communities and local humanitarian organisations has also been identified as a negative notion underlying community resilience (Welsh, 2014).

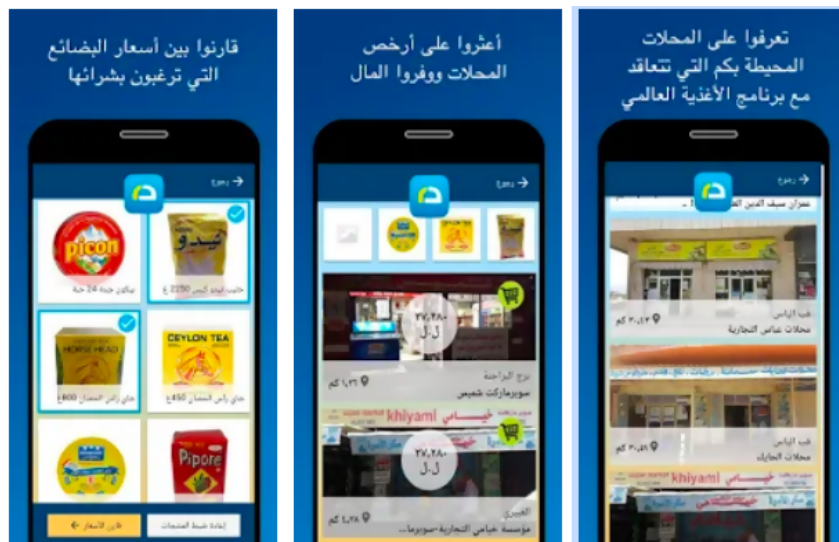


Figure 1.3 Screenshots of the Dalili app (WFP, 2019). On the left is a screenshot of selecting items to make a basket; the middle image shows the price of the basket in different shops. The screenshot on the right shows multiple shops and their descriptions.

Community resilience has also been critiqued as a way of shifting the responsibility of recovering from shocks from governments and aid organisations to communities (Evans & Reid, 2014).

Despite the FCR (figure 1.4) highlighting the need for a people-centred approach (IFRC, 2014) little guidance is available on the methodologies that should be adopted within the scope of such an approach. Furthermore, the role of digital technologies has yet to be situated within the FCR. Jacobsen (2015) highlights how humanitarian technologies often aim to meet the objective of the aid organisations and may not necessarily benefit refugee communities. This is in line with Mesmar et al.'s (2016) findings, which show that humanitarian health technologies tend to be top-down paternalistic innovations in which humanitarian organisations, rather than refugees, are the primary stakeholders considered in the design process.

In contrast to that, adopting an ECD approach when engaging with a refugee community on the role of technologies in building community resilience allowed me to place refugee communities as the primary stakeholder when designing technologies within this space. As such, this thesis focuses on how technologies designed together with a refugee community may primarily meet their needs rather than those of the humanitarian organisation. Furthermore, the research presented in this thesis aims to provide evidence on how humanitarian technologies may be designed to counter the identified pitfalls of the concept of community resilience and the current applications of digital humanitarianism.

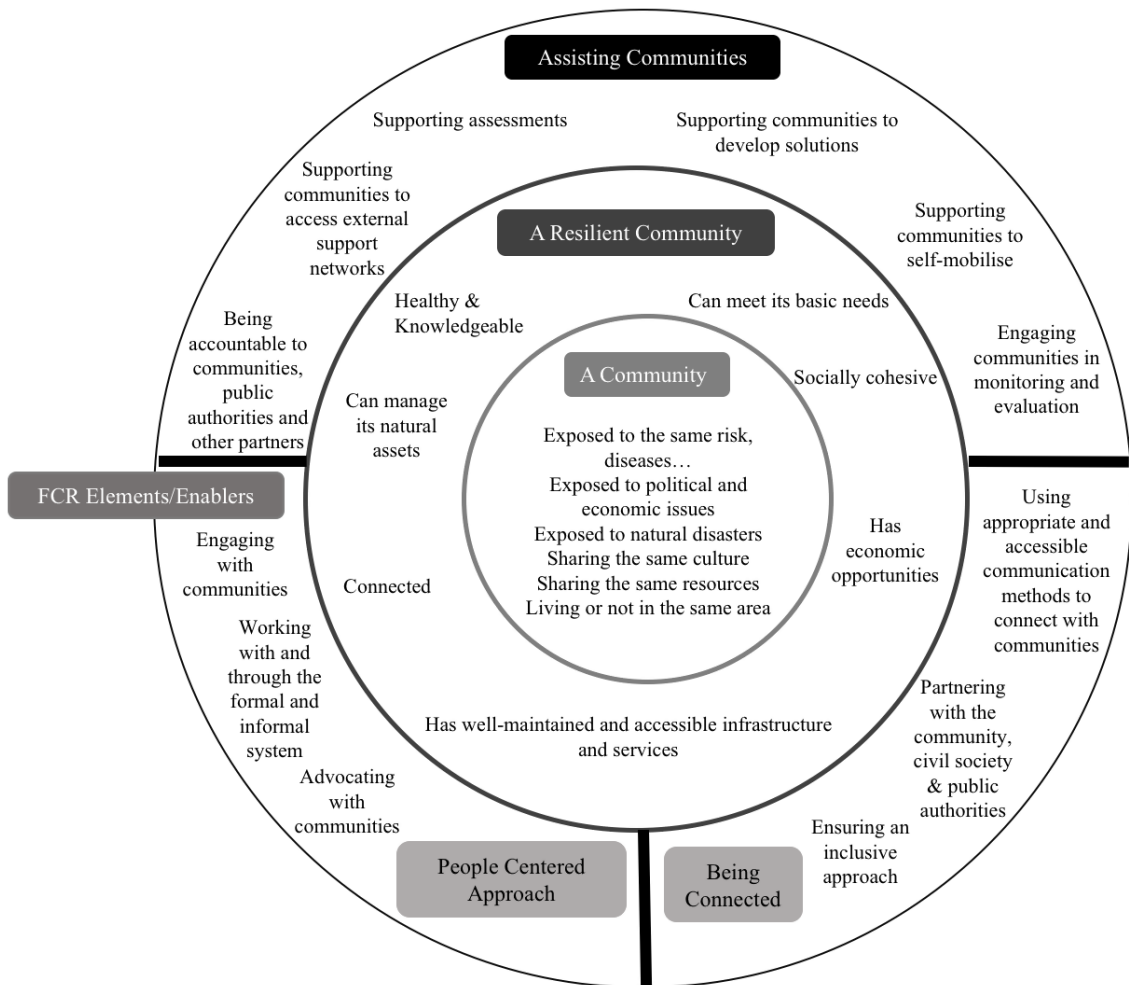


Figure 1.4 The IFRC's Framework for Community Resilience (IFRC, 2014)

1.3 Research Questions and Aims

Based on the aforementioned research motivation, I raise the following research questions to be addressed in this thesis:

- *Research Question One (RQ1):* How is community resilience experienced by a Syrian refugee community in Lebanon?
- *Research Question Two (RQ2):* How can community-designed technologies contribute to refugee community resilience?
- *Research Question Three (RQ3):* How can community-designed technologies counter critiques of community resilience and digital humanitarianism?
- *Research Question Four (RQ4):* How can using an Experience-Centred Design approach contribute to designing technologies for refugee community resilience?

Through responding to these research questions, I aim to:

- Extend community resilience through exploring the role of digital technologies within the FCR.
- Extend the field of digital humanitarianism by designing refugee-community-driven digital technologies.
- Explore the application of ECD as a methodology that can be applied in designing digital technologies for refugee community resilience.

1.4 Contribution

This thesis contributes to digital humanitarianism and community resilience literature within the specific context of Syrian refugees residing in rural Lebanon and experiencing food insecurity. I provide an understanding of how digital technologies may be designed and used by refugee communities to build their community resilience. The thesis also builds on HCI literature, thus extending the field to the exploration of technologies within the space of refugee community resilience. Furthermore, I contribute to the field of HCI by establishing ECD as a new lens through which digital humanitarianism and community resilience may be viewed and designed for. More succinctly, this thesis makes the following contributions:

- 1) Contextualising the FCR in the context of a protracted refugee community.
- 2) Situating the current ways in which technologies are contributing to refugee community resilience, through exploring (1) how a refugee community perceives technology's contribution to its resilience, (2) how smartphone technologies designed to support refugees fit into a refugee community's definition of community resilience, and (3) how humanitarian food aid technologies contribute to refugee food security.
- 3) Identifying how technologies may contribute to refugee community resilience through co-designing a technology to improve refugee food security.
- 4) Discussing how community-designed technologies may counter the critiques of community resilience and digital humanitarianism.

- 5) Reflecting on how ECD may be adopted as a means of engaging with a refugee community for the design of technologies for refugee community resilience.
- 6) Creating an adapted FCR that situates the role of technology in refugee community resilience.

In summary, this thesis presents two main studies, conducted over three years, with a refugee community. The studies were preceded by two scoping studies that aimed to gain a preliminary understanding of how the refugee community defined community resilience and how technologies contributed to that.

In the first study following the scoping studies, design engagements were conducted in order to understand refugees' existing experiences of food insecurity as an element of the FCR. Interviews with stakeholders in the food aid system were also conducted. Data collected was used to extend the FCR to encompass refugee participants' understandings and experiences of community resilience and also to identify how technologies may be designed to contribute to refugee community resilience. Secondly, through a design case study I explored how a community-driven humanitarian technology for food insecurity allows for the design and configuration of technologies that contribute to community resilience through increasing refugee agency and connectivity to other stakeholders in the aid system. In doing so I demonstrated how such technologies, which take into account refugee community practices, may respond to and counter critiques of community resilience and digital humanitarianism. Lastly, I contributed towards a research approach that builds on ECD as a methodology that aims to guide HCI researchers and designers in designing with refugee communities for community resilience.

1.5 Thesis Structure

The thesis is structured in a manner that contextualises the concept of community resilience to a Syrian refugee community in Lebanon and identifies the current role of technologies within that community's definition of community resilience. Then, using the case of food insecurity – a facet within the FCR and a challenge being experienced by the community – I present how a technology can contribute to refugee community resilience. Through this exploration, I extend the existing FCR and discuss how technologies may be designed in a manner that contributes to refugee community resilience while countering the critiques of both community resilience and digital humanitarianism. Lastly, I show how ECD as a methodology speaks well to

engaging in design research with refugee communities working towards community resilience. To maintain the narrative of this thesis, in every chapter I have adapted the diagram that encapsulates the FCR (figure 1.4) based on the findings presented. This is done to depict the contributions of this thesis to the FCR and to tie together the contributions to the fields of community resilience, digital humanitarianism and HCI under one framework that speaks to the multiple disciplines this thesis draws on.

[Chapter 2](#) introduces the concept of community resilience and juxtaposes the current trend for its application in humanitarian contexts with the critiques of the underlying values that community resilience embodies. I then present three existing frameworks for community resilience and use scholarly critiques to compare them and synthesise their strengths and weaknesses as frameworks that may guide my research. Through this comparative analysis I show how the IFRC's FCR lends itself well to the research I intended to conduct as part of my PhD. The chapter then moves on to provide a framing for existing technologies in humanitarian contexts through introducing the field of digital humanitarianism and HCI research conducted with refugees. I also provide a synthesis of literature that highlights the overlaps in the critiques of digital humanitarianism and community resilience to show how technologies themselves may be used as tools for a neoliberal approach to community resilience. The literature presented in this chapter provides the basis from which I launch my critical inquiry into how technologies may be designed to support refugee community resilience. It also outlines the need to be mindful of designing technologies that counter the critiques of community resilience and digital humanitarianism as tools of abandonment.

In [Chapter 3](#), I introduce ECD as a methodology that can be adopted as the FCR's people-centred approach. I outline its philosophical stance and the principles of dialogue, multi-voicedness and responsiveness. I then build on ECD by merging literature on designing and engaging with refugee communities and present the research approach that guided how I engaged with refugee participants, as well as the methods used throughout the course of my research.

I then contextualise the FCR through providing an understanding of refugee community resilience as it is lived and experienced by a Syrian refugee community in rural Lebanon. This is done in the first scoping data chapter ([Chapter 4](#)), where I present refugee participants' understanding of community and resilience. In doing so I strip the FCR down to the key elements that refugee participants considered to be important factors for their community

resilience. I also begin incorporating the current role of technologies in contributing to their community resilience. [Chapter 5](#) then builds on this narrative by providing a scoping review of smartphone applications – the most ubiquitous form of technology employed by refugees (UNHCR, 2016) – designed to address the current humanitarian crises. Through this review, I identify how the current smartphone applications are not tailored for building community resilience as defined by the FCR and as understood by refugee participants.

I use this contextualised understanding of community resilience and the knowledge of the current designs of smartphone applications for refugees as a basis from which I launch into my design research engagements. In my first study ([Chapter 6](#)), I present co-design methods used to gain a holistic understanding of refugee experiences of food insecurity at both the household level and the community level. This was achieved through several design engagements in which refugee participants co-constructed narratives of their experiences of coping with food insecurity, interwoven with their interactions with each other, other stakeholders within the aid system and members of the Lebanese host community. Furthermore, while co-constructing these narratives, refugee participants generated possible future narratives in which technologies may play a bigger role in improving their food security and community resilience. Semi-structured interviews were also conducted with shop owners identified by refugee participants within their narratives. This was done in order to understand shop owners' experiences of interacting with refugee communities as well as their current use of technology. I conclude the chapter by discussing how the findings relate to the FCR.

Based on the possible technological design ideas generated in [Chapter 6](#), I move on to [Chapter 7](#), where I provide an overview of literature that focuses on alternative food networks (AFN) as a form of collective action to address food security, as well as HCI literature on designing technologies for food security and food sustainability. I then present how I used the data presented in Chapter 6 to envision a technology that would enable refugee participants to engage in collective purchasing as a form of AFN. Accordingly, I present a study design that aimed at investigating the feasibility of a technology for collective purchasing using design methods that mimicked the interactions to be mediated by the technology. The technological design aimed to address refugee participants' food insecurity and contribute to their community resilience through increasing their agency and facilitating their self-mobilisation. The data generated from engaging with refugee participants was also complimented through semi-structured interviews with shop owners in which they responded to outputs of the collective purchasing paper-prototyping study that refugee participants were engaging in. [Chapter 7](#)

culminates in a discussion of how community-driven technologies may contribute to refugee community resilience, through the pathway of improving food security.

In Chapters 6 and 7, I present in detail the methods I adopted when engaging with participants as well as how they are guided by an ECD approach. However, it is not until [Chapter 8](#) that I reflect on how ECD can contribute to designing technologies for refugee community resilience. In this chapter, I present an analysis of my reflections on engaging with refugee participants and data from participants regarding their experiences of engaging in the research studies. In doing so I highlight the value of adopting dialogical and responsive methods that also account for the multiple voices within the community. The findings and discussion then make a case for ECD as a people-centred approach that can be employed within the FCR.

[Chapter 9](#) is my final discussion chapter, where I present an extended version of the FCR that is informed and adapted based on the findings presented in this thesis. I also bring the discussion back to the background literature ([Chapter 2](#)) and the research questions. In my concluding chapter ([Chapter 10](#)), I present a summary of my contributions to the fields of community resilience, digital humanitarianism and HCI. I also outline several lines of inquiry that stem from my research and may guide future research in this area.

Chapter 2. Community Resilience, Digital Humanitarianism and HCI: Concepts, Frameworks and Intersections

2.1 Introduction

In this chapter I present the concepts of community resilience and digital humanitarianism. I critically appraise community resilience and draw on critiques to develop criteria that I then use to select the framework for the research presented in this thesis. I also highlight the intersections between critiques of community resilience and digital humanitarianism. I also draw on literature from the multidisciplinary field of Human-Computer Interaction (HCI) that aims to understand the role of technology from the perspective of refugees and/or forced migrants. Through synthesising the aforementioned literature, I highlight the research gaps and critiques that my research addresses and responds to.

2.2 Community Resilience

2.2.1 Defining community resilience

To best unpack the concept of ‘community resilience’, we must dissect the term, since the definitions of both terms, community and resilience, vary widely within the literature. The term ‘community’ in itself is complex and varied (Lynn, 2006), probably contributing to the amorphous nature of the term ‘community resilience’ (Patel et al., 2017). Traditionally, researchers attempt to focus their research aims by defining the community they are targeting using measures such as common social and/or cultural identity (Kirmayer et al., 2009), exposure to a common disaster/stress (IFRC, 2014), or a geographically bound space (Norris et al., 2008).

In their work on the social construction of reality, Berger and Luckman (2011) theorise that a community is socially constructed through the social interactions of people. This theory is taken further by Albert Hunter (2018), who identified that community sentiments result from strong local social ties among people. In his chapter on conceptualising community, Hunter states that community is actually a “multidimensional variable where each dimension may vary by degree” (p.3); therefore, defining a community should be an empirical effort in order to best understand the dimensions used by people to define their community. The International Federation of Red Cross and Red Crescent Societies (IFRC) acknowledges the extra complexity of the term community associated with the fact that people may simultaneously belong to several communities (IFRC, 2014). Therefore, acknowledging the complexities of the term ‘communities’ entails a need to better understand how a specific group of people define themselves as a community. HCI identified that there is a breakdown in social cohesion within communities as trust is eroded in conflict zones (Semaan & Mark, 2011a) and as they experience displacement (Almohamed et al., 2018). This, coupled with the different policies

that shape refugee integration into host communities (Turner, 2015), entails that refugee communities may vary in form and definition.

The term ‘resilience’ has become more prominent within academic disciplines (Welsh, 2014) and is being adopted by humanitarian organisations (Duffield, 2013). The term is rooted in natural sciences, where it is defined as the capacity of a material to return to equilibrium following a disturbance (Norris et al., 2008). In the 1970s, the concept of resilience was drawn on by ecological studies to form the concept of ‘Disaster Resilience’ (Armitage et al., 2012). ‘Disaster Resilience’ concerns itself with the investigation of the persistence and robustness of an ecological and/or governance system to withstand shock and maintain its functionality (Armitage et al., 2012). Disaster resilience frameworks aim to identify vulnerabilities within a system that may make it more prone to stress and/or may produce more negative results to shocks (Armitage et al., 2012). In parallel, the field of Mental Health and Development Psychology has utilised the term resilience to define an “individual’s ability to maintain a stable level of functioning following traumatic events and as a trajectory of healthy functioning across time” (Kimhi, 2014, p.165). Within this construct of resilience, social interactions within communities have been found to be a positive contributor to resilience (Southwick et al., 2014). Furthermore, a study with Bosnian refugees indicated that family, spirituality and community support are contributors to individual resilience during the resettlement process (Sossou et al., 2008).

The term ‘community resilience’ merges both the psychological and ecological constructs of resilience with a grounding in social constructs such as conceptions of community. A systematic review conducted by Patel et al. (2017) of the definitions of community resilience highlighted that currently, within published research, the term is without a uniform clear structure or focus. Instead, the concept of community resilience is conceptualised and applied in different ways by different researchers and projects. One of the core distinctions made in the definitions of community resilience is in its classification as a process rather than a well-defined output (Southwick et al., 2014; Patel et al., 2017). Some researchers consider the process of building community resilience to be achieved by working on different community factors that are defined within a wider framework (Norris et al., 2008). Others define community resilience as a community’s abilities/characteristics that allow it to ‘bounce back’ from stress (IFRC, 2014). Furthermore, international humanitarian organisations have developed their own community resilience frameworks based on previous humanitarian response frameworks and

interventions that they traditionally deployed in the ‘Global South’ (IFRC, 2014; Department for International Development, 2011).

It is important to note that the majority of the literature finds community resilience to be more of a positive term than its predecessor ‘risk reduction’ (Patel et al., 2017). While risk reduction focuses on identifying possible risks and working towards mitigating them, community resilience identifies areas within the community that may be strengthened to withstand any future possible stressors (Patel et al., 2017). However, scholars such as Duffield (2012a) and Evans and Reid (2014) have placed the concept of community resilience and its underlying values under a critical lens in regards to its application within humanitarian contexts. To further unpack the concept, I provide a critical overview of three community resilience frameworks (one academic and two practice-based frameworks developed by aid organisations) often referred to in the literature, through which I reflect on their appropriateness to guide my research with refugees. I do this firstly by presenting the frameworks, then by a synthesis of existing critiques of community resilience as a concept. Based on the critiques, I develop criteria that I use to compare community resilience frameworks and select a framework to guide my research accordingly.

2.2.2 Community resilience frameworks

Norris et al.’s (2008) community resilience framework is based on a systematic review of community resilience literature, through which they identified common themes. In this non-linear framework, community resilience is defined as “a process linking a set of adaptive capacities to a positive trajectory of function and adaptation after a disturbance” (Norris et al., 2008, p.130), where adaptive capacities are community resources with dynamic attributes. The four adaptive capacities that the framework recommends strengthening are Information and Communication, Community Competence, Social Capital and Economic Development. Additionally, a community is defined as restricted within a geographic space.

The IFRC’s Framework for Community Resilience (FCR) (IFRC, 2014) defines resilience as “the ability of individuals, communities, organisations or countries exposed to disasters, crises and underlying vulnerabilities to anticipate, prepare for, reduce the impact of, cope with and recover from the effects of shocks and stresses without compromising their long-term perspective” (IFRC, 2014, p.6). It characterises a resilient community as one that (1) is knowledgeable, healthy and able to meet its basic needs, (2) is socially cohesive, (3) has economic opportunities, (4) has well-maintained and accessible infrastructures and services, (5)

can manage its natural assets, and (6) is connected. The IFRC, as a humanitarian and development organisation, considers the key elements of the framework to be assisting communities in addressing their underlying vulnerabilities and having a people-centred approach. This is also a non-linear framework in which community resilience is viewed as a process rather than an endpoint.

The UK Department for International Development's (DFID) Disaster Resilience Approach (Department for International Development, 2011) is the internationalised version of the UK government's community resilience framework for practitioners (Gov.uk, 2016). It also draws together several strands of DFID's previous frameworks, especially its Sustainable Livelihoods Approach (SLA) (DFID, 1999). The approach does not engage with the messiness of defining a community and therefore opts for the term 'Disaster Resilience'. Disaster resilience is defined as "the ability of countries, communities and households to manage change by maintaining or transforming living standards in the face of shocks or stresses without compromising their long-term prospects". The approach calls for the understanding of the context in order to differentiate the significance of resilience to different societal groups, resources and institutions and to decide whether the aim is to make a system or a process more resilient. The next element is the identification of the disturbance (shocks or stresses), followed by assessing the capacity to deal with disturbance. Capacity to deal with disturbance is related to exposure, sensitivity and adaptive capacity. The reaction to the disturbance may then be categorised as bounce back better, bounce back, recover but worse than before, or collapse. The approach identifies how the types and levels of resilience activities are linked to assets defined within the SLA: social/human capital (also referred to as political capital), financial/economic capital, environmental/natural capital and technological/physical capital (DFID, 1999).

2.2.3 Critiques of community resilience

As community resilience becomes more popular, several academics have critiqued it as a neoliberal tool (Welsh, 2014) that aims to help manage humanitarian crises from afar, fails to address underlying social inequalities and is ultimately dystopian in nature (Duffield, 2012a; Evans & Reid, 2014). The concept of community resilience has been criticised as falling into line with what Foucault called "neo-liberal governance", in that by seeking to build communities' abilities to adapt to stressors, the responsibilities and risks of responding to disasters shift from the state to communities, thus enabling governance from afar (Welsh, 2014). Duffield (2012a) highlights how shifting humanitarian aid towards building resilience is accompanied by a shift in responsibility from international aid organisations to local aid

organisations and even refugee communities themselves. In this way, the concept of community resilience circumnavigates the security risks that international aid workers are exposed to in humanitarian contexts (Duffield, 2012a). Duffield (2012a) terms this management of humanitarian crises from afar as the “bunkerisation” of international aid workers and critiques it not only for distancing aid organisations from their beneficiaries but also for placing more value on the lives of international aid workers than on local communities. This shift in responsibility towards communities being responsible for their own recovery has also been criticised as overlooking the underlying social inequalities that make communities more vulnerable (Duffield, 2012a; Evans & Reid, 2014). This is mainly due to the fact that working towards ‘bouncing back’ after a shock does not necessarily entail bouncing back to better conditions, but may actually result in a return to the status quo (Evans & Reid, 2014). This is further built on by critiques of the concept of resilience as dystopian in nature in that it is premised on communities being in constant fear of a crisis and preparing accordingly (Evans & Reid, 2014; Hilhorst, 2018). This normalisation of crises moves the rhetoric away from communities questioning the root causes of their vulnerabilities towards mere survival (Evans & Reid, 2014). Indeed, the emphasis on the need for communities to adapt in the face of adversity has been criticised as a mechanism that subdues the resistance of communities to the conditions that contribute to their suffering and social inequalities (Welsh, 2014).

2.3 Comparative Analysis of Community Resilience Frameworks

With the aforementioned critiques in mind, I critically compare the previously presented community resilience frameworks. Through this comparison I generate key criteria on which the community resilience framework that I will use throughout the rest of this PhD will be selected. The comparative analysis of the frameworks against the key criteria is summarised in table 2.1.

Norris et al.’s (2008) community socio-ecological resilience framework highlights the key areas, termed adaptive capacities, that should be built on to resist and/or adapt to stressors and shocks. The adaptive capacities are (1) economic development, (2) community competence, (3) social capital and (4) information and communication. The framework emphasises that resilience is “a process linking a set of adaptive capacities to a positive trajectory of functioning and adaptation after a disturbance” (Norris et al., 2008, p.130). The framework is built based on the results of an extensive literature review. While the framework provides a good guide to areas to leverage in order to build community resilience, it is important to note that while the authors indicate that some of their framework can be applied to protracted disasters (e.g.

displacement through war), it is based on literature from acute disturbances. Additionally, rather than starting with understanding the community, the framework starts with identifying stressors and how they interact with vulnerabilities. Furthermore, it adopts a rather simplistic definition of community as “an entity that has geographic boundaries or shares the same fate” (p.128). Accordingly, it does not delve into investigating the community and its dynamics but rather investigates the functions and processes that lie within the adaptive capacities. It does encourage participatory approaches but does not discuss such approaches to any great extent. Furthermore, the authors state that it is the maintaining of the functioning of a community that makes a community resilient and that a collection of resilient individuals does not imply a resilient community. Clearly separating community resilience from individual resilience implies that their framework prioritises the first over the second. Furthermore, the framework does not entail that the adapted functioning of a community post disturbances should be an improvement over previous functioning status. This means that the status quo of how a community functioned before being exposed to a stressor is the benchmark that adaptation should aim for. Consequently, the framework does not contribute to the long-term development of the community, nor to addressing the root causes of vulnerabilities.

The DFID Disaster Resilience framework directly builds on DFID’s sustainable livelihoods framework/approach (SLA) (Department for International Development, 1999). The SLA was developed as a tool to guide poverty reduction efforts, combining the experiences of Oxfam and the British Department for International Development. This non-linear framework presents the factors that influence peoples’ livelihoods; it is an asset-vulnerability approach to poverty reduction. It not only draws attention to the core influences and processes, but also to the overlap and interaction of these poverty contributing factors. The framework identifies five key components that can be levels of assessment and/or areas for intervention: (1) vulnerability contexts, (2) livelihood assets, (3) transforming structures and processes, (4) livelihood strategies, and (5) livelihood outcomes. The framework discusses how interventions should aim to aid communities in becoming more resilient to shocks (economic, natural conflict, etc.). Furthermore, similar to Norris et al.’s framework (2008), it includes social capital and economic diversity components. DFID’s use of the terms vulnerabilities, political influence and access differs from Norris et al.’s (2008) use of the terms collective efficacy and empowerment. By acknowledging politics and access, DFID’s resilience framework works towards influencing the root causes of vulnerabilities. Indeed, the presence of the transforming structures and processes component in the DFID framework indicates the importance of addressing the processes of accountability and the influence of policies and regulations on community

vulnerability at the macro level. Such notions are not addressed within Norris et al.'s (2008) framework, thus questioning its ability to account for factors contributing to marginalisation and vulnerability. Responding to the critique of community resilience as maintaining the status quo, the DFID framework placed sustainable development as an integral component within the livelihood framework approach, so that the focus is on people initiating and sustaining change to produce conditions that are better than the previous ones. That is a drastic difference to Norris et al.'s approach, in which new community functioning does not necessarily need to be better than previous community functioning. This is a big advantage of the DFID framework over that of Norris et al. Further, the DFID framework acknowledges that in contexts of conflict there needs to be a focus on strengthening institutions at the local, national and regional levels while addressing political security and humanitarian and development aid. This is relevant to refugees, whose lives are very much influenced by the policies of their hosting state, as previously presented in [Chapter 1](#).

Despite the aforementioned advantage of the DFID framework over that of Norris et al., it may fall short regarding participation and community engagement (Brocklesby & Fisher, 2003; Morse & McNamara, 2013). Brocklesby and Fisher (2003) have highlighted how DFID as an institution avoids the use of the term community, with 'people' emerging as the more frequently used term. This calls into question whether DFID's Disaster Resilience framework and methods aim to get a deeper understanding of community dynamics, formation and power relations that influence resilience. Similarly, Morse and McNamara (Morse & McNamara, 2013) have indicated that while culture is found as a subcomponent of the transformative processes of the SLA framework, previous applications of it have given little attention to cultural factors such as power dynamics and their impact on livelihoods. Similarly, within the DFID Disaster Resilience framework, culture is not given much attention. The UK government's community resilience framework, which is intended for interventions within the UK and not in international development contexts, does state that a participatory approach is encouraged. However, DFID's disaster resilience framework does not provide guidance on how to engage 'people' in building resilience. We can, however, look at DFID's SLA guidance sheet to understand the organisation's take on engaging with 'people'. The DFID SLA guidance sheets recommend the use of participatory methods for assessing different components of the framework (Department for International Development, 1999). For example, (1) the use of key informant interviews and preference ranking by 'people' when evaluating their vulnerability contexts, (2) focus groups to assess livelihood assets such as access to services and financial assets, and (3) Participatory Poverty Assessments (PPAs) to inform policy. The majority of these tools are used to gather

the perspectives of the poor to give a more holistic approach in applying the framework; however, they do not extend to involving ‘people’ in the design of interventions and policies. Additionally, the tools give little consideration to community member dynamics and how they influence the data generated (Brocklesby & Fisher, 2003). The guidance sheets recommend that participatory methods be used for people to construct a creative vision of where they want to be on the long term rather than creating actionable plans that can be implemented at a community level (Morse & McNamara, 2013; Brocklesby & Fisher, 2003). This disconnect between the participatory methods and action has been attributed to the SLA’s focus on the macro level rather than the community level (Brocklesby & Fisher, 2003). This is similar to the DFID disaster resilience framework, which focuses on institutions during crises (Department for International Development, 2011). The framework implies that policy reform is a key success factor. While this may be true, the emphasis on policy reform may prove to be unsuccessful in states such as Lebanon, where political stalemates slow down reform processes (Hazbun, 2016).

The IFRC framework for community resilience (FCR), introduced in 2014, was developed based on efforts to bridge relief and sustainable development (IFRC, 2012). The framework addresses many of the critiques of both Norris et al.’s community resilience framework and DFID’s disaster resilience framework. The FCR categorises itself as having a people-centred approach; therefore it starts with the people rather than their vulnerabilities and stressors. In contrast to DFID’s approach, the FCR places a great emphasis on defining a community. Its definition of community transcends Norris et al.’s by emphasising the dynamic and complex nature of communities and by taking into account varying commonalities between individuals, such as geographic location, culture, values and exposure to risks. This makes defining a community a case-by-case contextualisation process. The framework explicitly states that an individual may be part of a number of communities, and that must be taken into account when exploring community resilience. This acknowledgement of the complex nature of communities responds to the critiques of DFID’s approach, which does not account for culture and community power dynamics (Brocklesby & Fisher, 2003; Hornborg, 2009). The FCR also differs from Norris et al. in that it takes into account the differing levels of resilience. Rather than emphasising community resilience over individual resilience, IFRC’s framework highlights seven levels of resilience: (1) individual, (2) household, (3) community, (4) local government, (5) national government, (6) national IFRC societies and (7) regional and global. Within the FCR, community resilience is defined as a community that “strengthens the resilience of its constituent individuals and households”. Additionally, the FCR combines its

approach to resilience with its long-standing commitment to sustainable development, stating that in coping and recovering from stressors and shocks, the long-term prospects of a community should not be compromised. However, IFRC highlight that this may not be fully applied in humanitarian crises that are caused by conflict (IFRC, 2016). Similar to the SLA, the FCR defines vulnerabilities from a developmental perspective, where vulnerabilities are seen as contexts that disadvantage communities. Furthermore, it shares DFID's commitment to advocacy for policy reforms with an added emphasis on accountability.

While the DFID framework has been critiqued as overly focusing on the macro level, The FCR addresses advocacy and self-mobilisation, thus maintaining notions of formulating action plans, interventions and programmes with the community. It sets overarching goals to build a resilient community (e.g. economic opportunities), and the guidelines insist on working with the community to develop context-specific action that is relevant to community members. This further strengthens the FCR's people-centred approach. However, it is important to note that the FCR does not detail tools or specific methodological approaches that should be adopted within this people-centred ethos.

It is important to note that despite the ubiquity of technologies within humanitarian contexts (UNHCR, 2016), technology and its role in building community resilience has not been discussed in any of all three of the frameworks.

Based on the critiques of community resilience as a concept as well as the comparative analysis of the community resilience frameworks, the following criteria were identified to inform the selection of the framework I will adopt in this PhD:

- 1) Definition of community: creating a space in which communities are defined.
- 2) Definition of community resilience: acknowledging the need to address root causes of vulnerabilities.
- 3) Applicability to protracted refugee contexts: framework authors acknowledge the possibility to apply the framework in a protracted refugee context.
- 4) Inclusive approach: a participatory approach of engaging community members.

- 5) Applied in real-world contexts: empirical work guiding the framework has already been conducted.
- 6) Accountability: does not shift responsibilities to communities but rather maintains the accountability of governments, institutions and aid organisations.

In table 2.1 below, I provide a synthesis of the comparative analysis provided in this section. The table presents the Framework name and year (Framework (year)) followed by how the framework goes about defining a community (Definition of Community) and community resilience (Definition of Community Resilience). In the column titled ‘Scope’, I provide a summary of the different elements within each framework. I then indicate whether each framework is applicable to protracted refugee contexts (Applicability to Protracted Refugee Contexts) such as that of Syrian refugees in Lebanon, and whether it includes communities in the process of building community resilience (Inclusive Approach). Lastly, I provide evidence regarding whether the frameworks have been applied in real-world contexts (Applied in Real-World Contexts) and whether the framework calls for holding institutions and governments accountable (Accountability).

Framework (year)	Definition of community	Definition of community resilience	Scope	Applicability to protracted refugee context	Inclusive approach	Applied in real-world contexts	Accountability
Norris et al. (2008)	<p>People living in the same geographical area experiencing the same disaster.</p> <p>Eliminates the complexities of a community.</p>	<p>A process linking a set of adaptive capacities to a positive trajectory of function and adaptation after a disturbance.</p> <p>Functioning does not have to be better than it was before the disaster. A resilient community is not necessarily a community of resilient individuals.</p> <p>Ignores the social inequalities that make communities more vulnerable.</p>	<p>Has four main adaptive capacities, each with its own components:</p> <ol style="list-style-type: none"> 1. Information and communication 2. Community Competence 3. Social Capital 4. Economic Development. <p>Components are well defined and therefore can be operationalised, measured and actionable.</p>	<p>Based on literature on acute disasters, not protracted ones</p>	<p>States that the community should <i>work together to be resilient</i>, and build on citizen engagement.</p> <p>However, refugees are not citizens and therefore the framework's recommendations may not be applicable.</p>	<p>Has been used to measure community resilience (Sherrieb et al., 2010). Formed based on the compilation of other literature that has been put into practice (Norris et al., 2008).</p>	<p>The framework focuses on collective efficacy and strengthening of organisational links; however, it does not mention the accountability of institutions.</p>
DFID disaster resilience	<p>The DFID resilience framework avoids using the term</p>	<p>Defines resilience as the ability of a community to bounce back/prepare for disaster to result in more</p>	<p>Builds on the sustainable livelihoods approach.</p>	<p>Applicable to refugee contexts as it has a</p>	<p>SLA utilises participatory policy assessments (PPA); however, they have</p>	<p>Built on previous experience of DFID but still in the making and</p>	<p>Requires a focus on strengthening institutions, not</p>

framework (2011)	‘community’ and uses the term ‘people’ instead, thus avoiding the complexities of defining a community.	positive outcomes/ contexts than before the disaster. Puts development of the community at the forefront. Aims to bounce back better.	Looks at shocks, stressors, vulnerabilities and capacities.	development perspective and considers protracted social inequalities and vulnerabilities.	been criticised as tokenistic. PPAs focus on creating a vision of the future; however, the framework does not mention creating action plans with communities.	not yet applied as a full framework.	on strengthening communication between communities and institutions.
IFRC community resilience framework (2014)	Delves into the complexities of communities. Indicates that a first step is to gain a deeper understanding of the definition of community.	Community resilience is the ability of individuals, communities, organisations or countries exposed to disasters, crises and underlying vulnerabilities to anticipate, prepare for, reduce the impact of, cope with and recover from the effects of shocks and stresses without compromising their long-term perspective. A resilient community is a community made up of	Has six main components. Of these, four correspond to Norris et al.’s adaptive capacities and the other two to community assets identified in the DFID sustainable livelihoods framework.	Applicable to protracted refugee contexts as it has a developmental perspective and considers protracted social inequalities and vulnerabilities.	The framework explicitly calls for a people-centred approach.	Built on IFRC’s experience engaging with different communities and targeting distinct components.	Highlights how the implementation of the framework should support communities in accessing external support networks and that implementers should be connected to other actors to holistically

		resilient individuals/households.					support integrated community-led solutions.
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Table 2.1 A comparison of community resilience frameworks based on criteria from the literature

Based on the critiques, comparative analysis and the resultant criteria developed, I opted to use the FCR, for the following reasons:

- 1) It acknowledges the complexity of defining a community.
- 2) It acknowledges the need for communities to be connected to service providers and holds institutions accountable (thus countering critics of community resilience as a form of abandonment).
- 3) It adopts an inclusive approach, is applicable to protracted refugee contexts and pays attention to the underlying forces that result in vulnerabilities.

A full in-depth description and unpacking of the framework is presented in [Chapter 4](#), where I contextualise the FCR based on findings from engagements with refugee participants regarding their understanding of community resilience.

2.4 Digital Humanitarianism

I cannot begin exploring the role of technologies in building refugee community resilience without delving into the field of digital humanitarianism, which is defined as “the set of social and institutional networks, technologies, and practices that enable large numbers of remote and on-the-ground individuals to collaborate on humanitarian projects” (Burns, 2014, p.51).

2.4.1 Defining digital humanitarianism

The use of information communication technologies is considered to be transforming humanitarian responses to refugees (Maitland, 2019) and is seen by technology optimists as a means of improving the effectiveness of such responses (Sandvik et al., 2014). The IFRC’s World Disasters Report 2013 (International Federation of Red Cross, 2013) and the Office for the Coordination of Humanitarian Affairs 2012 report *Humanitarianism in the Network Age* (OCHA, 2012) both looked at the progress that is being made in terms of efficiency and effectiveness of delivering humanitarian aid through technology. Technology is also being used in this space to improve data collection through crowdsourcing (Zook et al., 2010; Ushahidi, 2008), streamline supply chains (Ergun et al., 2014; Abushaikha & Schumann-Bölsche, 2016), facilitate collaborations between humanitarian actors (Lai et al., 2015) and even deliver aid by drone (Martini et al., 2016).

The dwindling availability of humanitarian funding and the increasing ubiquity of digital technologies have increased the popularity of digital humanitarianism (Fisher, 2018; Sandvik, 2016). Multiple United Nations organisations, including the United Nations High Commissioner for Refugees (UNHCR) and the World Food Programme (WFP), have established innovation units in order to promote and support technological and social innovation within humanitarian contexts (Fisher, 2018). This move towards digital humanitarianism has led to the development and deployment of technologies in humanitarian contexts. In a review of several humanitarian technologies, Belliveau (2016) highlights how digital data collection and communication improve access to real-time information during crises. Additionally, the use of drones, mobile cash transfers and e-vouchers improve physical access to humanitarian aid in geographical areas that are difficult to reach (Belliveau, 2016). Lastly, digital technology is being leveraged to build skills and capacities of humanitarian actors and first responders through online courses (Belliveau, 2016). Other digital technologies currently in use include biometrics, such as iris recognition, as part of refugee registration processes (Jacobsen & Landau, 2003) and the distribution of food aid (World Food Programme, 2018), as well as blockchain in aid distribution (World Food Programme, 2018). Furthermore, increasing evidence of the important role that smartphone applications such as WhatsApp, Viber and Facebook play in refugees' lives (Fisher, 2018; Gillespie et al., 2018) has led to the development of applications specifically for aiding refugees by meeting their needs (Aradau et al., 2019). Humanitarian organisations and independent technology developers have created mobile applications to support refugees in accessing services, education and information (Appsforrefugees, 2019).

In a report for the World Refugee Council, Carleen Maitland (2019) highlights how the turn to digital humanitarianism has led to three developments: 1) increasing representation and visibility of refugees on social media and the Internet (this is echoed by Sandvik (2016) who highlights how Twitter is being used by refugees to voice complaints regarding humanitarian response and processes); 2) digital platforms being used by humanitarian organisations to enable others to 'broker' the delivery of aid (Maitland, 2019; e.g. the use of e-vouchers for food aid); and 3) the increasing role of digital technologies in supporting refugee self-sufficiency. Technology is supporting refugees in engaging in remote digital work as well as community problem solving (Maitland, 2019). This third development provides a clear link between digital humanitarianism and community resilience.

2.4.1 Critiques of Digital Humanitarianism

With the increasing turn towards digital humanitarianism, several academics have expressed their concern regarding the technology-optimist approach adopted by humanitarian organisations. Interestingly, the critiques of digital humanitarianism are very much aligned with those of the concept of community resilience. Both concepts have been critiqued as shifting humanitarian responsibilities away from international humanitarian actors and onto local actors and communities that are themselves stricken by disasters (Duffield, 2013, 2016; Jacobsen, 2015; Sandvik et al., 2014). Duffield (Duffield, 2012b, 2013, 2016) highlights how technology is allowing international aid organisations to ‘bunker’ in safe compounds, or even stay out of the country of conflict altogether. This distancing of aid organisations from their beneficiaries contributes to weakening the accountability element within community resilience frameworks (i.e. technologies are facilitating the movement from humanitarian organisations being caretakers of vulnerable communities to just facilitators of aid) (Duffield, 2013). Duffield’s argument is that humanitarian technologies are tools for removing the responsibilities of governments and humanitarian organisations to support communities, and they fail to address the social inequalities that make communities more prone to disasters (Duffield, 2016). Read et al. (2016) further argue that technology is not only being used by international organisations to reduce face-to-face contact with local communities and actors; such use is also driven by what is made possible by technology rather than what is needed by refugees. Furthermore, both Read et al. (2016) and Jacobsen (2015) indicate that the enforced sharing of personal data (e.g. biometric data) to receive aid may be replicating the already existing power asymmetry between humanitarian organisations and refugees. Power asymmetries are further reinforced by the existing digital divide, in which marginalised communities have less access to technology. The social inequalities within communities and countries may persist as aid is increasingly digitised (Read et al., 2016; Jacobsen, 2015). This falls into line with the argument that community resilience models maintain the status quo, in which social inequalities are experienced (Evans & Reid, 2014). It is important to note that despite the overlap between the critiques of community resilience and digital humanitarianism, to my knowledge there has yet to be any published empirical research within this intersecting space.

There are also several critiques that are specific to the field of digital humanitarianism. In *The Politics of Humanitarian Technology*, Jacobsen (2015) discusses how the current use of technology by humanitarian actors is consistent with a history of experimentation conducted in conflict zones by international organisations. Using the example of biometric technology to verify recipients of aid with the aim of reducing abuse, Jacobsen highlights how, despite the

technology being in its experimental stage with a high risk of false matches, it is being rolled out extensively and deemed a success. Jacobsen argues that the costs for refugees denied access to aid due to false matches outweighs the benefits of the technology's contribution to streamlining aid provision.

Furthermore, an argument has been made that humanitarian technologies are creating a new norm regarding data. Increasingly, data-driven technologies are requiring more data from refugees and there is a heavy push by donor states to appropriate the data collected for other non-humanitarian uses related to security and anti-terrorism (Jacobsen, 2015; Read et al., 2016; Duffield, 2016). The reuse (misuse) of refugee data clashes with the principles of neutrality and independence that are used to guide humanitarian organisations (Jacobsen, 2015). Additionally, the normalisation of sharing of data through the digitisation of access to services takes advantage of refugees not considering their digital security as a priority. Indeed, it has been found that among communities experiencing high levels of precarity, such as refugees, controlling digital access to services is considered less important than accessing the benefits of the service (Coles-Kemp & Jensen, 2019). A study conducted with refugees in Lebanon, Jordan and Uganda (Shoemaker et al., 2019) found that they are not knowledgeable regarding the institutions and processes that use and manage their data and cannot practise agency in deciding what data to share and how it is to be used. Coles-Kemp et al. (2018) also indicate that digitising services amplified the pressure on refugees and newcomers in Sweden to remain constantly connected to the digital sphere. Furthermore, Sandvik et al. (2014) point out that the assumption of the neutrality of algorithms is false and therefore not aligned with the humanitarian principle of neutrality. Burns (2014) discusses how humanitarian geospatial technologies may exclude data that do not strictly fall within quantitative categories, such as data representing emotion and affects. In response to humanitarian technologies possibly conflicting with humanitarian principles, Cardia et al. (2017) have proposed a framework to be used by humanitarian organisations. This encourages the use of the four humanitarian principles of neutrality, humanity, impartiality and independence as lenses for examining digital solutions within the contexts in which they will be deployed.

Critics of digital humanitarianism have called for a more critical view of the role of technology and a move away from the technological determinism exhibited in current reports on digital humanitarianism (Jacobsen, 2015; Sandvik et al., 2014). Sandvik et al. (2014) encourage scholars and humanitarian organisations to question not what digital technologies can do for humanitarian action but rather what technologies do to humanitarian action. In doing so, the

authors question how (1) humanitarian technologies reshape power relationships and the distribution of aid and (2) alter practices on the ground in a humanitarian response. This is further echoed by Jacobsen (2015), who emphasises that we need to be critical of how technologies replicate and/or amplify existing power relations within the humanitarian aid system. To achieve this, Maitland (2019) recommends that (1) independent analysis of humanitarian technologies be conducted and (2) there should be increased refugee involvement in digital policy formulation, digital programme planning and evaluation and assessments. Maitland states that this involvement should go beyond gathering refugee perceptions and encompass involving refugees in the early design stages of the development of humanitarian technologies.

2.5 HCI and Refugees

The multidisciplinary field of HCI responds to Maitland's (2019) call for involving refugees in the design of technologies. Studies within HCI also encompass understanding the information behaviours of refugees and forced migrants.

2.5.1 Information and communication behaviours

The information and communication behaviours of refugees and forced migrants have been investigated in the contexts of informal settlements and refugee camps as well as in the new countries refugees have settled in. Additionally, the concept of resilience has emerged when studying the ICT practices of people living in conflict zones.

Several studies have investigated the information and communication behaviours employed by populations in conflict areas. With a focus on Iraq and Israel during times of conflict, Bryan Semaan and his co-authors have identified how technology became a resource for resilience (Mark & Semaan, 2008; Semaan & Mark, 2011a, 2012a; Mark, Al-Ani et al., 2009). Indeed, in the context where participants' daily lives were disrupted due to war, technologies were used to continue working and socialising remotely (Mark & Semaan, 2008) as well as for people to control their identity, collaborate and access alternative news outlets (Mark, Al-Ani et al., 2009; Semaan & Mark, 2011b). Al-Ani et al.'s (2010) analyses of blog posts during the second Gulf War acknowledged these to be a virtual violence-free safe space that enabled people in conflict zones to engage in dialogue across borders. Facebook was also used by Iraqis during the war to seek and provide help to others and to maintain and develop new social relationships and norms (Semaan & Mark, 2012a). In contrast, a study conducted with internally displaced people (IDPs) in Iraq highlighted that 74% of IDPs did not take their mobile phone with them when

they were fleeing from conflict and that the price of mobile devices and recharge cards, as well as unreliable network coverage, restricted their ability to use ICTs (Sabie et al., 2019).

Other research has focused on the use of technology by people engaging directly in conflict. In their study of technology use by a guerrilla warfare group in Columbia, de Castro Leal et al. (2019) found that participants adapted their own practices based on how the Columbian army appropriated technologies. This is in line with Aal et al.'s (2019) overview of the use of social media and ICTs in the Syrian conflict, where the authors discuss how fighters appropriate technological tools and their interactions with technologies in response to online surveillance, prosecution and connectivity restrictions. During the Donbas conflict, soldiers used their private mobile phones for information gathering and negotiating with local 'enemies', despite the danger this placed them in (Shklovski & Wulf, 2018).

There has been a plethora of HCI research focusing on the information and communication behaviours of Syrian refugees in Za'atari camp in Jordan. Maitland and co-authors (Maitland et al., 2015; Xu & Maitland, 2016) conducted a survey with refugee youth in Za'atari camp which identified that mobile phones are the most commonly used tool to access the Internet and are used to access social media, communicate with others and access Google and Wikipedia. This was followed by a study that assessed network coverage within the camp and established that, due to network congestion and the spatial location of infrastructure in the camp, access to the Internet within the camp is not consistent (Schmitt et al., 2016). The infrastructural restrictions present within the camp are one of the main considerations that need to be accounted for when considering engaging refugees in co-design using technologies (Fisher et al., 2017). Yafi et al.'s (2018) study concluded that the technological hacking practices of refugee youth in Za'atari camp were highly gendered, with boys engaging in the activity to help other community members. Male youth engaging in these practices are considered to be technology experts within their community and are connected to a larger learning environment. Fisher et al. (2018, 2016) used LEGO, storytelling and co-design methods to facilitate refugee youth playing a bigger role in identifying gaps and vulnerabilities within their society.

Other studies have investigated the information and communication behaviours of refugees and forced migrants in countries where they have resettled, such as Germany, the USA and Canada. Refugee students in Canada reported difficulty in accessing information they needed for meeting daily needs such as job hunting (Shankar et al., 2016). In the US, similar findings surfaced through interviews with refugees that recounted difficulties in accessing critical

information regarding the services they are entitled to, such as food stamps (Irani et al., 2018) as well as the need for categorised location-based information (Lee et al., 2018). In Germany, smartphones were found to be used by newly resettled refugees to connect with others, including the government, as well as to access information regarding public transportation and education programmes (AbuJarour & Krasnova, 2017). However, research conducted with forced migrants in Germany (Duarte, Degbelo et al., 2018) found that when attempting to access information using geospatial mobile applications, publicly available on app stores, issues of information reliability and timeliness hinder the apps' effectiveness in meeting forced migrants' information needs. This issue is further compounded by forced migrants' lack of experience in using geospatial technologies (Duarte, Degbelo et al., 2018). In order to better tailor mobile applications to refugees' information needs, Schreieck et al. (2017) suggest design principles that address cultural differences regarding the understandings of icons and limited connectivity to the Internet. The identified principles also suggest the use of hierarchical clustering when presenting information as well as the inclusion of disclaimers that contribute to information credibility (Schreieck & Wiesche, 2017).

2.5.2 Understanding and designing for refugee needs and experiences

Other HCI researchers have employed interaction design methods to understand refugee needs that go beyond information and to provide insights regarding possible designs of intervention apps.

Within refugee settlements and camps, researchers and designers have investigated the everyday challenges experienced by refugees, ranging from shelter design to health and wellbeing. Studies have also aimed to provide insight into the possible ways technologies may support refugees in addressing these issues. Using technology to support participatory mapping has been proposed by Xu et al. (2015) as a possible means of supporting community building within Za'atari refugee camp. Sabie et al. (2017) discuss how, in light of the lack of guidance for refugees in shelter construction in refugee camps in Iraq, technologies may play a role in bridging the local contextual knowledge of refugees with that of architectural experts. Additionally, with new developments in 3D printing technologies there is potential for 3D modelling to support shelter design (Sabie et al., 2017). Pertaining to the physical design of camps, an ethnographic study consisting of field observations and interviews with refugees and aid workers found that refugees in Za'atari camp decorate spaces in order to cope with their new lives (Nabil et al., 2018). The study also found that decorating spaces was an activity that refugees engaged in to support their senses of identity and pride, and that 'smart decorations'

may be used to further support such activities, which refugees regarded as contributing to their wellbeing (Nabil et al., 2018).

Also related to maintaining identity, Fisher et al. (2017) propose that a digital representation of a community cookbook may further the contribution of food and food heritage to the community. Lastly, in informal tented settlements in rural Lebanon, focus groups highlighted how the ubiquitous use of technology among Syrian refugees creates a space in which mobile technologies may help in improving access to antenatal care (Talhok et al., 2016). The study identified how mobile phone technologies may improve access by supporting refugees in co-organising transportation, communicating with healthcare providers and engaging in health advocacy (Talhok et al., 2016).

Research in geographical areas outside refugee settlements and camps has focused on understanding challenges faced by refugees and asylum seekers in integrating into their new communities. Social isolation and coping with cultural differences were reported as major challenges in design workshops with refugee/asylum-seeking participants in Australia (Almohamed et al., 2018). The use of cultural probes and interviews identified how mistrust towards others and displacement trauma are also challenges faced by this community (Almohamed & Vyas, 2016b). Consequently, technology-design implications based on the aforementioned work focus on the need for the development of social tools to support cultural adjustment and the rebuilding of social capital (Almohamed et al., 2017). Also in Australia, Brown and Choi (2018) argue that designers should be working towards creating technologies and interventions that go beyond just supporting refugees in coping with their new environment to support refugees in experiencing posttraumatic growth. Regarding economic integration more specifically, it has been emphasised that technologies may be leveraged to support the job-seeking efforts of refugees through connecting them directly to local employers, since refugee participants reported struggling to use job-seeking platforms (Almohamed et al., 2018).

2.5.3 Deploying and evaluating technologies with refugees

Several studies within the field of HCI have also explored the potential role of technologies designed to be used by refugees through the deployment of technologies and creating technological interventions.

Within Za'atari refugee camp in Jordan, Xu et al. (2017) deployed a co-located social media technology, SpeakUp, as part of a community-building project. The deployment revealed that

such a technology increases refugees' participation in community-building projects as well as out-of-classroom activities, across both female and male genders (Xu et al., 2017). Furthermore, in response to challenges in accessing healthcare, community health radio shows mediated through an Interactive Voice Response technology were piloted with Syrian refugees in rural Lebanon . The deployment showed the potential of such technologies to increase refugees' agency in their relationships with healthcare providers as well as to shift healthcare providers' behaviours towards refugees .

In refugee camps in Palestine, computer clubs have been established as spaces to explore not only the roles of technologies in supporting refugees but also the roles of technological spaces in refugee camps. In these computer clubs, Swahney (2009) established that digital storytelling may empower refugee youth as it enables creative engagement. However, the study also showed that there is a need for digital storytelling programmes to be accompanied by supporting story development skills as well as by complementary media literacy programmes (Sawhney, 2009). These computer clubs have also been found to contribute to the development of social ties between refugees and the students that were tutoring them in the clubs (Yerousis et al., 2015).

Several technologies have been piloted as part of research projects to support refugee resettlement and integration in their new host countries. Rivrtran (a voice- and text-based system that facilitated communication between refugees and trusted sources) was piloted in the US; it was found to (1) mitigate cultural barriers experienced by refugees when attempting to seek information regarding the resettlement process and (2) enable refugees to access more diverse information sources (Brown & Grinter, 2016). Also in the US, the Lantern project (Baranoff et al., 2015) placed Near Field Communication tags around a city to provide refugees with information that supported them in learning about and navigating their new environment. This technological approach was found to improve refugees' ability to access health services (Baranoff et al., 2015). When piloting EmpathyUp, a mobile game that aimed at connecting refugees and German citizens emotionally and culturally, Neuenhaus and Aly (2017) found that the technology helped to change cultural prejudices and resulted in positive first contacts between the players.

The aforementioned studies have all been aimed at designing an intervention technology for a specific challenge being faced by refugees and/or forced migrants. None of these initiatives have been framed within wider humanitarian and development frameworks of community resilience. Although the work of Semaan and collaborators (Semaan & Mark, 2012b; Mark, Al-

Ani et al., 2009; Al-Ani et al., 2010; Mark & Semaan, 2008) does explore how technology contributes to resilience in conflict zones, this is still limited to an individual level and not looked at through the lens of community resilience. Additionally, apart from the research conducted by Coles-Kemp and collaborators (2018, 2019) and Shoemaker et al. (2019), the literature within HCI tends to adopt a technology-optimist approach and has yet to situate itself within the field of digital humanitarianism.

2.6 Chapter Summary

This chapter has provided a thorough overview of the concepts of community resilience and digital humanitarianism, as well as a snapshot of HCI literature pertaining to refugees in multiple contexts. I have thus highlighted how currently the role of technology is not explored within community resilience frameworks. Furthermore, although the critiques of community resilience and digital humanitarianism overlap, there has not been any empirical research within that space. Indeed, empirical studies that engage with refugees with a critical approach and aim to respond to the technology-optimist approach within digital humanitarianism are limited. Additionally, if we view technology optimism as one end of the spectrum of digital humanitarianism and critical inquiry as the other, the question remains of whether there is a middle ground. Therefore, there is a need for empirical research with refugees to design technologies that take on board these critiques, contributing towards a refined framework and design research approach that respond to these critiques. Such an approach should be extended to the exploration of how digital technologies may be designed to respond to the critiques of community resilience.

This thesis presents research conducted with a refugee community that aimed to explore the role of technologies in supporting refugee community resilience. By designing with refugees, as recommended by Maitland (2019), I situate the role of technology within a community resilience framework. I also explore how an Experience-Centred Design approach may result in humanitarian technologies that respond to the critiques of both community resilience and digital humanitarianism. Given that the concept of community resilience is abstract and encompasses multiple issues and disciplines, I use food insecurity, an element detailed in the FCR guiding this PhD, as a case study for refugee community resilience. Throughout the data chapters, where I map out the findings of this thesis, I extend the existing FCR. In the discussion chapter ([Chapter 9](#)), I show how the findings respond to the critiques of community resilience and digital humanitarianism and how community-designed technologies lie within the space between tech optimism and critical inquiry. However, before embarking on this research

journey that aims to truly understand how technologies can contribute to refugee community resilience, I need to (1) contextualise the IFRC Framework for Community Resilience to the refugee community I am engaging with, and (2) gain an understanding of the current ubiquitous technologies available to refugees. I do this in Chapters 4 and 5, where I engage with refugee participants to understand their perceptions of ‘community resilience’ ([Chapter 4](#)) and conduct a scoping review of available smartphone applications designed for refugees ([Chapter 5](#)). The findings of these chapters provide a basis from which I launch my inquiry into technologies and refugee community resilience (Chapters 6–9).

Chapter 3. Methodology: Experience-Centred Design and Research with Refugees

3.1 Experience-Centred Design

The research presented in this thesis adopted an Experience-Centred Design (ECD) research approach in order to holistically understand the food insecurity experiences of refugee participants and provide insight into how technology may create better future experiences. Having an ECD approach which consists of capturing multiple voices also meant that I engaged with other stakeholders with whom refugees interact with as they work towards becoming more resilient to food insecurity. In this section, I present an overview of ECD and describe the elements that define it. I then discuss how an ECD approach is appropriate for conducting research with refugee communities and how it contributes to an understanding of community resilience. I then merge ECD literature with literature on engaging and designing with refugees, to create a research approach that is tailored to designing with a refugee community.

3.1.1 ECD: A general overview

ECD is a widely used research approach within Human-Computer Interaction (HCI) that has been conceptualised by Wright and McCarthy (2010a). Experience has been indicated as a difficult term to describe; however, in their introduction to ECD, McCarthy and Wright (2007) rely on Dewey's definition of experience. This encompasses the processes by which we as humans make sense of our actions in relation to our emotions, will and imagination, all the while accounting for the continuous transformation of experiences based on past and current experiences (Dewey, 1998; McCarthy & Wright, 2007). The time dimension embedded in Dewey's definition of experience allows for researchers to understand how experience, knowledge and meaning change over time and in relation to place and people (Wright & McCarthy, 2010b). This entails questioning (1) the beliefs of participants and their sources, (2) the meanings that arise from their actions, and (3) how beliefs and actions shape one another (Wright & McCarthy, 2010b; Morgan, 2014). Additionally, pragmatism emphasises how emotions are central in the interplay between beliefs and actions, making emotions both a contributor to and consequence of experiences (Morgan, 2014). Experience, as defined by Dewey, is inherently social in nature as our experiences are shaped by others and our society as well as our own thoughts, motivations and emotions (Morgan, 2014). Ultimately, if our beliefs and actions are social then our experiences are social (Morgan, 2014). To account for the multifaceted nature of experience as per his definition, Dewey makes a distinction between experience as the ongoing consciousness of individuals and experience as an event with a fixed start and end point (Battarbee, 2003).

3.1.2 ECD's philosophical stance

In order to best describe ECD's research approach as well as the rationale behind the methods it adopts, I first need to provide an overview of ECD's philosophical stance. McCarthy and Wright (2007) state that adopting an ECD approach calls for a pragmatist philosophical research approach. Therefore, experiences should not be analysed and fitted into theoretical frameworks but rather holistically analysed as instances in which there is interplay between emotions and actions (Wright & McCarthy, 2010b). Pragmatism, as made prominent by Dewey (1998), breaks away from the epistemological debates within social science research and provides a new paradigm where post-positivism and constructivism are two sides of the same coin (Garrison, 1995). Rather than having metaphysical assumptions as a starting point for inquiry, pragmatism calls for inquiry to sprout from human life and experiences, where experiences are bound by the reality of the world we live in (post-positivism) and yet understood through our interpretations (constructivism) (Garrison, 1995). Through research being inherently rooted in human experiences, the issues that matter the most to individuals and communities are explored and addressing them is done in a way that is considered meaningful to participants (Morgan, 2014).

Adopting pragmatism as a philosophical research stance draws parallels between how Dewey describes experiences and research inquiry (Morgan, 2014). Indeed, inquiry in itself is also an experience (Morgan, 2014). While experience can be seen as a process in which beliefs and emotions contribute to reflection, decision making and ultimately taking action (and vice versa), inquiry is a form of experience in which reflection is more self-conscious and organised (Morgan, 2014). Morgan (2014) summarises Dewey's approach to inquiry in five key milestones: (1) identifying an experience as being problematic, (2) reflecting on how the experience is defined as being problematic, (3) considering possible actions to be taken, (4) evaluating the possible actions based on their consequences, and (5) taking action. This approach to inquiry mimics the thought processes humans undergo during experiences as they enact actions based on their beliefs and emotions (Wright & McCarthy, 2010b). It is through this lens that ECD aims to explore interactions with technology.

ECD builds on Dewey's definition of experience by investigating how experiences are enriched and influenced by relationships with people as well as technologies and vice versa (McCarthy & Wright, 2007). McCarthy and Wright (2007) argue that the current ubiquity of technology warrants a shift from exploring human factors that influence the design of technologies towards the investigation of how people experience the use of technologies. Consequently, rather than

designing and evaluating technologies for ‘users’, considering the lived experience of using technologies becomes the focus of inquiry (McCarthy & Wright, 2007). In the case of this thesis, I investigated the role of technologies in Syrian refugee experiences of community resilience and more specifically within a community resilience framework being applied to the stressor of food insecurity.

3.1.3 ECD as designing for people

Additionally, ECD allows us to break away from a consumerist approach to technology design, looking past participants as users to view them as “people as a whole” (McCarthy & Wright, 2007). In this way we are able not only to understand the centrality of technologies within people’s day-to-day experiences, but also to gain a holistic understanding of their experiences, interactions, relationships and values in relation to technologies (Wright et al., 2004). As such we can gain insight into people’s lives, the challenges they face and how they go about addressing them (McCarthy & Wright, 2015).

It has been argued that engaging in ECD research has the potential to bring about change and address socio-political issues (Wright & McCarthy, 2010a; McCarthy & Wright, 2015). By building on Dewey’s definition of experience, with participant reflection on past and current experiences as well as their visions of future experiences (Dewey, 1998; Morgan, 2014), ECD creates a space in which participants can imagine new realities. These new realities may challenge the current power structures that result in the socio-political challenges that people face (Wright & McCarthy, 2010a; McCarthy & Wright, 2007). Consequently, McCarthy and Wright (2007) posit that ECD researchers should reflect on the inherent value of technological designs, through questioning how these designs enrich experiences and relationships, address inequalities and facilitate intellectual, emotional, moral and spiritual growth. This is furthered through ECD’s humanist approach, which aims to address people’s desires, values and feelings (McCarthy & Wright, 2007). By taking account for participants’ emotions, values and transformational experiences, ECD also allows us to understand participants as they interact within complex and changing social networks and relationships (McCarthy & Wright, 2007). Furthermore, such an approach, in which participants’ voices, lived experiences and aspirations are at the forefront, entails the creation of a space in which participants can engage in the design process in an empowering manner (McCarthy & Wright, 2007). In the most recent take on the progress of ECD, Wright et al. (2018, p.318) state that “done well experience-centred projects can produce mutual learning and transformative outcomes for all participants”.

In summary, ECD accounts for what is said, felt and valued while giving meaning to what people want to do (Wright et al., 2004). With technologies becoming more and more ubiquitous among refugees (UNHCR, 2016), what refugees feel while using technology and when engaging in technologically mediated interactions becomes as important in our understandings of the role of technologies as the functionality of the technology in itself (Wright & McCarthy, 2010a). Furthermore, as emotions and motives are often the drivers for action and technological interactions, understanding them is important when designing and evaluating technologies (Wright & McCarthy, 2010a). This is even more relevant when designing technologies that aim to address social challenges (McCarthy & Wright, 2007, 2015). ECD highlights how experiences and actions are motivated by people making sense of their emotions through the initial construction of problems/challenges that explain our feelings; subsequently, solutions, technological or otherwise, are developed (McCarthy & Wright, 2007; Wright et al., 2018). With this in mind, when adopting an ECD approach technological designers should not only ask how an interaction will be technologically mediated but also inquire about the emotions that would be attached to said interaction (McCarthy & Wright, 2007). ECD's call for participants to reflect on previous and future experiences also allows the researcher to inquire into participants' assumptions and expectations (McCarthy & Wright, 2007). Through investigating how participants want future experiences to differ from their previous experiences, researchers and designers can identify what values participants would like to embed in the technologies they use (McCarthy & Wright, 2007).

Rooting inquiry in human experiences, as ECD does, allows for participants to reflect on social, political and economic issues in a holistic manner that captures the intersectionality of what they are designing for (McCarthy & Wright, 2007). Additionally, basing ECD upon Dewey's definition of experience, in which experiences, values, beliefs and actions are a result of past experiences and future aspirations, means that there is an emphasis on change and transformation (McCarthy & Wright, 2007). Therefore, ECD has the potential to explore the changes that participants and communities envision and how such changes relate to the socio-political and economic contexts in which they are experiencing life (McCarthy & Wright, 2007, 2015). McCarthy and Wright (2007) posit that ECD researchers and designers should question how their designs may lessen and/or make visible inequalities and create spaces for people to potentially grow through encouraging creative self-expression. Through aiming to address people's desires, values and feelings, we find that human values of democracy, equality and choice become more prominent in the design process and result in technological designs that

influence participants' future experiences of power, control and autonomy (McCarthy & Wright, 2007).

3.1.4 Main elements of an ECD approach

McCarthy and Wright (2007) have shown how the highly contextual nature of experiences makes the provision of a rigid framework for ECD research difficult. There have been, however, a series of publications in which HCI researchers have adopted an ECD approach and have distilled elements of ECD as a guiding methodology. These elements include (1) dialogue and multi-voicedness and (2) responsiveness. In this section, I will briefly describe each element and draw on previous empirical research that demonstrates how elements of ECD have been utilised. This is essential as these elements not only motivate the data collection tools adopted throughout the course of the empirical studies described in this thesis but also shape the interactions I had with research participants. Within each data chapter, I describe in detail the methods used as well as how these methods worked towards dialogue, multi-voicedness and responsiveness.

Furthermore, McCarthy and Wright (2007) distil three types of research in ECD:

- 1) **Research for ECD**: where the research aims are to understand experiences and design for new experiences.
- 2) **Research through ECD**: where studies mimic the intended new experiences and by doing so question the values, beliefs and interactions within that space.
- 3) **Research about ECD**: where ECD practise, theory and context are examined and reflected upon.

In this thesis I engage in **research for ECD**, investigating the experiences and understandings of community resilience ([Chapter 4](#)), food insecurity ([Chapter 6](#)) and the role of technology within these experiences ([Chapter 4](#), [6](#), [7](#)). Additionally, in [Chapter 7](#) participants and I engage in **research through ECD** as we mimic and unpack the potential experiences that may result from a digital platform that aims to facilitate collective purchasing in order to improve food security and increase community resilience. Lastly, in [Chapter 8](#) I present an analysis of my engagement in **research about ECD** by reflecting on the value of ECD when engaging with refugee communities.

ECD's emphasis on designing for human experiences entails the need for the researcher to gain a holistic understanding of participants' emotions, motivations and values. For this, ECD calls for the adoption of a dialogical approach when engaging with research participants (Wright et al., 2018). While common understandings of dialogue define it as a conversation between two or more people, within ECD dialogue is viewed as relational and a form of communication in which knowledge and identity are co-constructed as part of the relationship between researchers and participants (McCarthy & Wright, 2007). When engaging in dialogue, new meanings and shared understandings arise between the researcher and participants (McCarthy & Wright, 2007). Consequently, with a dialogical approach the researcher does not take the stance of being an objective listener and observer but rather engages in dialogue to better understand perspectives and co-construct meaning and mutual understandings with participants (McCarthy & Wright, 2007). In this context of co-creation, we witness how both the researcher and participants influence the engagements and in turn are influenced themselves as they come to a common understanding of one another as well as of the research being conducted (McCarthy & Wright, 2007). It is within this space that participants and designers become co-producers of knowledge, designs and ultimately technological experiences. Engaging with participants in such a manner requires the researcher to reflect on their own assumptions and be open to changing their perspectives (McCarthy & Wright, 2007). Dialogue extends the notion of understanding as apprehension to that of creating new meanings that enhance creativity and inform designs (McCarthy & Wright, 2007). Dialogue is considered essential within ECD as reflections on experiences are not easily articulated by participants; however, they can be constructed with them through dialogue.

In research contexts where there are varying perspectives and stakeholders, the researcher should acknowledge the multiplicity of voices within their design engagements (McCarthy & Wright, 2007). With this approach, knowledge is generated through the researcher and the participants reflecting on the perspectives expressed by multiple voices (McCarthy & Wright, 2007). Indeed, by bringing people together through dialogue, new meanings and understandings can be channelled towards creativity in a way that would not be possible if based on one voice alone (McCarthy & Wright, 2007). In the book *Taking Apart* (2015), McCarthy and Wright pinpoint how participatory projects are spaces for dialogue as they facilitate both the experiential and relational aspects of communication. Engaging in dialogue allows for the building of common understandings between the researcher and participants and among participants themselves; however, it may also surface differences in perspectives and beliefs

(McCarthy & Wright, 2007). Tensions that may arise amongst the multiple voices reflect nuanced differences in experiences and ultimately beliefs, therefore sensitivity is needed in listening to the multiple voices and navigating dialogue (McCarthy & Wright, 2015). Through dialogue the researcher may observe these tensions as well as the multiple interpretations of experiences and therefore adjust the method of inquiry to best direct the multiple voices towards creativity (McCarthy & Wright, 2007).

Reflecting on the work of Jayne Wallace on designing personally meaningful digital jewellery with participants, Wright et al. (2008) unpack how Wallace's direct engagement with participants adopted a dialogical approach. Wallace invoked dialogue through providing participants with objects and materials to stimulate participants to construct personal narratives in which they created meaning about their relationships, interactions, memories, places and events that they considered valuable (Wright et al., 2008). In this way, Wallace drew inspiration for the digital jewellery from her deeper holistic understanding of them as individuals and their perspectives and values (Wright et al., 2008); this perspective was gained through dialogue (McCarthy & Wright, 2007). The use of artefacts to engage in dialogue was previously investigated by Gaver et al. (1999); in this study, participants responded to cultural probes in creative ways (e.g. photography) as a means of providing dialogical responses that lay outside the confines of language, thus further inspiring designers' creativity.

Clarke and Wright (2012) also encouraged dialogue with vulnerable women by engaging with participants in storytelling methods that aimed at co-creating evocative responses to experiences. This approach was applied to account for participants' values when designing future technologies that aimed to support women in overcoming experiences of domestic abuse (Clarke et al., 2013). Theatre has also been employed by researchers engaging in ECD as a means of initiating dialogue among multiple stakeholders (voices) involved in envisioning the future of home care (Vines, Denman-Cleaver et al., 2014). Participants engaged in improvised theatre by responding to and taking part in a theatre act showcased by professional actors that were acting out stories based on personal stories and opinions (Vines, Denman-Cleaver et al., 2014).

While adopting a dialogical approach to engaging with participants is at the centre of ECD, equally so are interactive technologies that facilitate dialogue amongst multiple actors (McCarthy & Wright, 2007). Within a city in the UK, Crivellaro et al. (2015) exemplified this by using technologies to facilitate dialogues centred around issues that connect city residents

and the institutions responsible for the construction of their city. To engage community members in dialogues at the intersection of politics and placemaking, urban walks were augmented with historical and political information that participants accessed using smartphones and Near Field Communication cards situated around the city (Crivellaro et al., 2015). The augmented information initiated dialogue among participants as they walked around the city (Crivellaro et al., 2015).

As previously mentioned, engaging in dialogue with participants requires the researcher to be open to new understandings, meanings and knowledge generated through this engagement. This requires the researcher to engage in attentive listening where they (1) immerse their self in participant's stories, (2) want to learn from the multiple voices, (3) change their own assumptions, and (4) engage with the multiple values being expressed (Wright & McCarthy, 2010a). ECD, through encouraging both entities (the participants and the researcher) to respond to nuanced and differing values, creates a space for mutual learning and ultimately the co-construction of new understandings (Wright & McCarthy, 2010a). These actions fall under the umbrella of responsiveness, in which the researcher and participants are responsive to the feelings and values being surfaced and co-created throughout the design research process (Wright & McCarthy, 2010a). Developing such relationships requires researchers to invest time into extended engagements (McCarthy & Wright, 2015) as well as to exhibit empathy and active listening (Wright & McCarthy, 2010a).

Being responsive entails the researcher empathetically understanding participants as actors within their contexts (Wright & McCarthy, 2010a). Creating a deep understanding of the perspectives, experiences, values and beliefs of participants isn't easily achieved through surveying and observation, but rather through empathetically engaging with participants (McCarthy & Wright, 2007; Wright & McCarthy, 2010a). Empathetically engaging with participants allows the researcher to view participant experiences from their perspective and therefore develop a deeper understanding of participants (McCarthy & Wright, 2007). However, to maintain the push for creativity it is also important for the researcher to engage in empathetic understanding, so that rather than empathy leading to a fusing of perspectives, the differences in perspectives should be highlighted and creatively built on (McCarthy & Wright, 2007). As such, the designer does not step into the shoes of the participant as in the traditional definition of empathy, but instead responds to participants' experiences from their own perspectives (Wright & McCarthy, 2008). Wallace et al. (2013) do so through pulling out elements of participant experiences with dementia that resonate with the lead researcher and

integrating them into bespoke jewellery made for participants. Creating and reciprocating probes were also used by Wallace et al. (2013) to express the designers' values and show an understanding of participants' values. Clarke et al. (2016) reflect on their engagements with artists and community members, emphasising that openness while conducting research contributes to empathetic dialogue, as does engaging in research over long periods of time so that researcher and participant relationships may develop. These, in turn, are part of ECD.

Active listening within dialogue is also essential in order for dialogue to transcend from being just a conversation to enabling the co-creation of knowledge. "Active Listening involves going into a situation with the minimum of preconceptions about what we will hear and the understanding that it may be necessary to change how we already think about people, practices and events we find there" (Wright & McCarthy, 2010a, p.109). Active listening facilitates knowledge emerging through dialogue, thus providing richer and new understandings of experiences (Wright & McCarthy, 2010a). Active listening creates a space for dialogue and for participants to speak and be heard (McCarthy & Wright, 2007).

In conclusion, engaging in ECD is not dependent on the methods used but rather on how these are configured to harbour dialogue and responsiveness (McCarthy & Wright, 2007). I will demonstrate how this is done in each data chapter.

3.2 Why Adopt ECD for HCI Research on Technologies for Refugee Community Resilience?

Now that I have presented an overview of ECD, I would like to discuss why adopting an ECD research approach is appropriate when engaging with refugees on the issue of community resilience.

ECD's adoption of Dewey's definition of experience is one of the main motivators for adopting ECD in refugee contexts, because it accounts for past experiences and how these are influenced by place, time and interactions with others (McCarthy & Wright, 2007). The Syrian conflict began in 2011, five years before my PhD research began. Consequently, I needed to account for the fact that refugee participants have not always been refugees and therefore how their past experiences, values and beliefs as non-refugees influence their current experiences as refugees. Additionally, becoming a refugee entails drastic changes in place as refugees abandon their homes, cross borders, and settle in informal settlements in Lebanon. This change in place entails Syrians having to interact with new people, aid systems and governmental services. Further, Syrians engage in these new interactions through their new identity of 'Syrian refugees' rather

than ‘Syrian citizens’. Such changes may also in turn lead to a change in beliefs, perspectives and values. When adopting an ECD approach, these changes are accounted for. McCarthy and Wright (2007) highlight that in unstable environments, such as that of refugees, it is more difficult for people to make sense of their new situation and reconcile their current perspectives with their past experiences and future aspirations. Therefore, adopting an ECD approach would allow the participants and myself to create a shared understanding of the interplay of their values, beliefs and perspectives with their new context, as well as how technologies might facilitate meeting their aspirations. Additionally, ECD’s call for a holistic approach (McCarthy & Wright, 2007) in understanding participants is even more relevant in the context of refugees, as becoming a refugee influences every aspect of participants’ lives.

Considering that I have not experienced being a refugee and that refugee experiences are characterised as being traumatic, it was paramount for me to have an empathetic approach in which I actively listen to participants while conducting my research. The centrality of responsiveness within ECD also made ECD an appropriate research approach to adopt within this context. ECD enables the research to result in meaningful technological designs that have the potential to transform participant experiences (McCarthy & Wright, 2007). ECD also creates a space in which meaningful design processes may be configured by refugee participants and myself to construct shared understandings of (1) each other, (2) the context and (3) the issue we are designing for (McCarthy & Wright, 2007).

As previously discussed in [Chapter 1](#), Syrian refugees are a marginalised community due to social, political and economic factors related to the conflict from which they are fleeing as well as that of their host country. McCarthy and Wright (2015) reflect on the empowering role of ECD in community-based participatory projects. However the research on which they base this reflection is confined to contexts in which participants had some form of social and political agency (McCarthy & Wright, 2015). This is quite different from refugee contexts. Nevertheless, within a refugee informal settlement, it is essential to account for social and political tensions as well as aspirations for social change that may be supported by technological designs, and ECD provides a space to do just that. Furthermore, the dialogical approach advocated within ECD will also create a space in which multiple participants can actively voice their experiences and have agency in co-creating the knowledge and the technological designs throughout the research process – and that in itself is empowering (McCarthy & Wright, 2007). This approach is also aligned with IFRC FCR’s call for a people-centred approach (IFRC, 2014). Additionally, by conducting studies in which future possible experiences are mimicked and researched,

researchers can investigate how technology may mediate interactions and challenge current social and political relationships that marginalise refugee communities. Furthermore, critiques of community resilience have highlighted the need to understand the complexities within communities in regard to community tensions and dynamics. Through its accounting for multiple voices, ECD allows the researcher to do just that; consequently, it results in designs that account for the multiple perspectives within a refugee community.

3.3 Methodological Lessons from Design Research with Refugees

3.3.1 Designing with refugees

Fisher et al. (2016) and Almohamed et al. (2018, 2017) have used a multitude of interaction design and co-design methods to engage with refugees and asylum seekers in workshops in Jordan and Australia respectively. The studies indicate that the use of such methods successfully taps into the imagination and creativity of participants (Fisher et al., 2016) as well as surfacing experiences and challenges faced by refugees (Almohamed et al., 2018, 2017). Brown and Choi (2018) transformed probes into creative kits given to refugee participants prior to engaging in co-creation workshops to unobtrusively gain insight into participants' lives while inspiring creativity.

3.3.2 Role of non-governmental organisation (NGO) workers

The aforementioned studies all emphasise the role of NGO staff in facilitating design workshops and contributing to building a trusting relationship between the researcher and participants. In all these studies, NGO workers were present during the workshops and also brokered the introduction of the researchers to refugee participants (Fisher et al., 2016; Almohamed et al., 2018, 2017; Brown & Choi, 2018). This practice echoes recommendations within design literature on engaging with vulnerable communities (Massimi, 2009). Fisher et al. (2016) and Brown and Choi (2018) reported on NGO staff supporting the facilitation of workshops and Almohamed and Vyas (2016) piloted methods with NGO workers before conducting the research with participants. Brown and Choi (2018) also sought the support of NGO staff in developing creative kits to be used by refugees.

3.3.3 Creating safe spaces for refugee participants

HCI community-based research has previously indicated that design research is best conducted in spaces in which the community already engages in meaningful work (Le Dantec & Fox, 2015). When designing with refugees, the need for creating a safe space where refugee participants feel comfortable is imperative (Brown & Choi, 2018; Duarte, Brendel et al., 2018).

The involvement of NGO workers that refugee participants are familiar with has been indicated to facilitate the creation of a safe space in which refugees can engage with the research team (Brown & Choi, 2018; Almohamed & Vyas, 2016a; Duarte, Brendel et al., 2018). When co-creating with refugees in Australia, Brown and Choi (2018) created a safe space for engaging with refugees by conducting the research in a meeting place where refugees usually met with NGO workers and their research institution. However, in some cases distancing the research from service providers may prove to be a valuable exercise in creating a safe space. In a study conducted on the premises of a local school, Duarte et al. (2018) created a safe space through reiterating to refugee participants that their choice of whether to participate in the study would not impact the relationship they had with the school.

3.3.4 Researcher identity

Design researchers have also briefly reflected on the sharing of their own personal identities as a contributor to the formation of safe spaces for refugees. Duarte et al. (2018) recount how researchers sharing their own experiences of migration and their motivation for conducting the research contributed to young forced migrants feeling more comfortable in voicing their experiences. The sharing of attributes of the researcher's identity has also been indicated to enhance designer/researcher acceptance by communities in community-based research (Le Dantec & Fox, 2015).

Additionally, cultural understanding is necessary when engaging in refugee contexts as participants may originate from countries and cultures that are different from that of the researcher (Trimble & Fisher, 2006). I am from Lebanon, a country neighbouring Syria with a similar culture. Therefore, I did not expect differences in cultural understandings to pose a challenge. However, I considered that the nature of the conflict in Syria, where religious divides brewed (Phillips, 2015), as well as the political and social tensions between Lebanese communities and Syrian refugees (Thorleifsson, 2016a), might lead to feelings of distrust and wariness towards me. This is especially true as the religious faith I was born into, Druze, has played a controversial role in the Syrian war (Phillips, 2015). Indeed, one of my ethics review boards called on me to consider how such factors could put my safety at risk.

3.3.5 Flexibility in the design process

Design research conducted with refugees also draws parallels with design literature highlighting the need to adopt flexible research processes to accommodate the various challenges that arise when engaging with this community (Munteanu et al., 2015; Vines et al.,

2017). Duarte et al. (2018) highlight how language barriers make obtaining informed consent from refugee participants difficult; they call for more flexible ethics procedures that utilise audio-visual resources. Such notions build on previous work by HCI researchers (Vines, McNaney et al., 2014) highlighting that current research practices are not enough when engaging with vulnerable communities. Unexpected challenges may arise and alter the study design, therefore requiring more flexibility (Vines, McNaney et al., 2014). Flexible consent, which addresses changes in study designs, has been described as essential in ensuring that researchers' presence and interests are clearly defined to participants and participant expectations are not confused (Massimi, 2009). Flexibility is further called for when engaging with refugees to account for the ongoing need for participants to negotiate the intersectional challenges they want to design for (Brown & Choi, 2018). Indeed, the design process should accommodate the varying needs and paces at which refugee participants individually and collectively are comfortable working (Brown & Choi, 2018). This is echoed by community-based research: LeDantec and Fox (2015) highlight how flexible research processes should extend to the co-creation of the study design.

3.3.6 Meaningful design outcomes and the researcher's roles

There is a need for establishing meaningful relationships and outcomes when designing with vulnerable communities (Vines, McNaney et al., 2014) such as refugees. Clarke et al. (2016) call for design researchers to socially engage with participants and to value relationships built with participants. When engaging with rural communities, partaking in social practices such as the sharing of food has been found to support the building of relationships (Bidwell & Hardy, 2009). Light and Akama (2012) have shown how design researchers should adopt flexible roles in order to respond to communities' aims as well as the heterogeneity and multiplicity of actors within a community. Bidwell and Hardy (2009) provide an account of leveraging their social capital to respond to some of a rural community's needs that were not necessarily within the scope of the research project.

While design research with refugees has yet to account for the creation of meaningful relationships and the researcher's roles, consideration has been given to providing refugee participants with meaningful outcomes. Duarte et al. (2018) and Brown and Choi (2018) both identified that refugee and migrant participants found value in engaging in design workshops as it gave them opportunities to work with host community members as well as to be heard. The creation of technological designs that address refugee needs has also been considered as a meaningful design outcome (Brown & Choi, 2018). However, within the space of technological

design, Vines et al. (2017) highlight how the failure of technologies may lead to participant feelings of frustration and lowered self-confidence. Consequently, it is important to co-construct feasible meaningful outcomes with participants.

Importantly, the aforementioned studies were all conducted in formal spaces, such as schools, NGO centres and universities. Conducting design research with Syrian refugee women residing in informal settlements in rural Lebanon precludes the use of such spaces. Informal settlements do not have spaces dedicated to community engagement as the entire space is used for living. Furthermore, there are several factors that limit Syrian refugee women's mobility in Lebanon, making it difficult to conduct design research outside the settlement. These factors include (1) limited access to transport (Reese Masterson et al., 2014b), (2) cultural assumptions about safe travel distances without male guardians (Yasmine & Moughalian, 2016) and (3) fear of government checkpoints querying the legality of their presence in Lebanon (Janmyr, 2016). While there has been increasing interest within design research in engaging with refugees, there is limited reflection and guidance on how to conduct design research in refugee settlements.

3.4 My Research Approach

For the purposes of conducting the research presented in this thesis, I developed a research approach that built on ECD by integrating the aforementioned methodological lessons from design research conducted with refugees. This approach, detailed below, guided my study designs and the way in which I engaged with the participating refugee community.

A community-based flexible approach

Given that community resilience is the point of inquiry of the research, I adopted a community-based research approach in which I leveraged ECD's call for openness and responsiveness to account for and respond to existing community dynamics and to consider the multiple voices within the community. Such understandings enable flexible design studies that accommodate the multiple voices within the community.

Meaningful outcomes

Within my research approach I aimed to attempt to balance research contribution with community benefit. Reaching a common understanding of a community benefit was done through engaging in dialogue and being responsive as well as adopting a flexible approach in defining my role within the community.

Dialogue and multi-voicedness

Underpinning my whole research approach are the ECD elements of dialogue and multi-voicedness. Furthermore, through engaging in dialogue I aimed to create a safe space in which participants had a voice and were heard.

Responsiveness, attentive listening and empathy

Adopting an ECD approach meant that I entered the research engagements with an openness which embraced how new meanings, knowledge and understandings were to emerge through the research. To do so I had to engage in attentive listening and aim to build empathetic relationships with participants in which I understood their experiences and perspectives and responded to them with my own perspective as well as the multiple perspectives within the community. The community-based approach adopted entailed long-term engagements that would allow for such empathetic relationships to form. I drew on anthropological literature (Altorki et al., 1988) to identify how sharing relatable aspects of the researcher's identity (e.g. being a caring daughter) was pertinent in establishing relationships with participants and overcoming barriers rooted in the differences in their identity (e.g. having different socioeconomic status).

Researcher safety and NGO involvement

To ensure my safety I utilised the lone researcher protocol provided by my local collaborators at the American University of Beirut. The protocol included (1) seeking approval to conduct the fieldwork from governmental agencies; (2) when in the field, sharing my location with others in the research team; (3) a local NGO selecting the community I was to engage with, based on their knowledge of the safety of the settlement; and (4) a local NGO employee accompanying me during my initial visits.

Continuous reflection

Design literature on engaging with communities calls for the provision of reflexive accounts that consider our interactions with participants and community groups (Le Dantec & Fox, 2015; Vines, McNaney et al., 2014; Johnson et al., 2016). This is also in line with adopting an ECD approach. Consequently, I adopted an auto-ethnographical approach (Holman Jones, 2007) in documenting and reflecting on my engagements with participants. I kept a journal where I reflected on my engagements with participants as well as noting certain interactions and experiences that related to my methodological approach.

In each data chapter I provide a table in which I outline how the different methods respond to the elements of dialogue, capturing multiple voices and responsiveness that constitute an ECD approach. The value of adopting such a research approach is reflected on in [Chapter 8](#) in response to Research Question Four.

3.5 Ethical Approval

The research conducted received ethical approval ([Appendix A](#)) from the Faculty of Medical Sciences Research Ethics Committee, which is part of Newcastle University's Research Ethics Committee. Furthermore, I obtained local ethical approval from the American University of Beirut's Institutional Review Board. Any changes in the study designs that were needed in order to be flexible and responsive were submitted to the ethics board and approved as amendments.

3.6 Chapter Summary

In this chapter I presented ECD as the guiding methodology for my research. ECD's pragmatist approach, elements and initiative to lead to social change makes it a suitable people-centred approach to be used within the FCR. I augmented ECD with literature on designing and engaging with refugees to create an approach that I applied throughout my research.

Chapter 4. A Refugee Community's Understanding of Community Resilience

4.1 Introduction

In this chapter I present findings from a research engagement with refugee participants that explored their understandings of community resilience and the role of technologies within their experiences of being resilient. I did this because the concept of community resilience is quite all-encompassing (Patel et al., 2017; Armitage et al., 2012) and its holistic approach entails a wide range of pathways through which community resilience may be built (IFRC, 2012). Therefore, by engaging with refugee participants regarding their understandings and experiences of community resilience, I contextualised the Framework for Community Resilience (FCR) (IFRC, 2014) that guided this thesis. The engagement and findings in this scoping chapter respond to:

- *Research Question One (RQ1)* by giving me a preliminary understanding of how community resilience is experienced by a Syrian refugee community in Lebanon.
- *Research Question Two (RQ2)* by scoping out how existing technologies are being used by refugee participants in relation to community resilience.
- *Research Question Three (RQ3)* by scoping out refugee experiences of community resilience and the use of technology that can be considered in relation to critiques of community resilience and digital humanitarianism.

4.2 The Framework for Community Resilience (FCR)

In this section I provide a detailed overview of the elements of the FCR (IFRC, 2014) that are within the scope of this PhD. As previously mentioned in [Chapter 2](#), the framework pays particular attention to defining a community, the interplay between multiple levels of resilience experienced within communities and the multiple characteristics of resilient communities. Additionally, the framework provides some guidance for humanitarian workers engaging with communities towards building their community resilience.

In order to best depict the framework in a manner through which I can visually show how the findings of this thesis extend and adapt it, I created figure 4.1 below, which summarises the FCR. The depiction is circular in order to reflect the lack of linearity of the framework. It summarises:

- 1) The FCR's definition of 'Community'.
- 2) Its characterisation of a 'Resilient Community'.

- 3) The three elements/enablers of community resilience:
- a. Assisting Communities
 - b. Adopting a People-Centred Approach
 - c. Being Connected.

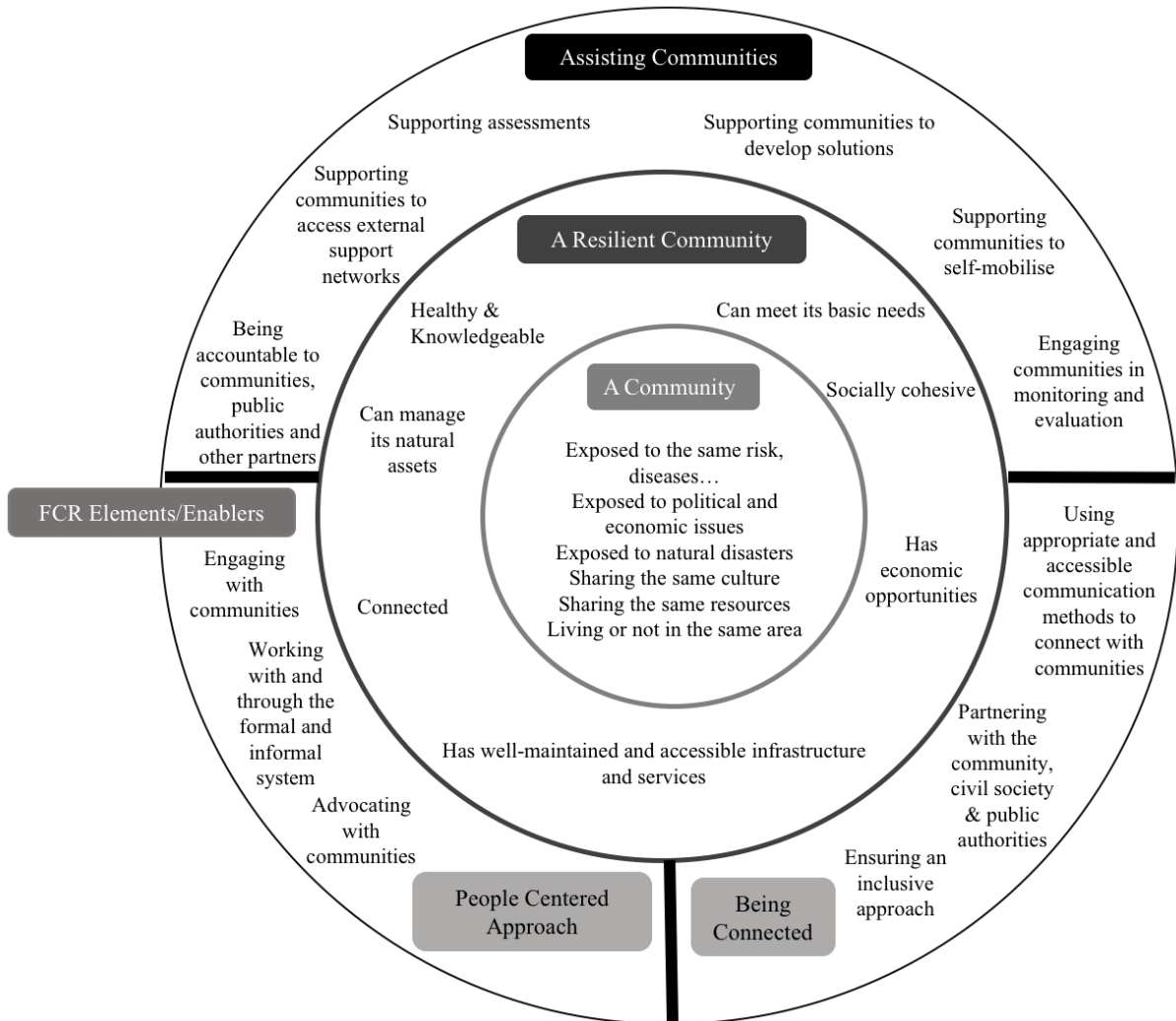


Figure 4.1 A summary of the FCR from the document IFRC Framework for Community Resilience (2014)

4.2.1 Defining a community

The FCR states that communities may be defined by their:

- 1) exposure to the same risks, diseases and natural disasters
- 2) shared culture
- 3) shared geographical area
- 4) shared resources
- 5) shared exposure to political and economic issues

Such a definition acknowledges the complexity associated with defining a community.

4.2.2 Defining resilience

The FCR defines resilience as “the ability of individuals, communities, organisations or countries exposed to disasters, crises and underlying vulnerabilities to anticipate, prepare for, reduce the impact of, cope with and recover from the effects of shocks and stresses without comprising their long-term prospects” (IFRC, 2014, p.6).

This definition places the long-term development of a community at the forefront of any community resilience intervention guided by this framework.

4.2.3 Multiple levels of resilience

The FCR also identifies multiple levels of resilience:

- 1) individual
- 2) household
- 3) community
- 4) local government
- 5) national government

The framework highlights how resilience at a community level strengthens the resilience of households and individuals and can be strengthened/weakened by local governments and infrastructures that provide social services. The scope of this PhD engages mostly with the interplay between community resilience and local and national government/aid services.

4.2.4 Defining a resilient community

The framework identifies a resilient community as a community that:

- 1) is knowledgeable, healthy and can meet its basic needs
- 2) is socially cohesive
- 3) has economic opportunities
- 4) has well-maintained and accessible infrastructures and services
- 5) can manage its natural assets
- 6) is connected

For each characteristic, the framework provides objectives such as improving the knowledge and health of communities, strengthening the social cohesion of communities and developing

well-maintained and accessible infrastructure and services in communities. Within the objective of improving the knowledge health of communities, the framework explicitly states the need to ensure that “everyone has access to a secure and nutritious food supply” (IFRC, 2014, p.19).

4.2.5 Key elements/enablers of the FCR

Adopting the FCR entails three key functions that aim to guide people using the framework:

- 1) Assisting communities as they adopt risk-informed, holistic approaches to address their underlying vulnerabilities through supporting:
 - a. assessments that capture the dynamics of the community’s needs and risks, and the vulnerabilities and capacities of all members
 - b. the development of holistic and appropriate solutions and innovations
 - c. community self-mobilisation
 - d. community access to support networks

Also within their function as a humanitarian organisation, the IFRC works towards engaging communities in monitoring and evaluations of programmes and services and being accountable to communities, public authorities and other partners.

- 2) Having a demand-driven, people-centred approach, through:
 - a. engaging with communities
 - b. working with and through formal and informal systems
 - c. advocating with communities for their involvement in decision making
 - d. inclusive needs and vulnerability assessments
 - e. understanding context-specific issues
- 3) Another element that is more specifically tailored to the mission of the IFRC as an aid and development organisation is being connected to communities through being available and aiming to prevent human suffering. Given the intimacy of this element to the IFRC’s mission as a practice rather than research organisation, this element was not explored in this thesis.

4.3 Method

4.3.1 Refugee participant recruitment

Approval to visit the informal settlement was obtained from the local municipality in a rural town in the Bekaa region of Lebanon. The local municipality representative I was liaising with conditioned my access to the settlement by requiring the provision of some form of benefit to the Lebanese community, which can be attributed to political rhetoric debating how Lebanese living in austerity should receive similar aid to Syrian refugees (Thorleifsson, 2016b). Therefore, I used my public health background to take on the role of a public health educator. I provided ten health and nutrition education sessions, based on a curriculum developed for refugees, to three local schools.

Based on researcher safety considerations, the local municipality liaison and a local NGO employee due to accompany me on my initial visit agreed that the best settlement for me to visit was one of 20 refugee households living in two buildings enclosed by a surrounding wall and a gate. The buildings in the settlement are not fully built but are inhabitable and were constructed by the landlord when the Syrian war started, with the intention of renting them out to Syrian refugee families. The NGO employee then took me to the settlement and introduced me to the Sheikha of the settlement. The Sheikha is usually a woman who is well connected within the community; typically the wife of the Shaweesh, who acts as the liaison between the settlement and the local municipality and humanitarian organisations. The Sheikha agreed to inform community members that I would be visiting the settlement. I then did so, knocking on every door and explaining the study to the women within the households. Only women were recruited because (1) in the daytime, men are usually outside the settlement working or seeking work; and (2) women in refugee households more easily respond to food-related questions (Chaaban et al., 2010).

Fourteen women consented to participate in the study (see table 4.1 below for a detailed breakdown of participants). Of these, two had previously lived in the settlement but had moved to neighbouring buildings. However, these women (Fatima and Rola) still visited the settlement every day and approached me to partake in the study while I was visiting the settlement. All the participants had children and three were grandmothers with their children and grandchildren living with them. Several indicated that they were not comfortable participating in the study in the presence of other women and preferred to do so on an individual basis. Therefore, eight participants opted to participate together, forming group 1, and three others formed group 2. Three participants preferred to participate individually.

Building number	Household number	Number of participants within the household	Pseudonym	Relationship between participants within the household	Participated in an individual or group basis
1	1	1	Sarah	-	Group 1
	2	2	Maria, Zeinab	In-laws	Group 1
	3	1	Hala	-	Group 1
	4	1	Chaza	-	Individual
	5	1	Zena	-	Group 1
	6	1	Hanadi	-	Group 1
2	7	1	Hanan	-	Individual
	8	1	Yara	-	Individual
	9, 10	3	Malak, Lara, Dalia	A mother and her two daughters	Group 2
Community Neighbours	11	1	Fatima	-	Group 1
	12	1	Rola	-	Group 1
Total	12	14			

Table 4.1 Breakdown of refugee participants

4.3.2 Data collection

In this engagement, I aimed to explore refugee community resilience through the lens of a resilient community as being knowledgeable, healthy and able to meet its basic need for food security. This engagement also aimed at capturing refugee participants' understanding of resilience based on their experiences. Therefore, I conducted focus groups (approximately 40 minutes) with group 1 and group 2 and interviews (approximately 30 minutes) with the three women who opted to participate individually. In the focus groups and interviews, participants were asked to reflect on the FCR's definition of resilience and compare it to their understandings and experiences of resilience. Additionally, participants were asked to discuss their understanding of what a community is as well as how community action and technology can contribute to community resilience.

While Experience-Centred Design (ECD) more typically engages in interaction design methods that aim to reflect the methodology's dialogical approach, for this scoping investigation I opted to conduct focus groups; these are also referred to by McCarthy and Wright (2007) as possible tools. Due to the wide scope of the concept of community resilience, focus groups and interviews were selected as data collection tools because they lend themselves well to exploratory conversations (Morgan, 1997; Braun & Clarke, 2013). The focus groups and interviews were conducted in Arabic, the mother tongue of the participants and myself, and were audio recorded. I listened to the Arabic audio recordings and directly translated and transcribed them. During this process, I maintained a glossary of certain Arabic words that do

not easily directly translate into English and the English words and phrases which I used when translating them. This was done to maintain consistency in the translation process and to ensure that the meanings of the Arabic words were not lost in translation.

I also took notes throughout the engagement and maintained a diary in which I reflected on my own interactions with participants. This was because ECD calls for the researcher/designer to reflect on their own assumptions as well as connections between the researcher's experiences and those of participants (McCarthy & Wright, 2007). My notes taken during the data collection process were then integrated into the transcripts in instances where this was applicable. Additionally, the notes from my reflective journal were digitised and also analysed (see [Chapter 8](#)).

4.3.3 Data analysis

McCarthy and Wright (2007) indicate that multiple forms of data analysis may be used depending on the research questions being asked. However, thematic analysis (TA) (Braun & Clarke, 2006, 2013) is the most commonly used form of data analysis in previous ECD research (Wallace et al., 2013; Clarke et al., 2016; Vines, Denman-Cleaver et al., 2014). Wright and McCarthy also state that adopting ECD calls for a pragmatist philosophical research approach (McCarthy & Wright, 2007; Wright & McCarthy, 2010b); therefore, experiences should not be analysed and fitted into theoretical frameworks but rather holistically analysed as instances in which there is interplay between emotions and actions.

In order to consistently and systematically reflect upon experiences expressed within multiple data sources (data collected from design engagements, interviews and my reflections), I used TA (Braun & Clarke, 2006, 2013). TA is a qualitative data analysis method that allows for researchers to inductively and systematically identify patterns across data sets, thus giving the researcher a sense of the collective meanings and experiences expressed by participants (Braun & Clarke, 2013). Furthermore, TA's systematic approach also allows for a deductive inquiry into one element of the data that corresponds to a research question (Braun & Clarke, 2013). The starting point of pragmatic inquiry is not theories or concepts but rather experiences that we aim to understand and design for; understandings of experiences are then used to engage with wider theoretical rhetoric. Consequently, I adopted an inductive data analysis approach. This entailed a bottom-up analysis where the data is considered as a driving force and is the basis for codes (Braun & Clarke, 2013).

The analysis followed the six phases of TA outlined by Braun and Clarke (2006, 2013):

- 1) *Getting familiar with the data:* By transcribing the data myself I actively listened to three hours of audio. After transcribing, I read through all the transcripts and took note of important or interesting pieces of data. For good-quality analysis, I ensured that transcripts were of an appropriate level of detail and I randomly revisited some of the recordings to check the transcripts for accuracy.
- 2) *Coding:* Transcripts were imported into NVivo 10 for Mac. Using NVivo 10, I systematically revisited the transcripts/notes and coded the data. Data was first coded in a descriptive manner. The codes reflected the content of what was being said in regards to how resilience and community are defined by participants and how technology is being used for resilience. I then conducted a second round of coding for any latent meanings and interpretations; that is where the theme of agency emerged as an underlying barrier to self-mobilisation. I was inclusive when coding the data to ensure that the coding process was thorough and each data item was given equal attention. This was done to ensure that themes that would emerge further down the process were not based on a few anecdotal examples.
- 3) *Identifying potential themes:* After the data was coded, I went through all the codes and some of the data that was attributed to the codes and began systematically categorising them into larger themes. The themes aimed to provide a holistic account of refugees' understanding of community resilience and how the technologies they use relate to it. Codes were clustered based on any overlaps as well as on the multiple perspectives expressed by participants on the same issues. Through this process, a meaningful pattern began to arise in the form of the themes that are presented in this chapter.
- 4) *Reviewing potential themes:* In this phase, I reviewed the themes created by reading the data allocated to each theme. It is at this stage that I presented the themes back to participants for member checking. This was done in order to ensure that the themes meaningfully captured the data shared with me by participants. The themes and the corresponding data were then presented to my supervisory team for quality checks and were reviewed based on their coherency, consistency and distinctiveness.

- 5) *Defining themes*: Based on the discussions that took place during the previous phase, I defined the themes by identifying how they responded to the research objectives of this chapter. In this process, I revisited the FCR and outlined how my findings corresponded to the different elements within the framework. This phase ensured that the data was interpreted in a manner that went beyond just paraphrasing and that the themes presented a narrative that reflected the data and topic at hand.
- 6) *Writing up*: In the final stage of the TA process, I documented the themes in the form of this chapter. In this stage of the analysis process, I embedded the themes within the community resilience framework (FCR) and wider literature on community resilience.

4.4 Findings

4.4.1 Understandings of community and social cohesiveness

The refugee participants recruited were living in the same area (the same settlement, except for two), exposed to the same risks and the same political and economic issues. They were of similar legal status; therefore, they experienced the same political and economic policies in place for Syrian refugees in Lebanon. Furthermore, they were of the same culture as they were all from Syria. From that perspective, the refugee participants I engaged with adhere to the multiple criteria outlined by the FCR when defining a community. However, my findings indicate that the way refugee participants define their community is more nuanced: subcommunities form based on existing familial and social relationships.

Some participants (n = 3) identified their community as consisting only of their relatives: “*Our community is our relatives. Not all the neighbours are part of our community. Only our relations. Sitting alone is better*” [Malak]. However, others emphasised the importance of their social relations with their neighbours when defining a community:

Hala: Personally, I would say the people living in the same building as me. They are like relatives living around each other.

Sarah: There is enthusiasm and love towards each other.

Hanadi: My friends, my neighbours, my family ... this is my community.

Participants also indicated that despite the formation of new communities in their settlements, there is a nostalgic feeling towards their old communities back home in Syria:

Fatima: We still have an ache because we are not living in our own country and our original community.

Such nostalgic findings highlight how the communities refugee participants form in their new environment are considered to be different from their original communities back in Syria.

4.4.2 Understandings of resilience

Refugee participants indicated that their understanding of the notion of resilience is that of survival, adaptation and acceptance of their new reality. When discussing what it means to be resilient, refugee participants described it as:

Rola: We are surviving, we are adapting.

Zena: Yes, we adapted somehow.

Dalia: We are living and adapting.

Further discussions regarding resilience as adaptation highlighted that participants had to adapt to their new contexts as well as to being reliant on aid:

Fatima: We had to adapt to changes in prices of food, it is not like we have a choice.

Maria: We adapted and got used to this building ... housing.

Fatima: The general environment and living conditions.

Zena: First thing was the accommodation [that we adapted to].

Rola: Second thing was work.

Hanan: We experienced changes. We had to start taking aid.

Participants also identified that part of being resilient is accepting their new reality:

Fatima: You can't keep thinking about it, you have to accept the situation.

Maria: We have had to accept the reality of things.

Rola: We are accepting it since we don't have any other choice.

It is important to note that none of the participants indicated that resilience includes working towards a better future.

4.4.3 Interplay of multiple levels of resilience and self-mobilisation

The interplay between household/individual-level, community-level and local-government-level resilience was discussed by refugee participants as they identified the role their community has in supporting household/individual level resilience, as well as how local and aid governance structures influence their community resilience.

Participants in Group 1 identified that the social support they provide to one another as a community contributes to their individual resilience:

Sarah: Meeting together helps us support each other.

Maria: The major thing is us gathering ... we started sitting with each other ...

Rola: Yes, we gathered with each other.

Maria: The pain was common for all of us!

Fatima: Our love for each other [brought us together].

Hala: And we started to entertain each other ...

Community-level resilience was also indicated as strengthening the resilience of its constituents. Community members in group 1 supported one another in certain activities such as going out of the settlement to access aid:

Sarah: In general, each one of us alone doesn't dare to go out alone if her husband wasn't with her! We have to be with each other [other women in the community].

Rola: We go together to get aid and buy clothes to save money on transportation and also for safety in numbers. If our husbands are not there to take us, we go together.

The findings also indicated that community resilience is weakened by participants' inability to change their contexts. Indeed, at several points they indicated that they do not have choices available to them:

Zena: We don't have any other solution or choice.

Hanadi: No, we don't have any other choice!

Yara: We are forced [to accept things].

This was intimately tied to participants feeling that as refugees, they have no agency within their local host community or the aid system. They attributed their inability to advocate for change or self-mobilise to their limited agency:

Fatima: We cannot take collective action because this is not our country.

Malak: We don't have this courage to go and complain [to aid organisations and local government] and do such things ...

Dalia: We can't do this ... it's not our country so we can't do this.

Malak: The first thing they would say is that "this not your country!"

Dalia: You will get humiliated and it would all be for nothing.

The limited agency experienced by refugees was viewed by participants to be reflective of their limited socio-political and economic rights within Lebanon and their host communities.

4.4.4 Role of technology in community resilience

In this engagement, I also probed on the current role of technologies in building refugee community resilience. Participants identified that the use of smartphones to stay connected to their families was a big contributor to their resilience:

Yara: At least we had the chance to communicate with our families.

Maria: When we first came here, there was no WhatsApp or something like that! We had Skype and we used to talk with our families using Skype. Now you can talk to your mother and make sure she's fine ... you can talk to your sister ...

Fatima: Technology has helped, we use it to talk to our parents. At first we had to go to the telephone switchboard office to make calls.

However, participants indicated that their smartphones do not enable them to be connected to the aid system and services:

Hanan: The phone doesn't help you connect to the UN.

Reem (Researcher): And did it help in the communication with the aid organisations?

Malak: No, not with the aid organisations.

Smartphones were also highlighted by participants to contribute to their resilience as they use them to access information on health and on how to navigate the aid system:

Hala: The phone helps. It helps us stay in touch and it is a source of information. We use it as a translator and to find health information. Information about medicine we are prescribed.

Rola: There is a Facebook group for a doctor, he has a Q&A session ... the advice he is giving is similar to what we are getting from doctors in clinics.

Malak: For example, my husband now is in a [Facebook] group for diabetes and he is benefiting a lot from it concerning diets and the medications ...

Fatima: For example, if someone wants to go with their children to the borders; they ask her [a UN employee who has started a Facebook group] what papers should they bring and she gives them the information.

In conclusion, smartphones are being used to connect refugees to family members. However, when examining the use of technology to access an external network we find that the interactions are restricted to accessing information. Technology is not being used to facilitate communication between refugee participants and the aid system.

4.5 Discussion

While the FCR acknowledges the complex nature of communities, it fails to account for the multiple subcommunities that form within geographical spaces such as informal refugee settlements. The presence of subcommunities within the informal settlement calls for specific consideration, both in regards to research design methods and when considering the design of technologies. Additionally, this calls into question how technological designs can facilitate the building of resilience for subcommunities.

When comparing the findings in this chapter to how community resilience is defined in the FCR, we find that refugee participants' understanding of community resilience mostly falls within the 'coping' element of the FCR's definition. Participants described their experiences as those of survival and adaptation. The findings indicate that refugees viewed resilience as accepting their current reality; this does not align with the elements of addressing underlying

vulnerabilities, long-term prospects and recovery that are also components of the FCR's definition of community resilience. As previously discussed in [Chapter 2](#), this acceptance of the status quo is an issue that critics of community resilience have expressed concern about (Duffield, 2013; Evans & Reid, 2014). The FCR attempts to respond to these critiques through stating that in order to build a resilient community, we need to support self-mobilisation. However, participants expressed that their status as refugees in Lebanon entails a low agency that limits their ability to advocate for change. Berkes and Ross (2013) argue that increasing agency is a pathway to building community resilience. The notion of having agency in order to address underlying vulnerabilities has been identified as key to economic, social and political development (Sen, 2001). In his seminal work *Development as Freedom*, Sen states that "achievement of development is thoroughly dependent on the free agency of people" (2001, p.4). Sen shows that institutional arrangements such as political liberties and social powers may enhance or limit people's ability for change and development (agency), and that agency in itself can also drive institutional change. Within his capabilities approach, Sen defines a person with agency as "someone who acts and brings about change" (p.19). Although the situation of Syrian refugees in Lebanon is classified as a humanitarian crisis, the protracted nature of the crisis places it in the Humanitarian-Development Nexus (Pariat, 2019); therefore, economic development theories and definitions are applicable. Through this lens we see that refugee participants' experiences of lack of agency become problematic when we start thinking of how technologies may support community resilience through supporting self-mobilisation.

Lastly, participants indicated that technologies, primarily their smartphones, keep them connected to their families as well as acting as a source of information. The use of technology for informational purposes by refugees has been explored within the field of Human-Computer Interaction (Duarte, Degbelo et al., 2018; Schreieck & Wiesche, 2017); it contributes to refugee communities being resilient through being knowledgeable. Furthermore, Almohamed, Vyas and Zhang (2017) have explored how technologies may be used to further refugee connections once resettled in Australia, which in turn would allow them to cope better with the obstacles in their daily lives. However, in the context of community resilience as presented by the FCR, being connected refers to communities also being connected to services and support systems. Such use of technology to connect to the aid system was not identified in this chapter.

4.6 Adapted FCR

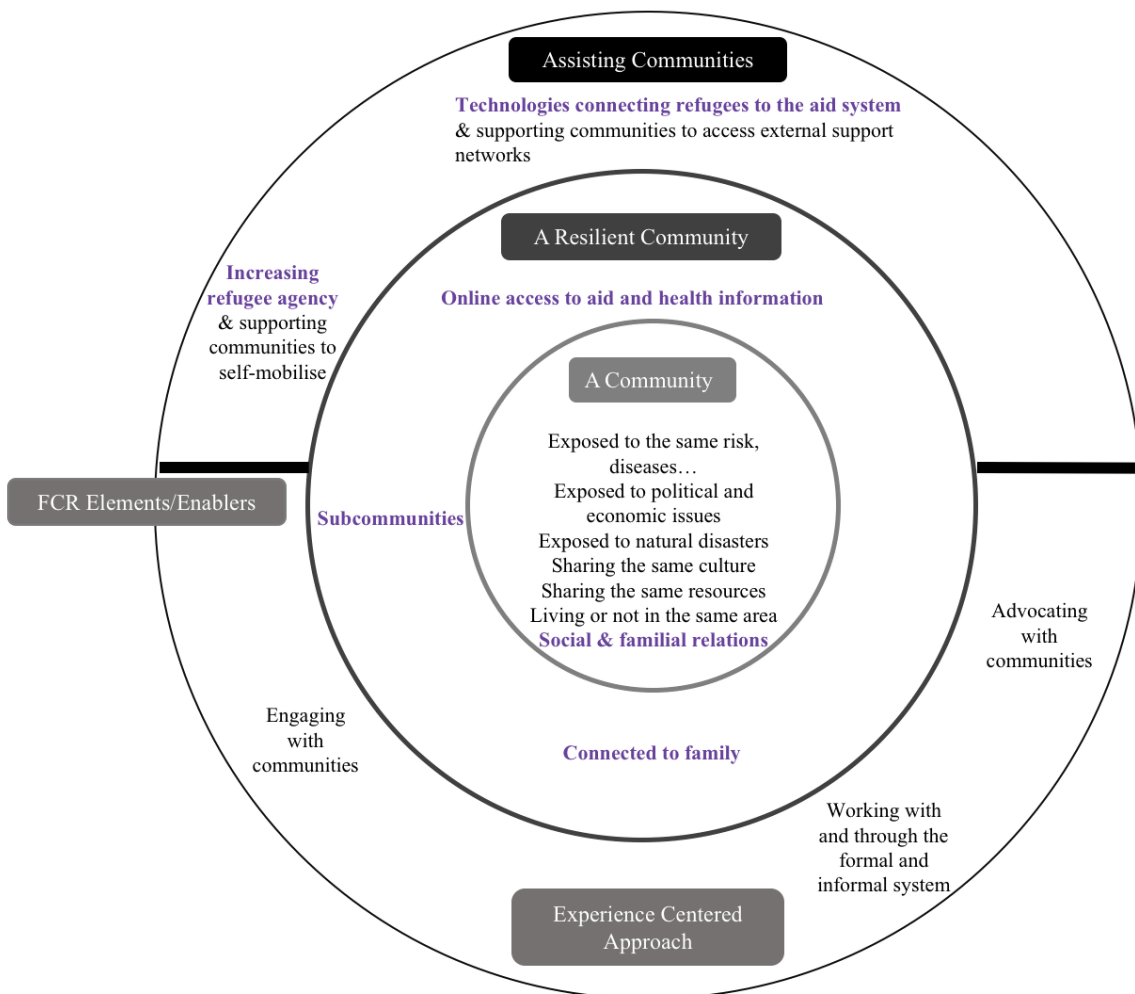


Figure 4.2 The adapted FCR based on the findings in Chapter 4 (changes in purple)

4.6.1 A community

The scoping findings in this chapter highlight that refugee participants placed a heavy emphasis on defining their communities by social and familial relations. Despite living in the same settlement, participants had different views regarding how they defined their community. While some participants, primarily group 1, defined their community based on the social relationships they developed within the settlement, others, such as those in group 2, defined their community based on familial relations. Furthermore, some participants restricted their definition of community to their immediate family that reside with them in the same household. The fact that refugees opted to participate in the study based on how they defined their community indicates that this is an important consideration if we are to design for refugee community resilience. Consequently, I amend the FCR framework (figure 4.2) to include social and familial relations as a facet through which we can define communities.

4.6.2 A resilient community

The aforementioned nuanced understanding of how refugee participants define their community entails that a resilient community is one that is socially cohesive; this should also account for the formation of subcommunities (figure 4.2). While engaging with a refugee community that is geographically bound, the data highlighted how social and familial relations play a big role in participants' formation of subcommunities. Additionally, while technology is being used to maintain familial relations through keeping refugees connected to family members, it is not playing a role in connecting refugees to aid services and external support networks. Therefore, currently, the adapted FCR (figure 4.2) reflects how refugees are connected through technology to family outside the settlement. Technology is also contributing to a healthy and knowledgeable community (figure 4.2) as smartphones are being used to access health and aid information through the Internet.

4.6.3 Assisting communities

Lastly, supporting communities to self-mobilise is considered by the FCR as a form of assisting communities in working towards resilience. However, the findings in this chapter indicate that the lack of agency experienced by refugees acts as a barrier to self-mobilisation. Therefore, I have amended the FCR (figure 4.1) to reflect the need to consider supporting refugee agency as a pathway to supporting refugee self-mobilisation (figure 4.2). Furthermore, the findings indicate that technology is only being used to access information regarding aid and not to connect refugee participants in a manner that allows them to access an external network; in this case, the aid system (figure 4.2).

4.7 Chapter Summary

This scoping study showed that refugee experiences of community resilience ([RQ1](#)) are influenced by how they define community. Furthermore, refugee participants indicated that their experiences of limited agency contribute to their inability to self-mobilise to be resilient ([RQ1](#)). Their current view of community resilience is that of survival, which is in line with the critiques of community resilience presented in Chapter 2 ([RQ3](#)). Lastly, smartphones are being used by refugee participants to connect to family members outside of the settlement and to access health and aid information ([RQ2](#)). However, they do not support refugees in accessing the aid system, nor in self-mobilisation.

These findings led me to question whether there are existing smartphone applications designed to be used by refugees that support them in accessing aid services and external support

networks. Furthermore, with the aim of supporting self-mobilisation, I questioned whether there are smartphone applications that connect refugees to one another and/or aim to increase refugee agency. It is these questions that led to the work presented in the following chapter, which aims to scope out existing smartphone applications within this space.

Chapter 5. Scoping Smartphone Applications for Refugee Community Resilience

5.1 Introduction

As previously mentioned in the introduction and background chapters (Chapters [1](#) and [2](#)), technology is being hailed as a revolutionising factor in humanitarian response (International Federation of Red Cross, 2013; OCHA, 2012). Mobile phones and applications (apps) are being posed as solutions to problems faced by refugees (UNHCR, 2016). The Framework for Community Resilience (FCR) indicates that when aiming for community resilience, we should work towards holistic innovation, including technological innovation (IFRC, 2014). In Chapter 4, refugee participants indicated that in their experiences of resilience, their smartphones are a source of information. However, the analysis of participants' reflections on experiences of community resilience identified that refugee communities experience low agency. Their low agency was indicated to inhibit their ability to self-mobilise. Further, the data showed that technology is not enabling refugee participants to connect to the humanitarian aid system. Both elements are considered by the FCR to be essential to building community resilience. There is space for technologies to play a role in supporting self-mobilisation as well as connecting communities and people to services.

Before beginning to respond to my research question on how community-designed technologies can contribute to refugee community resilience ([RQ2](#)), I needed to explore the existing technologies designed to be used by refugees. In this scoping study, I aimed to investigate existing smartphone applications, as smartphones are ubiquitous within the refugee community I engaged with. The study explored how smartphone applications designed specifically for refugees are:

- 1) connecting refugees to services and other stakeholders
- 2) increasing refugee agency and/or supporting refugee self-mobilisation
- 3) delivering information

First, I synthesised existing Human-Computer Interaction (HCI) literature based on the key findings of [Chapter 4](#) that reflect refugee experiences of community resilience. I then conducted a survey of existing smartphone applications designed to be used by refugees and analysed them against the three aforementioned functions. I categorised the apps based on their main functionality and also contextualised them geographically based on where they are intended to be deployed. The analysis also showed whether apps designed to be used by refugees assist communities in self-mobilisation and/or being connected to external support networks; that is, stakeholders within the aid system.

5.2 Background

5.2.1 Connecting to services and stakeholders

Several studies on HCI highlight the use of smartphones to connect refugees to others. Xu et al. (2016) and Fisher et al. (2016) found that social media is a commonly used medium of communication amongst Syrian refugees residing in Za'atari refugee camp in Jordan. Furthermore, it was found that male refugees are more likely than females to communicate using mobile applications (Xu & Maitland, 2016). However, specific to Za'atari refugee camp, Schmitt et al. (2016) reported a variation in network connectivity and bandwidth spatially within the camp and based on mobile phone carriers. This variation in connectivity entails infrastructural challenges that need to be considered when using technologies for the inclusion of refugees in digital projects/interventions (Fisher et al., 2017). Studies supporting refugee integration have identified that technologies are needed to expand the social networks of refugees and build their trust in their new host community (Almohamed & Vyas, 2016b). Brown and Grinter (2016) and Baranoff et al. (2015) both utilised technology to support the integration and resettlement of refugees in the US, respectively using an IVR system for translation and the placement of NFC cards around a city to disseminate information. With the aim of supporting the integration of refugees in Germany, Neuenhaus and Aly (2017) explored the use of 'Empathy Up', a geolocational mobile game, to address cultural barriers and connect refugees to members of their host community. Computer clubs, both in refugee camps and in Germany, have been explored as spaces for bridging inter- and intracultural, economic and gender divides amongst refugees and members of other communities (Yerousis et al., 2015; Aal et al., 2014, 2015).

Despite this plethora of work, there has been little research on how technologies may connect refugee communities to the aid system. To my knowledge, the closest endeavour to this has involved providing refugees with technologies to complete surveys on community-based data for humanitarian organisations (Xu & Maitland, 2019). Research I have conducted that has not been included in this thesis also showed the value of connecting Syrian refugees in Lebanon to the healthcare system by using voice technology to improve their access to reproductive healthcare. Through the use of synchronous interactive voice technologies, Syrian refugee women were able to ask healthcare providers questions that they were unable to ask in the clinics.

5.2.2 Self-mobilisation

My previous research conducted around improving refugee access to healthcare indicated that within the provision of healthcare for Syrian refugees in Lebanon, technologies should attempt to increase refugee agency within relationships with the healthcare system (Talhouk et al., 2016). Furthermore, Synchronous Community Radio shows, within the same context, have been shown to improve refugee agency in their relationships with healthcare providers. However, this research has not extended to fully exploring how technologies may facilitate refugee self-mobilisation. In their work on participatory community-building in Za'atari refugee camp, Xu et al. (2017) highlight how the use of co-located media as part of community-building activities increased the sense of community among refugee participants. Involving refugees in digital data collection also enhanced participants' sense of community (Xu et al., 2015). However, the authors also identified that the difficulties in implementing change based on data collected were intimately tied to the commitment of stakeholders, including service providers and the host government (Xu et al., 2015). AbuJarour and Krasnova (2017) identified that in Germany, the provision of information through technologies gives refugees agency in attaining their day-to-day goals such as navigating to an address. However, agency in relation to self-mobilisation was not discussed in this study.

5.2.3 Provision of information

In a chapter on the information worlds of refugees in the seminal book *Digital Lifeline? ICTs for Refugees and Displaced Persons*, Fisher (2018) highlights the integral role that smartphones play as sources of information and/or intermediaries to friends and families who provide information. The chapter states that the most-used apps by refugees in Za'atari camp are Google and WhatsApp. However, accessing technologies within refugee camps such as Za'atari may be restricted by the technological controls placed on the camp (e.g. limited connectivity) (Schmitt et al., 2016; Yafi et al., 2018; Fisher, 2018). In the West, there has been a greater focus on developing smartphone applications that provide refugees with local information that would support them in accessing services, as well as for integration into their host community. In a qualitative study in Australia, Felton et al. (2015) indicated that newly arrived migrants and refugees use the Internet for specific location information seeking. The project INTEGRATE aims to address the information deficit experienced by refugees when they arrive in Europe through a mobile application that provides them with relevant information (Schrieck et al., 2017). Information is provided by the local municipalities, which access the system through a WordPress site (Schrieck et al., 2017). In an analysis of existing smartphone applications that provide information to forced migrants resettling in Germany, Duarte et al. (2018) identified

information reliability, timeliness and complexity as challenges that refugees need to overcome when using the information provided. Finally, through working with refugees from multiple countries resettling in Germany, Schreieck and Wiesche (2017) highlighted that the interface design of information technologies should account for the interculturality of refugee communities. The authors suggest design principles pertaining to visualisation, structure, usability and use of disclaimers; these would contribute to better intercultural designs of informational smartphone applications (Schreieck & Wiesche, 2017).

5.3 Methods

The initial scoping exercise for this study was conducted over six months, December 2016 to May 2017. The scoping exercise was intended to inform the criteria based on which smartphone applications were to be extracted. Data extraction for the full analysis was done in June 2017.

5.3.1 Scoping

A scoping exercise was conducted to better inform the study methods. I joined Facebook groups of developers making technologies for refugees. These groups were identified through news articles that shed light on how technologies are being used to support refugees. I also read reports and blogs generated by the innovation divisions of several humanitarian organisations that are responding to the refugee crisis, including the United Nations High Commissioner for Refugees, the World Food Programme, the United Nations Children's Fund and the International Federation of the Red Cross and Red Crescent.

This was done to scope out what types of technologies are being created. Mobile apps for refugees were found to be a predominant technology being developed to address the refugee crisis. Furthermore, during my previous engagements with Syrian refugees in Lebanon I observed that Android phones are more commonly used by refugees due to their relatively cheaper cost. Existing literature also found that Android phones are most commonly used by refugees (Schreieck & Wiesche, 2017). Consequently, I decided to scrape the Google Play store rather than the Apple store.

Through the scoping exercise, I identified which search terms are usually associated with the term 'refugees'; I would retrieve relevant apps through the Google Play store. The search term 'displaced' retrieved irrelevant applications, and 'displaced populations' retrieved applications that target internally displaced populations rather than refugees. Additionally, the utilisation of the term 'asylum seekers' concurred with that of the term 'refugees'. Lastly, to scope out and

refine the exclusion and inclusion criteria, I systematically read the descriptions of apps that resulted from the search term ‘refugee*’ in the UK Google Play store. Through this I identified the genres containing apps that were not relevant to this study as they were not intended to be utilised by refugees. These genres included puzzle, action, personalisation, article, simulation, entertainment, music and audio, and strategy. These genres were then cross-checked with other Google Play stores for validation.

The Google Play stores of countries that host the most refugees, according to UNHCR statistics (UNHCR, 2017b), were selected from each region. These included Bangladesh, Canada, Ethiopia, France, Germany, the Islamic Republic of Iran, Jordan, Kenya, Pakistan, Russia, Serbia, Turkey, Uganda and the USA. Countries that host smaller numbers of refugees but still provide different contexts were also included. Lebanon was added due to (1) its hosting of Palestinian refugees for over 67 years (UNRWA, 2017), and (2) unlike Jordan and Turkey, it has not set up formal camps for Syrian refugees, thus giving refugees more mobility within the country (Achilli et al., 2017). Greece was included as it is a passageway into Europe, and the United Kingdom was included because the restrictions on refugee entry placed by the government entailed that unaccompanied young refugees were given priority (Bosworth & Fili, 2016). I acknowledge that there are other countries that have accepted refugees, but the exhaustive selection of the aforementioned Google Play stores encompasses a variety of countries with varying immigration, economic and social policies regarding refugees.

5.3.2 Systematic search and data extraction

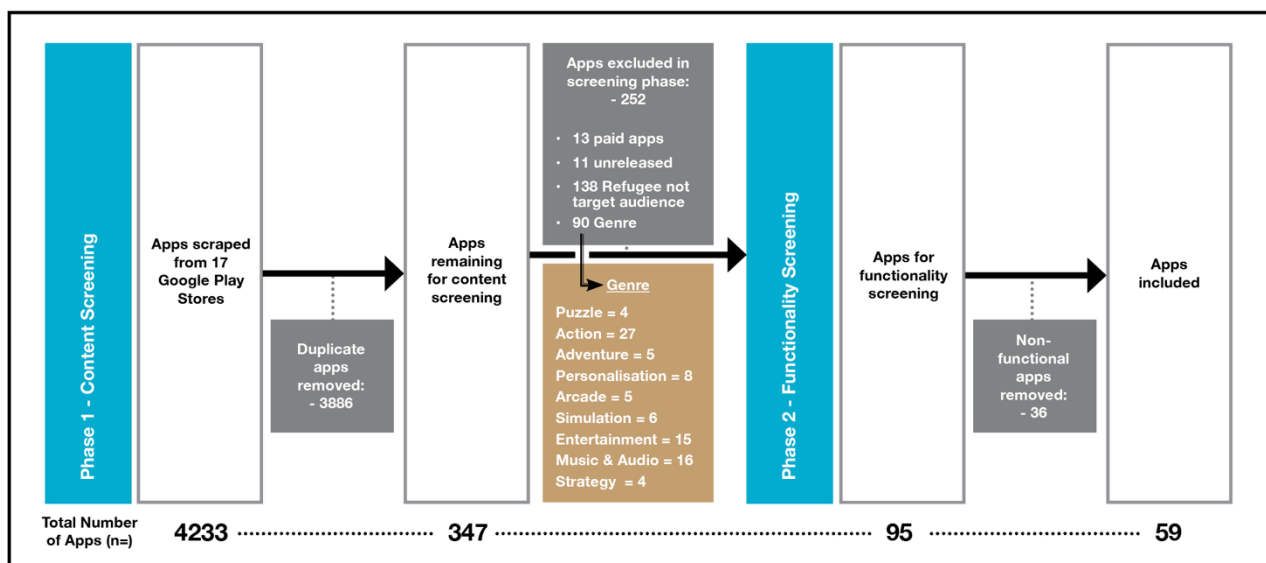


Figure 5.2 App screening was done in two phases; the number of apps excluded and reasons for exclusion are shown

In collaboration with Dalya Al-Shahrabi (a research associate with coding skills in Open Lab), I scraped smartphone application metadata from the 17 different Google Play stores using the

terms ‘refugee*’ and ‘asylum seeker*’. The metadata collected included app name, app description, genre, price, developer information and app URL. The metadata of a total of 4,233 apps was retrieved. Duplicates that emerged from apps published in multiple stores were removed (n = 3886); apps were then screened for inclusion in two phases (figure 5.1). In the content screening phase (phase 1), apps were screened based on completion of metadata, price, target audience and genre. Apps that target an audience other than refugees and/or are labelled with the genres that were identified as providing irrelevant findings in the scoping phase were excluded. Additionally, apps that are not free were also excluded as they were considered to be inaccessible to refugees, who are typically resource constrained.

In the functionality screening (phase 2), apps that remained after the first phase content review were screened based on their functionality. Functional apps were identified as those that were downloadable and that worked once downloaded. Apps were classified as non-functional if they (1) were non-responsive, (2) crashed once opened, (3) only acted as a link to a website (i.e. did not provide offline information), or (4) were no longer available on Google Play stores at the time of the download. Apps were downloaded on a Samsung S4 Mini because it is considerably cheaper than other Android phones and therefore is likely to be accessible to refugees.

5.3.3 Data analysis

The 59 remaining apps were downloaded and their main functions were compared to the app descriptions provided by the developers to ensure the reliability of the descriptions as complete reflections of the objectives of the apps. The data analysis encompassed (1) deductive content analysis of the functions of the apps, (2) geographical analysis and (3) an analysis of whether the apps connected refugees to other stakeholders and the aid system as well as to each other for self-mobilisation.

- 1) *Deductive analysis*: In order to best categorise smartphone applications based on their functionality, I utilised a deductive content analysis approach (Hsieh & Shannon, 2005). This was guided by the Sphere handbook (The Sphere Project, 2011), from which I identified the main themes and aims of humanitarian interventions. Furthermore, given that the current refugee crisis has been characterised by refugees journeying to Europe, I used a United Nations report (UNHCR, 2015b) to identify the category of journeying. The deductive content analysis was conducted on the app descriptions scraped (see deduced categories in table 5.2).

Although a deductive approach was employed, I also allowed for the formation of new categories that emerged from the data to account for innovations in addressing refugee needs as well as the emergent field of community resilience. Apps were categorised based on the aims described in the app descriptions (see emergent categories in table 5.2). The categorisation of the apps was validated with one of my supervisors, Dr Madeline Balaam.

- 2) *Geographical analysis*: Apps that were designed to address refugee needs within a specific country were also categorised based on the country they were intended to be used in (indicated as “Number of apps that are country specific” in table 5.2). However, scraping from multiple Google Play stores captured apps that are published worldwide but are developed for refugees in specific countries outside the 17 countries included. These were not included in the geographic analysis of the applications because I had not intended to look at apps from those countries.
- 3) *Self-mobilisation analysis*: To investigate the extent to which mobile apps are connecting refugees to other stakeholders and self-mobilisation, I also categorised apps based on their enabling/facilitating of connections between refugees and other refugee communities, service/aid providers and/or members of the host community (indicated as “Number of apps that connect refugees to other stakeholders” in table 5.2). I also categorised apps based on whether they provide information to refugees (indicated as “Number of apps that provide information to refugees” in table 5.2).

5.4 Findings

My findings show that there are a number of thematic gaps in which the apps do not attend to refugee needs as defined by the Sphere handbook (The Sphere Project, 2011). More relevant to this thesis, I found that within the configuration of the majority of the apps, refugees are presented as information recipients only: the applications analysed did not aim to position refugees as active agents. Furthermore, a high concentration of development of apps for refugees was found in Europe when compared to contexts of protracted refugee situations in the ‘Global South’.

5.4.3 Thematic gaps

Category	Example	Category	Example
Refugee Protection	RefuShe provides female refugees in Germany with information regarding their rights and protection services available to them	Resettlement	RST Checklist provides refugees in Texas with a To Do list for resettlement
Integration	Newcomers provides audio information and schematic maps of Germany and animations about hygiene standards	Health	AOK Health Navigator serves as a translator during treatment and helps refugees navigate the German healthcare system
Education	German Vocabulary for Refugees helps them to learn the most important German words and simple sentences	Journeying	Alphen Location Tracker helps you reach a destination without the Internet
Access to General Services	RefAid is specifically for refugees; it shows the location and types of aid available on a map	Activism	Iraqi Demonstration – The Hague helps Iraqi refugees to reach the location of a demonstration
Money Transfer	Hello Paisa aims to help refugees/asylum seekers create transactions securely	Reporting	Refugee Assistance Mapping Application aims to allow refugees to report issues they are facing

Table 5.1 The categories that resulted from the analysis of smartphone applications, with an example for each

The largest group of apps (n = 14) fell within the category of integration. Within this category I found that the apps addressed the different facets of integration, including social, cultural and economic integration of refugees.

Cultural integration was relatively well developed (n = 7) with apps providing information regarding the culture refugees are integrating into. One app, ‘Guide for Refugees in Germany’, “provides answers to a set of common questions among refugees such as ... life in Germany”. The social integration apps (n = 4) aimed to facilitate the socialising of refugees with host community members through facilitating social interactions between refugees and members of

the host community. Only one app supported economic integration; this allowed refugees to “advertise their [language] services and for people seeking linguists to find them”.

	Category	Number of apps in category	Number of apps that are country specific	Number of apps that provide information to refugees	Number of apps that connect refugees to other stakeholders
Deduced Categories	Refugee Protection	1	1	1	0
	Resettlement	10	10	10	0
	House, Shelter & WASH	0	0	0	0
	Integration	14	8	7	7
	Food Security	0	0	0	0
	Health	4	1	1	3
	Education	13	9	13	0
	Journeying	6	4	6	0
	Access to general services	8	2	5	3
Emergent Categories	Activism	1	1	1	0
	Money Transfer	1	1	0	1
	Reporting	1	0	0	1

Table 5.2 The number of apps within each category. The table also shows the breakdown of apps based on whether they were country specific, provide information to refugees and connect refugees to other stakeholders

Education apps facilitated informal learning; these were the second-largest category (n = 13). The majority of these were dedicated to language learning (n = 11). Nine were country specific and focused on learning one specific language, including Dutch (n = 1), Swedish (n = 1), and German (n = 5). The other two apps dedicated to language learning allowed refugees to select which language they would like to learn. Furthermore, two of the language learning applications

aimed to teach language using icons. Only two applications within this category aimed at non-language learning; they focused on teaching “email etiquette” and maths skills.

One app focused on refugee protection through providing female refugees in Germany with the location and contact details of gender-based violence service providers. None of the journeying apps focused on protecting refugees while they journey to new countries. The six apps within this category only provided information that would facilitate their journey. Three of the journeying apps were basic locator applications to help refugees find the location of certain towns in the Netherlands. The other three provided information regarding (1) survival tips, (2) transportation fares and discounts and (3) facts about different nations refugees can go to. Given the journeying nature of the apps, they were not deemed to be country specific. Resettlement constituted the third-largest subset of apps. These apps aimed at providing refugees with information regarding bureaucratic processes for resettling in new countries (table 5.2). The specific requirements of each country were reflected through the apps; therefore they were country specific.

Only four applications were developed specifically to address the health issues of refugees. Of these, two were specific to certain health issues (maternal/child health and mental health) while the other two aimed to facilitate interactions between refugees and healthcare providers through providing translations for symptoms and common health terms (table 5.2). None of the apps reviewed were developed specifically to address housing, shelter, WASH or food security. However, these needs were touched upon by four of the apps, which provided general information regarding a multitude of services accessible to refugees. Food security services such as the availability of food stamps were addressed by two applications, while services pertaining to refugee protection were indicated in two others. Other information provided by these four apps included the location of health clinics (n = 2), education services (n = 2), housing (n = 1) and shelter (n = 1). One application also provided information regarding the availability of aid in the form of clean water. The other four applications in the accessing general services category did not specify what information they provided. Five of the apps in this category facilitated access to services across multiple countries, thus reflecting the journeys refugees take as they find new countries to resettle in.

Region	Country (n = 27)
Europe	Germany (n = 18)
	Great Britain (n = 1)

	Serbia (n = 1)
Middle East	Turkey (n = 1)
	Lebanon (n = 1)
	Jordan (n = 1)
	USA (n = 2)
Americas	USA (n = 2)
Africa	Kenya (n = 2)

Table 5.3 The number of apps developed for refugees in specific regions and countries

Three categories that are not particular to humanitarian guidelines emerged from the dataset, however with low frequency (table 5.2). These included money transfer, activism and reporting (table 5.2). “Hello Paisa” aimed to facilitate money transfer among refugees who do not have any form of personal identification. Only one application aimed to support refugee political engagement by aiding them in finding the location of a protest (table 5.2). This app can be viewed as one working towards self-mobilisation as it supports refugees in coming together to take action to address an issue they are experiencing. Lastly, one application allowed refugees to report any issues they were facing; however, they would not receive any form of feedback based on their report. This app enabled advocacy, which can also be considered as a modality through which refugees may self-mobilise.

5.4.4 Geographical gaps

My analysis showed that most of the apps were developed to address the refugee crisis within the context of Europe, with apps specific to Germany accounting for 66.7% of the total. Of the apps developed for Germany, four served the same broad function of cultural integration; however they were specific to certain regions in Germany. Regions with more protracted refugee contexts, such as Africa and the Middle East, had fewer apps developed to respond to the refugee crisis (table 5.3). Furthermore, the apps developed to be used in Kenya and Jordan were restricted to geographically confined communities in refugee camps.

5.4.5 Connecting to others

I found that the majority of the apps met the aims of the aforementioned categories through the provision of information (table 5.2). Indeed, 74.6% of the apps provided refugees with access to information, while only 15 served as tools to connect refugees to (1) other refugees (n = 3), (2) members of the host community (n = 2) and (3) NGOs and public institutions (n = 8). Surprisingly, only two apps within the integration and resettlement categories connected refugees to members of their host communities. Refhope connected refugees to neighbours in

order to organise community events that would facilitate refugee social integration, while ULang connected refugees to businesses in search of translators. No other apps connected refugees to host member communities; however, several connected them to service providers (table 5.2). REFascent is a collaborative platform that links refugees to volunteers and aid organisations, thus enabling online interactions with stakeholders. Only three applications facilitated relations amongst refugees. Mmarket and Za'atari Locator respectively facilitate trade and information sharing among refugees residing within refugee camps, since they allow refugees to upload information regarding local shops; whereas RefugeesHub was restricted to connecting Farsi- and Dari-speaking refugees. Refugee protection, resettlement, education, journeying and activism were categories that only included informational apps.

5.5 Discussion

5.5.1 Refugee agency as knowledge producers

It is often claimed that mobile apps are tools which can empower refugees (UNHCR, 2016, 2017a). However, I found that the majority of mobile apps for refugees do not challenge the traditional view of refugees as mere recipients of aid. Many of the applications developed were found to be informational apps that only functioned as sources of information for refugees. Technologies have been critiqued within humanitarian literature as paternalistic in nature (Mesmar et al., 2016) with a top-down approach of providing services to refugees. Data from [Chapter 4](#) indicated that access to information does contribute to refugee participants' resilience; however, the majority of the apps surveyed did not connect refugees to support peer-to-peer knowledge exchange. Indeed, the apps aiming to only provide information to refugees configure refugees not as knowledge producers or actors but rather as consumers of information and aid. Such a configuration of technologies may further the experiences of lack of agency that refugee participants considered as a hindrance to self-mobilisation and community resilience.

5.5.2 Refugee agency as connectivity

When looking specifically at apps for integration, only two put refugees in direct contact with members of the host community. This contrasts with research being conducted within HCI, such as Empathy Up and computer clubs in Germany and Palestinian refugee camps (Neuenhaus & Aly, 2017; Aal et al., 2014; Yerosis et al., 2015). The aforementioned research highlights the benefits of direct engagement between refugees and host community members for integration. These studies exemplify how through connecting refugees to others, technologies and technological spaces allow refugees to take on proactive roles and contribute

to the development of trust, empathy and cultural knowledge sharing (Neuenhaus & Aly, 2017; Aal et al., 2014; Yerosusis et al., 2015). In Lebanon, synchronous IVR community health radio shows in which Syrian refugee women are in control of dialogues with healthcare providers have also shown the potential for building trust and understanding between marginalised refugee communities and the aid system. Furthermore, the increase in agency exhibited by refugees through community radio shows led to shifts in the perceptions of healthcare providers, from viewing refugees as unmotivated accessors of health services to seeing them as patients proactively seeking health advice. Technologies in which refugees are situated as knowledge producers also have the potential to facilitate the sharing of refugee knowledge, experiences and resources amongst themselves and their host communities.

The scoping study found that in countries where refugees are residing in camps or settlements, such as Jordan and Kenya, interactions facilitated through mobile apps were restricted to the camps and therefore did not attempt to increase the social capital of refugees – as advocated by Almohamed et al. (2017) – through connecting them to their host community. Furthermore, the apps did not attempt to connect refugees to the aid system that manages the camp in which they live and highly influences their day-to-day experiences.

5.5.3 Refugee agency as self-mobilisation

Community agency and self-organisation have been discussed as necessary precursors to community resilience (Berkes & Ross, 2013). The two apps that constituted the emergent themes of reporting and activism can be viewed as digital technologies that support self-mobilisation. The most direct form of self-mobilisation is supported through the activism app as it facilitates refugees meeting for a protest. The app facilitating reporting allows refugees to advocate for themselves online. Xu et al. (2015) have theorised that participatory community-building within refugee camps would enable the mapping of problems being faced and bring forth refugee opinions to other stakeholders within the camp. This builds on work within HCI research, in which the configuration of technologies is being explored as a means of moving towards users as citizens rather than consumers (Olivier & Wright, 2015; Vlachokyriakos et al., 2016; Foth et al., 2015; DiSalvo et al., 2016; Disalvo et al., 2014; Harding et al., 2015).

5.6 Adapted FCR

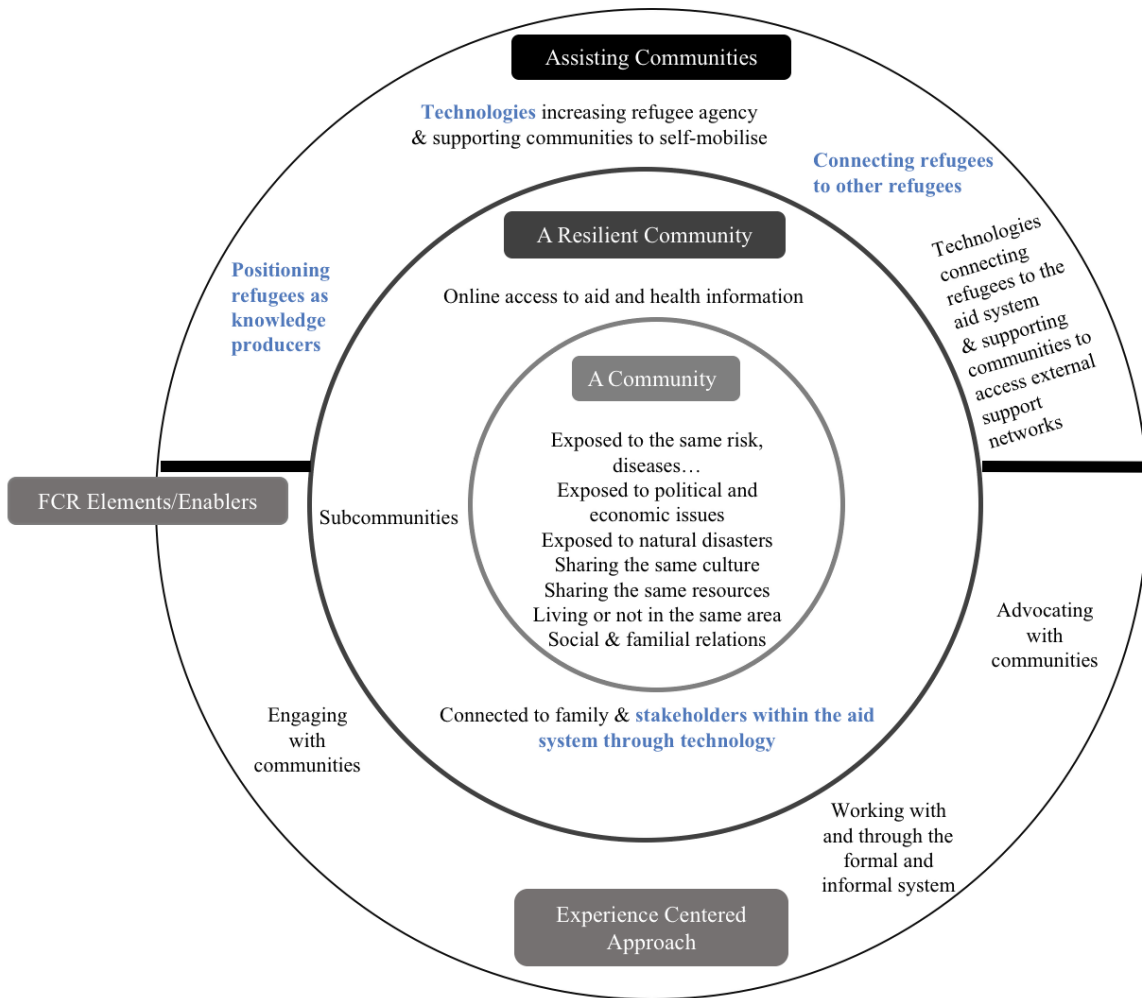


Figure 5.3 The adapted FCR based on findings in Chapter 5 (changes in blue)

5.6.1 A resilient community

The survey of the apps and the analysis illustrated that the majority of the apps are designed as information platforms rather than to connect refugees to each other and other stakeholders. Consequently, I adapted the FCR to reflect that (figure 5.2). The majority of smartphone applications designed to be used by refugees are intended to provide them with information regarding the services they can access in their new environment. However, the findings indicate that most smartphone applications do not position refugees as knowledge producers and maintain the notion of refugees being consumers of aid and information rather than active agents who produce and share knowledge.

5.6.2 Assisting communities

This scoping study highlighted that smartphone applications being specifically designed for refugees mainly aim to assist refugees in Europe. There are far fewer applications tailored for refugees in camps and settlements, such as the participants in my PhD research. Furthermore,

as previously mentioned, applications are not being designed to improve refugee connectivity to other stakeholders; therefore, they are not assisting refugee communities by improving their access to an external network (figure 5.2). Additionally, through positioning refugees as just information consumers rather than knowledge producers, current smartphone applications available to refugees may not contribute to refugee agency and consequently self-mobilisation (figure 5.2).

5.7 Chapter Summary

In summary, the findings in this chapter contribute to responding to Research Question Two ([RQ2](#)) by highlighting how current smartphone applications contribute to refugee community resilience by giving them access to information regarding services available to them. While information can contribute to refugee resilience, there is more to be explored in regards to how digital technologies may contribute to community resilience through increasing refugee agency, connecting refugees to other stakeholders and in turn facilitating self-mobilisation. It is these identified gaps that will guide my further inquiry into how community-designed technologies can contribute to refugee community resilience.

**Chapter 6. Understanding Experiences of Refugee Food Insecurity
Through the Lens of Community Resilience**

6.1 Introduction

A quantitative analysis of the food security of Syrian refugees in Lebanon, presented in [Chapter 1](#), demonstrated that 34% of Syrian refugee households are experiencing some form of insecurity (UNICEF et al., 2018). While the analysis does shed light on the different food coping mechanisms employed by Syrian refugees, it does not provide a rich understanding of experiences of food insecurity and how they are shaped by refugee values, past experiences and interactions with stakeholders in the aid system. Additionally, the analysis was conducted on a household level (UNICEF et al., 2018) and therefore did not capture the community practices employed to cope with food insecurity. Lastly, the report does not provide any insight into the use of technology within this space, nor does it examine the findings through the lens of community resilience. Therefore, in order to design a technology that aims to address refugee food insecurity using a community resilience approach, I employed an Experience-Centred Design (ECD) approach to respond to:

- *Research Question One (RO1)* through understanding (1) refugee experiences of food insecurity at a household and community level and (2) the current community practices being adopted to cope with food insecurity.
- *Research Questions Two (RO2) and Three (RO3)* through (1) understanding the current use of technologies by refugees to cope with food insecurity and how this contributes to refugee community resilience, and (2) exploring the potential for technologies to support refugee communities in coping with food insecurity while building community resilience.

In this study, I conducted design engagements with the refugee participants recruited in [Chapter 4](#). Additionally, I conducted semi-structured interviews with the shop owners those refugee participants interact with when purchasing food. The interviews with the shop owners were used to gain an understanding of their perspectives on their interactions with refugees and to receive their input regarding any potential technologies we may be designing.

6.2 Background

In the background chapter ([Chapter 2](#)), I provided a thorough review of literature on Community Resilience, Digital Humanitarianism and Human-Computer Interaction (HCI). The aforementioned literature guided the overall research presented in this thesis. However, to further inform the design of a technology that aims to address refugee food security, I also needed to build on existing research related to technology, food security and food sustainability.

6.2.1 HCI and food security

Studies within the field of HCI have yet to explore refugee experiences of food insecurity or how refugees interact with stakeholders in the aid system and their food environment. However, I can draw on literature exploring distinct platforms for food sharing and for knowledge exchange in relation to food. Furthermore, I can build on research regarding technologies that aim to support food aid organisations within contexts of food sustainability and poverty. Additionally, due to the interplay between food insecurity and poverty (DFID, 2011) I also provide a synthesis of literature that focuses on designing technologies to account for food and financial practices.

The concept of ‘food democracy’ has been recently introduced into HCI literature by Prost et al. (2018). Food democracy accounts for the values of social and economic justice in the production and consumption of food in local networks. The authors identify the difficulty within such networks of providing food more cheaply without negatively impacting local food producers (Prost et al., 2018), thus highlighting the influence of competing needs of stakeholders on food prices. HCI researchers have also explored food-sharing platforms in relation to creating more food sustainable environments (Ganglbauer et al., 2014; Clear et al., 2016). Such studies have identified that interactions through such platforms are motivated through individual values as well as the socio-political environments that motivate making food available in a sustainable manner (Ganglbauer et al., 2014). Within contexts of austerity, it has been found that individuals employ their social networks to carpool to visit food markets and to share information on prices (Vyas & Dillahunt, 2017). Such practices have been found to create environments that advocate for food sustainability (Ganglbauer et al., 2014) and new modalities through which communities of low socioeconomic status cope with (food) poverty (Vyas & Dillahunt, 2017).

Such existing practices contribute to building the case for sharing economies as a means to facilitate coping with poverty (Vyas & Dillahunt, 2017; Snow et al., 2017). Sharing economies, defined as the swapping, trading, or renting of products and services (Botsman, 2014), have been identified as a means of aiding people by enhancing their immediate access to food as they wait for policy developments to address their needs (Pingali et al., 2005). Advocates of sharing economies argue that these new economic models have the potential to address limited access to resources (Botsman, 2014). Such rhetoric encourages the exploration of sharing economies in addressing food security. However, research has highlighted how collective action is a

prerequisite for sharing cultures (Light & Miskelly, 2015). This is important to keep in mind since in [Chapter 4](#) refugee participants indicated that their ability to self-mobilise is limited by their lack of agency as refugees in Lebanon.

Several studies have been conducted with refugees in relation to food; however, they did not focus on food security. Irani et al. (2018) identified that refugees in the US face challenges in accessing food due to the lack of availability of information about food stamps they are entitled to and to the language on food packets being English. A study examining information technologies for refugees in Germany also explored a platform that promotes dinners between forced migrants and locals (Duarte, Degbelo et al., 2018). The study identified that information reliability, timeliness and complexity were often barriers to successful utilisation of informational mobile applications (Duarte, Degbelo et al., 2018). Fisher et al. (2017) have explored the possibility of co-designing a digital cookbook with refugees in Za'atari camp. However, the project aimed to maintain recipes and food heritage rather than allowing information exchange regarding food experiences (Fisher et al., 2017).

Other studies have examined the role of technologies in sharing food information and experiences in poor communities. Within contexts of poverty, it has been found that digital storytelling and knowledge exchange can support communities in learning how to cope with poverty and access aid from organisations (Vyas & Dillahun, 2017). Grimes et al. (2008) investigated how mobile phone technology can be used by low-income African American community members to share and reflect on memories in which they attempt to make healthy food choices. The research was further extended to the creation of technologies that support activism around food poverty through making community stories more visible (Parker et al., 2012). Both studies (Grimes et al., 2008; Parker et al., 2012) implicitly address a key element of food security: access to nutritious foods (Food and Agriculture Organization, 2006). They highlight that access to food is not sufficient; it is access to healthy food that makes individuals and communities food secure.

While the aforementioned studies have focused on designing community-based technologies, research has identified that often within food-insecure contexts, technologies can play a role through supporting local food aid organisations (Dombrowski et al., 2013; Masiero & Prakash, 2015). The centrality of local organisations in supporting communities in accessing food as well as being spaces for knowledge exchange and building of social relationships has been emphasised (Dombrowski et al., 2013). Masiero and Prakash (2015) have investigated the role

of technology within food aid systems in India. The authors found that the technologies used in food aid systems retain the political attributes of corruption that are characteristic of the aid system as a whole. Other projects have theorised that community mapping activities in Za'atari refugee camp, mediated by technologies, can aid in the mapping of food aid, to provide aid organisations with real-time information to guide their decisions (Xu et al., 2015).

On an individual and household level, Comber et al. (2013) used a situated action approach to identify the food practices adopted by households. They showed the role of planning recipes in advance and fitting food into a structure of routines as mechanisms to reduce food waste (Comber et al., 2013). However, there is a limited amount of research investigating such practices within the context of poverty and food insecurity. Instead, we can draw on literature on financial household practices among low-status socioeconomic communities. Vyas et al. (2016) identified that households employ various planning and expense tracking systems that incorporate routines, values and familial relationships in order to better manage their finances. The study identified that familial interactions should be accounted for when designing technologies that aid in meeting both short-term and long-term financial goals (Vyas et al., 2016). Although the aforementioned studies propose ways in which organisational and financial planning technologies may support food practices and financial coping mechanisms, Vines et al. (2014) highlighted how participants of low socioeconomic status viewed technology as untrustworthy in regards to managing their finances. Additionally, participants expressed concern that technologies may be making more transparent practices they employ to cope with poverty, such as hiding their financial circumstances in order not to lose government benefits (Vines, Dunphy et al., 2014).

6.2.2 Applicability of existing literature to refugee contexts

It is undeniable that the aforementioned studies shed light on the food and financial practices utilised by several communities; however, they fail to account for how food coping practices employed by participants change over time. Understanding temporal changes is essential when investigating such practices among refugee communities, as being a refugee is recognised as a journey with transitional phases (Gillespie et al., 2018). By uncovering how practices change over time, we will be able to consider how individual technologies may (or may not) support food coping practices at different points in the refugee journey. Such an understanding would further build on studies such as Snow et al. (2017), in which sharing platforms were proposed as a means of supporting individuals coping with poverty, by identifying how resources that may be shared change over time.

Within the aforementioned literature, I identified several gaps that further motivate the aims of this case study. For example, there is a limited amount of research on designing technologies for refugee food insecurity; therefore there is a need to understand the complex nature of refugee experiences of food insecurity. This is compounded by limited research at the intersection of food practices, poverty and humanitarian aid. Additionally, studies on food and financial practices have yet to be expanded to contexts such as that of refugees residing in informal settlements, or to incorporate technologies for food insecurity within a wider framework of community resilience.

6.3 Methods

6.3.1 Recruitment

Refugee participant recruitment

The refugee participants that took part in this phase of my research were the same people that I recruited in [Chapter 4](#). Therefore, I will not recap the full recruitment procedure; however, I will provide the participant table (table 6.1) for ease of reference in this chapter.

Building number	Household number	Number of participants within the household	Pseudonym	Relationships within the household	Participated in an individual or group basis
1	1	1	Sarah	-	Group 1
	2	2	Maria, Zeinab	In-laws	Group 1
	3	1	Hala	-	Group 1
	4	1	Chaza	-	Individual
	5	1	Zena	-	Group 1
	6	1	Hanadi	-	Group 1
2	7	1	Hanan	-	Individual
	8	1	Yara	-	Individual
	9, 10	3	Malak, Lara, Dalia	A mother and her two daughters	Group 2
Community Neighbours	11	1	Fatima	-	Group 1
	12	1	Rola	-	Group 1
Total	12	14			

Table 6.1 Breakdown of participants from Chapter 4

Shop owner and other stakeholder recruitment

Throughout the design engagements with refugee participants, I took note of the shops that they mentioned visiting. Permission to use this information to guide the recruitment of shop owners for semi-structured interviews was obtained from refugee participants on the condition that their anonymity be maintained (part of the protocol approved by the ethical board). I visited the shops refugee participants frequented and asked the shop owners to take part in the study. Four

shops, two of which are registered with the World Food Programme (WFP) as official shops, consented to do so. Only these shops were approached as they were the primary shops that the refugee participants frequented. The shops sold both food and non-food items. Food items included fresh fruit and vegetables, frozen and/or refrigerated meats, dairy products and dry foods customarily purchased by Syrian refugees.

Shop Number	Shop Location Relative to the Refugee Settlement	Shop Owner Pseudonym	WFP Retailer Status?
1	In the town square of the town in which the refugee community is settled (15-minute walk from the settlement)	Mohammad	Registered
2	In the town square of the town in which the refugee community is settled (15-minute walk from the settlement)	Larissa	Not registered
3	In the town square of the town in which the refugee community is settled (15-minute walk from the settlement)	Hakim	Not registered
4	In another town, a 30-minute drive from the settlement	Jad	Registered
Total			Registered: 2 Not registered: 2

Table 6.2 Breakdown of shop owner participants

The main humanitarian actor addressing food insecurity among Syrian refugees in Lebanon is the WFP. Therefore, I aimed to conduct interviews with WFP employees working in the innovation department in order to gain an understanding of the current innovations they are working on as well as their view of technology's role in addressing food insecurity. I emailed three WFP innovation team members listed as in charge of the technologies being deployed in the Middle East, using publicly available email addresses, to invite them to take part in the study. I hoped to employ snowball recruitment strategies (Atkinson & Flint, 2001). However, I received a preformatted response from all the invited participants, declining to participate ([Appendix E](#)).

6.3.2 Data collection

All engagements and interviews with refugee participants and shop owners were conducted in Arabic (the mother tongue of the participants and myself), and were audio recorded – except for one interview with a shop owner who felt uncomfortable with using an audio recorder. In the case in which the research participant did not consent to audio recording, I took detailed notes. Additionally, throughout the data collection process I took notes of issues emphasised

by refugee participants, as well as any feedback they provided regarding the research process and the interactions I was having with them. These notes helped guide the analysis as well as contributing to the findings in [Chapter 8](#) on ECD as a people-centred approach to be employed when designing technologies for refugee community resilience.

Data collection with refugee participants

I engaged with this community and refugee participants over the course of two years, during which I spent four days a week in the settlement over nine months. Continuous contact with the community was maintained over WhatsApp during the times I was not visiting. The data presented in this chapter is from seven key design engagements that took place during the months of June–August 2017. These seven engagements used distinct methods, ensuring that the multiple elements of ECD were achieved (table 6.3). The engagements were designed firstly to initiate dialogue with participants regarding how they wanted to participate in the study, what methods we would be using and what were considered to be meaningful outcomes. The following engagements were then tailored based on the new shared understanding regarding the study. Each engagement had a specific objective that contributed to achieving the aforementioned study objectives. Furthermore, the data collected in each engagement informed the configuration of the next and was also used as the starting point for the following engagement. The engagements were organised as follows:

Introductory engagement: This engagement was conducted with each participant individually and aimed to co-construct with participants a shared understanding regarding the study objectives, how they wanted to go about conducting the study (i.e. the different data collection tools we could use) and what was the community benefit from engaging in this research.

Accordingly, I gave participants an overview of the possible methods that we could use and topics to be discussed. Methods included traditional focus groups and interviews, dialogue cards, diaries and the co-designing of an artefact that would reflect their work in the design process.

Over around 30–45 minutes, each participant provided feedback regarding which methods they preferred. This resulted in the use of dialogue cards (figure 6.1) for narrative building as a primary method. The full set of cards can be found in [Appendix F](#). It was agreed that one of the outcomes of this study could be a co-designed booklet that would reflect the data that participants had shared and be used by the community for discussion with NGO representatives

who assess their food insecurity. The co-creation of the booklet acted as a reciprocated probe (Wallace et al., 2013) which reflected my responsiveness to participants and the experiences they were expressing. Also, participants considered that the booklet could potentially be used for advocacy. Three participants also indicated that they would like to fill in diaries of their experiences of food insecurity, with one indicating that she would enjoy drawing depictions of their experiences. Consequently, I made diaries that were given to participants. The diaries consisted of both blank and lined pages with a blank cover.

The dialogue cards were designed to facilitate dialogue within the engagements around participants' experiences of food insecurity, as well as aiding in the co-construction of narratives of coping with food insecurity at a community level. The cards were created based on the Arab Family Food Security Scale (Sahyoun et al., 2014) and were intended to reflect the multiple factors that might influence food insecurity as well as coping with food insecurity. The cards were colour coded by category as follows (see figure 6.1): (1) Food coping strategies in purple; (2) People within the refugee community and the host community in yellow; (3) aid organisations they interact with in navy blue; (4) Types of food and dishes that range in cost, in red; (5) Seasons that are known to have an impact on refugee food security, in green; (6) Resources needed for the preparation and preservation of food, in brown; and (7) Technologies commonly available to refugees in light blue. Participants could also create new cards, which resulted in ten new cards being made. The dialogue cards also provided an opportunity for me to partake in the discussions and use the cards to co-construct narratives reflecting my grandparents' and parents' experiences of food insecurity during the Lebanese civil war and my food experiences while living abroad. I reflect further on my use of the cards in [Chapter 8](#).

Additionally, some participants indicated that they did not know whether they wanted to engage with the design process individually or in a group setting as they were still unclear on the different aspects of their experiences that the research would surface. Therefore, I suggested to participants that I could run a follow-on introductory design engagement individually, in which we might begin discussing some aspects of experiences of food insecurity. This was to give participants a better sense of the conversations that might take place during the study, based on which they could decide whether to participate individually or in a group.



Figure 6.1: Examples of dialogue cards used. (1) purple card: decreasing portion size as a coping strategy; (2) red card: meat dishes; (3) light blue card: smartphone; (4) green card: winter; (5) navy blue card: NGO workers; (6) yellow card: shop owner; and (7) brown card: gas canister

Lastly, participants and I agreed that my fluency in both Arabic and English enabled me to provide a meaningful outcome for the community by becoming a tutor to the children. My agreeing to do so could be seen to be in line with responsiveness as an element of ECD (table 6.3). In order to avoid such a form of beneficence becoming coercive, I offered to tutor all the children in the settlement regardless of the participation of their mothers in the study. This resulted in me tutoring 20 children, 5 of whom did not have mothers participating in the study.

Introductory follow-on engagement: As previously mentioned, the aim of this engagement was to give participants more of an idea regarding the topics we would be discussing and how we would be using the dialogue cards. Furthermore, I aimed to collect data regarding experiences of coping with food insecurity at a household level. To do so, I introduced the food coping strategies cards; participants were then asked to sort the cards based on the strategies they were engaging in and reflect on their choices. Participants were asked to arrange the cards, firstly according to the coping strategies that they preferred employing (with the most preferable being the first) (figure 6.2), and then based on the effectiveness of the coping strategies (figure 6.3). Additionally, participants were asked to group together the coping strategies that they employed simultaneously. At the end of this engagement, five participants indicated that they would prefer to continue their participation on an individual one-on-one basis, and eight said

they would prefer group engagements (see table 6.1). The engagements lasted around 30–35 minutes each.



Figure 6.2 Coping strategy cards ordered based on participant preference



Figure 6.3 Coping strategy cards ranked by participant based on effectiveness

Configuring a space for the design engagements: After refining the tools and design process to match the preferences of participants, I met with participants to give them a detailed overview of the data collection process. I also discussed the frequency of my visits, both for the design engagements and to tutor the children. I showed participants the different materials we would be using (e.g. big cardboards to take notes of their discussions, place the dialogue cards when

co-constructing narratives and present back findings from other participants). Participants engaging in an individual capacity indicated that the design engagements could take place in any room in their homes, depending on what other household activities they might be engaging in (e.g. in the kitchen if they were preparing food). Participants engaging in a group said that they met for coffee every day, so the design engagements could be part of that social meeting. Participants also agreed that among themselves, they would manage a rota for where the engagements were to be physically hosted. These engagements took around 25–30 minutes each.

Narrative-building engagement: The aim of this engagement was to facilitate dialogue and the co-construction of narratives among participants regarding how they coped with food insecurity at a community level. In the group engagement, the cards were divided amongst participants and they placed them in relation to one another in order to construct individual and collective narratives that reflected their experiences of food insecurity (figures 6.4 and 6.5). In the individual engagements, all the cards were presented to the participant and I would prompt her to build narratives of food insecurity around the cards. Additionally, the technology cards were used by participants to reflect on how technologies were supporting them in coping with food insecurity as well as how they might support them further. Throughout the engagements, I would reflect on their narratives and share how they related to my experiences, as well as the experiences of my parents and grandparents during the Lebanese civil war (this is further expanded on in [Chapter 8](#)). The engagement with group 1 lasted approximately 2 hours, that with group 2 about 1 hour 40 minutes, and those with individual participants 40–60 minutes.



Figure 6.4 Dialogue cards placed by participants in the group 1 engagement to co-construct narratives of food insecurity and coping

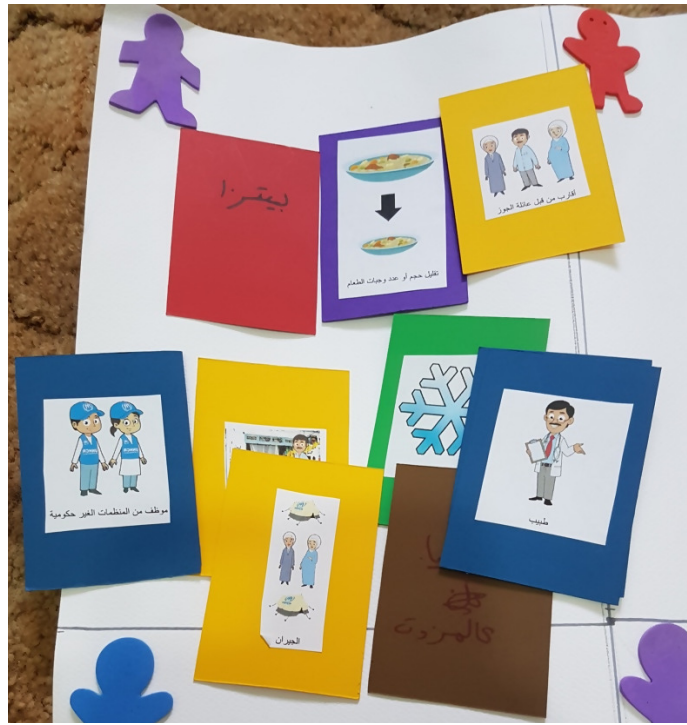


Figure 6.5 Dialogue cards placed by group 1

Validation/Member checking engagement: I conducted a validation engagement (Creswell & Miller, 2010) in order to ensure that the primary themes that were emerging from my analysis were true to participants' experience. To do this I collated anonymous quotes reflecting emergent themes from both the group and individual engagements and presented them back to participants (figure 6.6). Participants critiqued, added and removed data. The engagement also aimed to show reciprocity by reflecting to participants that their experiences were being accurately heard and understood. The engagements lasted between 55 and 80 minutes.

Content-design engagements: I conducted two content-design engagements. The aim of the first was twofold. First, to work with participants to put the data collected into sections that would make up the co-created booklet. Second, to instigate further reflection and dialogue among participants regarding the narratives they had co-constructed and to give an opportunity for participants to add any experiences that they felt had not previously been fully explored. Participants used a white sheet of cardboard to prescribe how the data should be divided into different parts of the artefact.

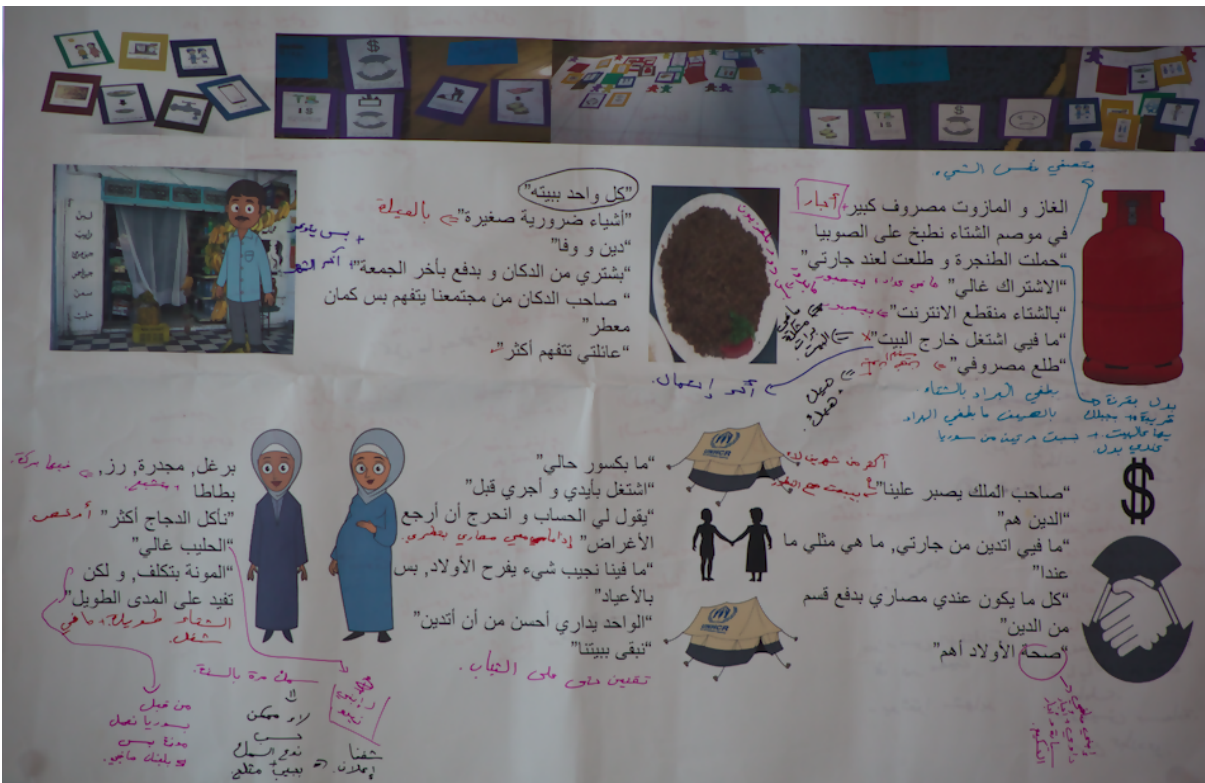


Figure 6.6 Collated quotes representing themes that were adapted and amended by participants in the validation engagement

Three participants also volunteered to draw images to be used in the booklet. The first engagement lasted around two hours with groups 1 and 2 and one hour with individual participants. In the second engagement (approximately 40–55 minutes), I presented to participants a draft of the booklet, and the final content for the artefact was further validated by participants.

Refugee participants gave the booklet (figure 6.7) the title of *The Suffering of Syrian Refugees: “Despite the Austerity We are Living”*. They discussed wanting the title to reflect how coping with food insecurity is an ongoing struggle intimately attached to their status as refugees, while also indicating that they are surviving through it.

The data was divided into chapters in a chronological manner that reflected their journey in Lebanon as refugees as well as seasonal changes that affected their food security. The first two chapters were dedicated to the interplay between their experiences of resettlement and food security. In these chapters, participants highlighted the need to obtain local knowledge regarding purchasing of food as well as the town they had resettled in.



Figure 6.7 The images in the booklet were drawn by participants and their family members and the text is a synthesis of the data selected by participants

The next three chapters were seasonal chapters which focused on coping mechanisms utilised during school time, the holy month of Ramadan and the winter. In these, the advice provided to other refugees focused on managing resources and employing coping mechanisms in preparation for these seasons and to cope throughout the seasons. They emphasised sharing of knowledge on how to navigate and negotiate aid and transactions. Participants wanted to end the booklet on a positive note and therefore opted to title the last chapter “We wish”. In this chapter, participants stated that they wanted to go back home to Syria and for the Lebanese host community to be more understanding of their situation.

Importantly, the participants asked that the booklet be digitised in order for them to share it online and through social media. It can be found at <https://refugeefoodsecurity.wordpress.com/>. This contrasts with Fisher’s research on co-designing a cookbook for maintaining refugee food heritage (Fisher et al., 2017) in that refugee participants in the study presented in this chapter expressed how they wanted not only to provide the content for the artefact but also to have more agency in how the content was communicated to others, and its future function.

Wrap-up engagement: The aims of this engagement were (1) to collect participants’ feedback regarding the methods and research approach employed in this study, and (2) to discuss with

them the next step of the project. To elicit feedback, I did a recap of all the methods we had used and explained to the participants that one of my aims as a researcher was to learn how to do this type of research better. I then asked participants to voice their opinions regarding the methods used as well as how we could have done things differently. This was done through focus groups (30–40 minutes) and semi-structured interviews (25–30 minutes). In this engagement the participants and I agreed that we needed time to consider how to move forward with possible technological designs.

Data collection methods with shop owners

Semi-structured interviews lasting 30 minutes each were conducted with shop owners in their shops ([Appendix C](#)). The interviews aimed to explore their current interactions with refugee communities, their current use of technology and their opinions of the technology ideas generated through the design engagements with refugee participants. Questions focused on the shop owners' experiences of using the e-voucher system, whether they were registered with the WFP, and their experiences of selling goods to refugees. I also asked the shop owners how they were using digital technologies within their business. None of the shop owners were comfortable with the use of an audio recorder. Therefore I took detailed notes of their responses.

6.3.3 Data collection methods and ECD

The aforementioned data collection engagements and the methods used within them were guided by the three main elements of ECD. In the table below (table 6.3), I show how the methods employed and the configuration of the design engagements were designed to evoke dialogue and responsiveness as well as to create a space for multi-voicedness.

Engagement	Dialogue <i>Defined as a relational form of communication in which knowledge and identity are co-constructed.</i>	Multi-voicedness <i>Defined as acknowledging the multiplicity of voices within engagements and the tensions that may arise due to varying perspectives.</i>	Responsiveness <i>Defined as being empathetic and engaging in active listening to respond to participants' experiences and perspectives.</i>
Introductory engagement	Giving participants an overview of possible methods initiated the co-creation of a shared understanding regarding how the research would be conducted.		Agreeing to act as a tutor can be seen as a way of responding to participants' values and needs and considering from my perspective how I can contribute to the community.
Introductory follow-on engagement		Running introductory design engagement individually: reflecting on the social dynamics in play. Running individual sessions: capturing the multiple voices despite community not wanting to come together.	Running individual sessions: engaging with the multiple values being expressed by participants regarding how they want to engage with the research and with one another.
Configuring a space for the design engagement	Co-creation of shared understanding of how the research will be conducted. Allowing participants' values, culture and beliefs to contribute towards defining a space for the dialogue.		
Narrative-building Engagement	Use of dialogue cards: invoked participants to co-create shared narratives of experiences.	The stakeholder cards allowed refugee participants to reflect on the multiple perspectives of stakeholders and others in their community.	Justifying placement of cards created a space for attentive listening and discussion in which empathetic understanding was practised as

	Using the cards to share my experiences as well as the experiences of my parents and grandparents during the Lebanese civil war: sharing understanding of each other's identities.		differences in perspectives were highlighted.
Validation engagement		Brought together data from all participants while still being respectful of the social dynamics.	Showed attentive listening, empathy and reciprocity as they were analysed from my perspective.
Content-design engagements	Co-created artefact created based on shared understanding of one another and knowledge generated through previous engagements.	Design decisions that needed to be made led to further identification of the multiple voices in the community.	Empathy: understanding one another from multiple perspectives (my perspective on how a booklet should be made and participants' perspectives).
Wrap-up engagement	Further dialogue regarding how we should proceed with the research.		Got feedback about the process.
Interviews with shop owners		Inclusion of the voices of shop owners as well as accounting for the power dynamics between refugees and shop owners.	

Table 6.3 Breakdown of how the design engagements in this study were designed to evoke dialogue, multi-voicedness and/or responsiveness

6.3.4 Data analysis

I listened to the Arabic audio recordings and directly translated them into English and transcribed them. During this process, I maintained the glossary of translated words developed in [Chapter 4](#). Notes I took during the data collection process were then integrated into the transcripts in instances where this was applicable. Additionally, the reflective notes were digitised to be analysed separately.

Thematic Analysis (Braun & Clarke, 2013, 2006) was conducted on this data:

- 1) *Getting familiar with the data:* By transcribing the data myself, I actively listened to the audio recordings. After transcribing the data, I read through all the transcripts and took note of important/interesting pieces of data. To ensure good-quality analysis, transcripts were of an appropriate level of detail and I randomly revisited some of the tapes to check the transcripts for accuracy.
- 2) *Coding:* Transcripts from all the engagements were imported into NVivo 10 for Mac. The data from all the engagements was analysed as one corpus of data in order for the analysis to holistically capture refugee experiences of food insecurity and technology. Using Nvivo 10, I systematically revisited the transcripts and notes and coded the data. Data was first coded in a descriptive manner, through which codes were created that reflected the content of what was being said. I then conducted a second round of coding for any latent meanings and interpretations. I was inclusive when coding the data to ensure that the coding process was thorough and each data item was given equal attention. Inclusivity was necessary to ensure that the themes that would emerge further down the process were not based on a few anecdotal examples.
- 3) *Identifying potential themes:* After coding the data, I went through all the codes and the data that was attributed to the codes. I then began systematically categorising the codes into larger themes, firstly to provide a holistic account of refugees' experiences of food insecurity and secondly to respond to the research questions posed in this chapter. Codes were clustered based on any overlaps as well as on the multiple perspectives expressed by participants on the same issues. Through this process, a meaningful pattern began to arise in the form of the themes that are presented in this chapter.

- 4) *Reviewing potential themes:* In this phase, I reviewed the themes created by reading the data allocated to each theme. At this stage, I presented the themes back to participants for member checking. This was done in order to ensure that the themes were meaningfully capturing the data shared with me by participants. Themes identified by participants to be incomplete were revisited with participants and discussions were held to further define them. Themes and the corresponding data were then presented to my supervisory team for quality checks and were reviewed based on their coherency, consistency and distinctiveness.
- 5) *Defining themes:* Based on the discussions that took place during the previous phase, I defined the themes by identifying how they responded to the research objectives of this chapter. Through this process, I created an outline of how the themes create a rich narrative of refugee experiences of food insecurity as well as how their experiences relate to designing technologies for community resilience. This phase ensured that the data was interpreted in a manner that went beyond just paraphrasing and that the themes presented a narrative that reflected the data and topic at hand.
- 6) *Writing up:* In the final stage of the TA process, I documented the themes in the form of this chapter as well as a conference paper that was submitted for review. In this stage of the analysis process, I embedded the themes within the wider scholarly research on food security, community resilience and humanitarianism.

6.4 Findings

Analysis of the data identified that refugee experiences of food insecurity are predominantly experiences of adaptation, navigation and negotiation. I found low agency to be a consistent emergent theme within experiences of food insecurity. Furthermore, refugee community members were found to share aid, material resources, food and knowledge. However, values related to privacy and lack of social cohesion often limited community sharing practices. Lastly, technologies for sharing of knowledge and facilitating purchases emerged as possible technological designs to improve refugee food security.

6.4.1 Experiences of food insecurity

The findings from this study show that refugees' experiences of food insecurity are characterised by a period of adaptation, navigation of formal and informal aid systems and negotiations with multiple stakeholders. Co-constructed narratives highlighted how lack of

understanding of the formal aid systems and the informality of other forms of aid often left refugees feeling vulnerable and decreased their agency. Furthermore, the constant need to negotiate with stakeholders left them dependent on the understanding of others and tied them to specific stakeholders, thus limiting their agency in further negotiating.

Adapting to poverty

When exploring the coping mechanisms utilised in order to meet their food needs, participants indicated that there is an adaptation curve in which they had to learn how to cope in their new context of poverty:

Back home I had my house, we had our business, we did not have to worry about money and food. [Fatima]

In Syria, we were well off but I moved here, but I know how to adapt to live with what we have. [Hala]

The adaptation curve became more evident as participants began grouping data and their experiences to be included in the booklet in a chronological manner that reflected their journey. Since all the participants reported that they had built or inherited debt-free their houses back in Syria, rent was a new expense that they had to learn to accommodate: “*here what makes it difficult is paying rent. It is killing us*” [Dalia]. Participants described their current experience as refugees to be that of day-to-day survival: “*We are living day by day*” [Fatima]. This was reiterated in how participants gave the booklet the title of *The Suffering of Syrian Refugees: “Despite the Austerity We are Living”*.

Adapting to living with extended family

Using the people cards, participants reflected on how living with extended family members impacted eating habits and ultimately their food expenditure:

My son would have already eaten but then he would see his cousins eating and he would want to eat again. [Fatima]

When we were living alone, one loaf of bread was enough for a week, but when my sister-in-law lived with us we would buy three loaves a day. [Rola]

Participants indicated that they had had to adapt to discussing food expenditure within their household, which had not been common when they lived in Syria; especially as they realised that they had to start keeping track of who bought what and learn *“how to control our expenditure”* [Maria]. Part of the adaptation was also learning how to strategically use their food vouchers and not spend them on items considered luxuries: *“We learnt that with our food vouchers, we should buy the essentials like rice and oil only, rather than buying cheese that we fancied”* [Malak]. Additionally, they relied on the knowledge of relatives who had arrived before them to identify shops where they could buy cheaper foods. At first *“It took us a while, by God it took us a while, when you first come, you don’t know where the market is. You take 100,000LL (US\$66) and buy only a few things”* [Zeinab]. Participants highlighted that the purchasing power of money in Lebanon was much less than in Syria. Consequently, they adapted to this by having open discussions about finances within their households as well as seeking advice from other women regarding how to manage food expenditure: *“The lady [her neighbour] used to tell me: get this or don’t get that, and, for example, when a guest comes buy and make whatever you can afford, you don’t have to borrow money”* [Yara]. When recounting experiences of the initial stage of their life in Lebanon, participants emphasised, through the selection of coping mechanism cards, that they had had to reduce food quantities and the quality of food in order to buy essential furniture for their houses.

Adapting to new geographical locations

Despite there not being cards that represented geographic migration, reflection on cards representing members of the Lebanese host community identified the selection of the town/area refugees are to settle in as a crucial point in their journey and adaptation. Refugee participants recounted narratives of moving from town to town until they found one in which they felt safe enough to engage in food transactions with the host community: *“I first lived in Laya but we heard that this town treats refugees better, so we moved here”* [Rola]. Participants stated that at first their husbands would do the food shopping, as the women did not yet feel safe in their new towns. However, given that the men did not perform the role of cooking for the household, they would not know which ingredients to swap for cheaper ones: *“At first he [her husband] would go to the shop and of course he doesn’t know what items to swap with what if something was expensive”* [Fatima]. Knowledge of towns that were perceived to be more welcoming was communicated by relatives and other refugees who had previously visited and/or worked in those towns before the war in Syria began.

6.4.2 Experiences of food insecurity as navigating aid systems

Refugee participants were eager to provide feedback regarding the aid systems they were embedded in as they co-constructed narratives using cards that represented coping mechanisms, resources and people working within the humanitarian aid system. The narratives constructed around the cards revealed that they are navigating two forms of aid systems. The first was described as a formal aid system managed and governed by United Nations agencies and established non-governmental agencies. The second was an informal aid system that takes the form of donations. Additionally, participant narratives reflected on their lack of understanding of the formal aid system and their inability to question it, as well as the precarious position they often find themselves in when accessing informal aid.

Navigating the formal aid system

Refugee participants indicated that the forms of aid they receive from the UNHCR vary within the community, with some of them receiving unconditional cash assistance in the form of a debit card which they can use to withdraw cash from an automated teller machine (ATM), and others receiving e-vouchers. E-vouchers are also delivered in the form of a debit card, which can only be used to purchase food in shops registered with the WFP. Registered shops have a purchasing system that enables them to process food purchases using the e-voucher. Refugee participants highlighted how it is often difficult for them to navigate the formal aid system due to a lack of understanding:

Red card [a debit card given to them from an aid organisation] but it has not been activated yet and we don't know what it is for. [Hala]

This month they have registered us again for aid, but we don't know what they want to give us. [Maria]

Furthermore, participants questioned how aid is distributed and the kind of aid distributed:

People get fuel, I don't get any and I don't know why. They don't tell me why I am not entitled to aid. [Sarah]

Last year they helped with the fuel. This year I don't know. [Lara]

Why do I get cash and other people have vouchers? [Zena]

Such gaps in understanding of the aid they are receiving make it difficult for them to account for long-term utilisation of aid as a resource. This is further compounded by the low agency experienced by refugee participants in querying the aid they are receiving. Several participants indicated that when they visited the aid organisation and asked why they had been discontinued from aid, the aid workers would respond by saying, “*Someone pressed the wrong button by mistake*” [Lara]. They would give no further explanation, thus avoiding providing a valid explanation regarding the discontinuation of aid. Participants indicated that such decisions from the formal aid organisations are non-negotiable, thus contributing to their feelings of limited agency:

Now they are doing assessments and every time they come and ask you but you feel it doesn't go anywhere. [Maria]

That's it: you are discontinued, you are discontinued. [Hanadi]

Additionally, participants indicated that unless they go and question the discontinuation of aid, they only receive an SMS informing them that they have been discontinued. Furthermore, they highlighted that the current remote feedback and query process in place for the formal aid system is ineffective: “*We call but no one picks up*” [Lara].

Lack of understanding of the formal aid system also extended to e-vouchers: participants recounted narratives of how this system created spaces of vulnerability as it placed the shop owners in a position of power. One participant, Fatima, said that at first they did not know how to use the e-voucher and so would give it to someone else to buy food on their behalf: “*at first we used to give our card to a man who owned a shop that wasn't a WFP shop and he would go and buy the stuff for us from another shop ... he was a thief.*” Participants recounted narratives in which they described not knowing how much money was in their account and having to rely on the shop owner to tell them. One shop owner said that this sometimes puts refugees in a vulnerable position, as some shops may take the card and “*they withdraw money from it without telling the refugee ... it is because they [refugees] don't know how to use the system so they give us [shop owners] the PIN number to enter it*” [Jad]. This shows the added vulnerabilities that refugee participants experienced as they adapted to interacting with the e-voucher system as a humanitarian technology.

Navigating the informal aid system

Narratives also reflected on accessing other forms of aid that are not tied to official NGOs. Reflecting on interactions with members of the Lebanese host community, refugee participants built rich narratives of an informal aid system that they are heavily reliant on. They described the informal aid system as existing on the periphery of the formal aid system. Participants indicated that sometimes people in the town make donations in the form of clothes or food. They emphasised that when engaging with such direct donors, it is important to accept the aid even if it is not suited to their needs, so that the donors remain familiar with them and they can benefit from other forms of aid, such as food, once they become available:

Even if it is summer clothes being given out in the winter, we go and take them because next time it might be food. [Maria]

While such an informal aid system supports this refugee community, participants indicated that the informality of the system sometimes makes it difficult to access and may sometimes leave them vulnerable. This is especially true of aid being distributed as sporadic charitable donations by local actors rather than formal organisations. One participant recounted how *“My husband went and he stood in line the first day and the second day and they didn’t give him aid. He said, ‘why didn’t I get aid?’ They told him: ‘no, you have not gotten aid from us before [during a previous charity donation].’ My husband told them, ‘no one is telling me when there is food aid.’ How is he supposed to know?”* [Malak]. Additionally, multiple participants recounted how they had been extorted by an informal aid gatekeeper who was taking a commission on the aid he was distributing: *“we have to pay the person in charge 5000LL so he will give us aid”* [Zena]. They indicated that they knew he was pocketing the money. However, they did not have the agency to challenge him as they are dependent on that aid: *“We don’t dare complain because then he will mark our settlement and we won’t get any more aid ... It has happened before”* [Sarah].

Findings regarding refugee participants navigating both the formal and informal aid systems reflect their inability to challenge experiences of vulnerability due to their limited agency within the aid system and the Lebanese host community.

6.4.3 Experiences of food insecurity as negotiations

Coping with food insecurity also required participants to negotiate with multiple stakeholders and service providers. Service providers included actors within the food aid system, but also

other stakeholders whose understanding enables the refugees to spare money for purchasing food.

Negotiating with non-food service providers

Refugee participants indicated that they rely on the understanding and patience of service providers, not accounted for in food security literature, who allow them to delay payments so that they can afford food. These service providers included their landlord, Wi-Fi provider, school bus driver and generator owner. Cards representing these actors were created with participants; upon reflecting on these cards in relation to coping mechanisms, participants indicated that they did not view being late in paying for services as being in debt to someone, and therefore did not use the “being in debt” card when discussing these interactions. Participants explained how their landlord is patient regarding tenants paying their rent late, especially in the winter when job availability in the construction industry is limited: “*The owner of the building is good to all*” [Zeinab]. They indicated the same regarding the Wi-Fi provider and the owner of the generator that provides them with electricity during the hours in which this is rationed. When integrating the season cards within their narratives, participants also indicated that in winter, when their income is low, they discontinue their Wi-Fi in order to cut down on expenditure. They also indicated that the school bus driver gives them leeway in paying for his services late or even in instalments: “*I have money, I give him; I don’t have money ... sometimes I am three months late but he is patient*” [Rola]. They attributed this understanding from service providers to these individuals being “*considerate of our situation*” [Yara] and being from the same neighbourhood: “*he knows us, we are all in the same neighbourhood. He knows us and we know him*” [Hanan]. Others highlighted the importance of their interactions with employers within the Lebanese community. One household highlighted how the eldest male in her household worked for a farm owner who sometimes paid him in kind by allowing him to pick out and take home the vegetables that they harvested. But the vegetables available to him to pick are of poor quality, thus making them unsuitable to be sold in the market: “*if it weren’t for him [the farm owner], we couldn’t buy vegetables. My husband picks up what is left in the field after they harvest*” [Malak]. Co-constructed narratives centred around negotiating with non-food service providers highlight the reliance of refugee participants on the understanding of these stakeholders.

Negotiating with local shop owners

Participants described multiple negotiations regarding the utilisation of aid and interactions around the purchasing of food products and other household goods. They indicated that there is a whole economy based on the sale of e-vouchers:

We sell our food voucher for 20,000LL less [than its value] and we use the money to pay rent ... my husband joked about selling it to the shop owner and the shop owner agreed. [Malak]

Another participant said that she does not sell her e-vouchers so that the landlord does not perceive them as a means of paying rent.

When reflecting on their experiences of negotiating on the prices of products with shop owners, participants discussed how not knowing the prices of items beforehand puts them in embarrassing positions they did not experience before becoming refugees. Using the shop owner dialogue card, they recounted experiences of wanting to put items back once they realised the price at the point of purchase, but feeling too embarrassed to do so. Participants did, however, indicate that some shops in which they use their e-vouchers allow them to buy non-food items with the vouchers, inputting the purchased goods as food items. In this instance, a negotiation takes place between the participants and shop owners in order to establish a loophole in the formal aid system; this provides refugees with more agency regarding the use of aid. *“We also use the food vouchers to buy cleaning detergent for the house, don’t we need those [to have healthy food]?” [Zena].* Participants also reflected on the importance of being able to buy on credit as a means of coping with food insecurity:

I buy on credit but only from the shop owner that I use my voucher with – that way, next month when I get the voucher, the money is immediately withdrawn from my voucher card. [Rola]

I buy from the local shop in the building using credit, and at the end of the month we pay him back. [Fatima]

They indicated that such negotiations are built on the shop owner’s familiarity with them – and, in one case, on the shop owner being related to a household in the building. While such a system enables them to cope with food insecurity, participants also indicated that it limits their ability to haggle for lower prices of items: *“For example, [if] I am going to get yoghurt and I am*

buying it on credit, I can't tell him, 'sell it to me for 2,000LL instead of 3,000LL,' because I am not paying with cash" [Fatima]. Furthermore, they indicated that it is difficult to buy on credit from some shop owners as they know that the owners are sometimes "*as poor as us*" [Sarah]. Interviews with shop owners indicated that they only permit refugees they know to buy on credit. However, one shop owner indicated that "*I allow it if I know their employer; that way if they are late in paying me back, I go to their employer to get the money*" [Larissa]. Such interactions between shop owners and refugees, which are mediated by refugees' employers, further place refugees in a position of lower agency within the Lebanese host community.

Low agency within negotiations

The narratives co-constructed by refugee participants highlighted the challenging nature of negotiations in which they were reliant on the understanding of others. One participant indicated that at unexpected times, the bus driver eventually sends them an SMS asking them to pay: "*he tells the children, 'Tell your parents so and so you owe this much, etc.'*, and if the children didn't tell us he would send us a message on the phone" [Rola]. Furthermore, although using e-vouchers to purchase non-food items did increase refugee agency in regards to how aid is used, participants indicated that not all shop owners engage in such negotiations. The limited number of shop owners using this loophole places refugees at a disadvantage, as the shop owners who are willing to do this have increased their prices: "*He is more expensive but I can use the voucher to buy washing liquid*" [Zena]. This is because they know that refugees will not challenge the prices, given that they are being allowed to use their e-vouchers to buy non-food necessities.

Another restriction to participants' ability to negotiate the purchasing of food is lack of transportation. Some households identified how having access to a car, brought with them from Syria or belonging to their employer, enables them to go to shops outside the town they live in to buy food at cheaper prices. However, very few in the community have that option and therefore their access to competitive prices is limited to the shops in their vicinity. When asked if they go to the vegetable market that has cheaper food, one participant responded by saying, "*No, by God, we don't have a car*" [Hanan]. Furthermore, even those with cars indicated that travelling to other towns makes them legally more vulnerable: "*We brought our own car with us from Syria, but now it is illegal: we can be stopped at a checkpoint*" [Dalia]. Participants also indicated that they find the cost of public transportation prohibitive to accessing shops that are further away.

Refugee participants and shop owners both indicated that in some cases the shop would have a driver who would drive refugees and their purchases back to their settlement: *“We [the shop] have a driver that takes people and their purchases back home”* [Mohammad]. However, the refugee participants debated the safety of getting into a car with the driver: *“Maybe if we [the women] are together, then yes, but I would not get into the car alone with him [the driver]”* [Maria]. Therefore, it is not only lack of transportation that restricts refugee participants’ ability to patronise shops with competitive prices, but also the unavailability of ‘safe’ transportation.

6.4.4 Community practices for coping with food insecurity

The co-constructed narratives of experiences of coping with food insecurity also revealed several community practices that refugee participants were engaging in to cope with food insecurity. These included sharing aid, knowledge and resources to ensure that they had enough left over to purchase food. Additionally, participants engaged in sharing practices that enabled them to purchase food products they would not otherwise have been able to afford. However, when exploring such practices, it became evident that the lack of social cohesion within the community confined such practices to subgroups within the community.

Sharing Aid

When recounting narratives based on cards representing resources and extended family members, participants indicated that living with extended family, some of whom are entitled to aid while others are not, allows them to pool resources in order to meet the needs of the household. One participant explained how they use food vouchers received by her widowed sister to buy food for the whole household, and then rely on her husband’s and sons’ incomes to support them throughout the month: *“We use her [the sister’s] voucher to buy the essentials, rice, lentils, ghee, sugar for the household”* [Lara]. Another participant recounted how when she was living with multiple families, *“One person will manage the money and pay for everything, and at the end of the month the expenses from rent to electricity and food were divided by five because we were five families”* [Zeinab]. A few participants emphasised that they rely on their relatives sending them some of the food aid that they are receiving in Syria: *“there is the Red Crescent that distributes food [in Syria] ... so they don’t use them all, so that I don’t buy from here, they send them from there. From the food that they have”* [Hanan]. These narratives of sharing aid as a coping practice were confined within families, further highlighting the importance of familial relations in the definition of community.

Sharing of material resources and food

Participants provided examples of sharing of material resources other than aid. In one instance, a participant indicated how, when she runs out of gas in the stove, she carries the pots and continues cooking the food in her neighbour's kitchen. They also highlighted how medications are sometimes used as a communal resource:

The Panadol pills rotate among us. [Sarah]

We are neighbours, especially if it is pills but if it is liquid and it is almost expired you can't. [Maria]

If my son is sick at night, I call Maria and ask her if she has medicine. [Zena]

We benefit a lot from our neighbours and we help each other. [Hala]

Refugee participants in group 2, who were split into two apartments, also indicated that they share their Wi-Fi connection and electric supply across households in order to share the costs of the service: *"We split the Wi-Fi bill and generator bill between both of the houses – that way we can afford it"* [Lara].

Refugee participants described their practices of food sharing as being informal. Participants indicated that in times of need, they borrow small quantities of food from one another: *"Sometimes you have to borrow from your neighbour garlic, onions or rice"* [Zena]. Participants emphasised that borrowing small amounts of food was preferable to borrowing money to buy food: *"If I take it from her it is better than borrowing money"* [Sarah]. They indicated that they can only borrow food from one another in small quantities because *"we are living in the same situation"* [Fatima]. Consequently, participants resort to sharing food only in times of need: *"yes, sometimes [when] I need something I send someone to my neighbours or friends to get [it]"* [Zena]. Participants described sharing food resources as a system of care that is practised in good faith: *"They don't ask for it back, but you return it out of good faith because you can't ask for something else if you need it later on"* [Sarah]. They identified the unwritten agreement of sharing food when it is available to them as a means of paying back for food that they had previously borrowed:

For example, [if] you are in a tight spot – for example, you need salt – you take some from your neighbour and then when she is in a tight spot she takes from you. It is like

borrowing and paying back. But you can't just ask for it and she gives you without anything in return later, you know what I mean? ... It is borrowing food and returning it. [Hanadi]

Other than engaging in the aforementioned system of care, in which food was shared, participants recounted narratives of collectively purchasing food items that they would not otherwise have been able to purchase:

Once I wanted to buy a box of tomatoes, but it was expensive, so Fatima and I bought it together and we split it. [Maria]

We do that, for example, if we want to buy olive oil which is expensive, we buy it and divide it amongst us ... that way we can afford to pay for it. [Zeinab]

Two participants also co-constructed a narrative in which they recounted that they sometimes share transportation costs in order to go shopping:

If I know that she [Fatima] is going to the vegetable market, I go with her. [Rola]

Despite the forms of sharing of resources exhibited by the participants, they stated that such acts do not extend to sharing of meals or privately owned resources that are accessed frequently such as fridges. When participants were discussing whether they would sometimes send their children to eat at a neighbour/relative's house, they indicated that this would be unacceptable:

I don't send my children to eat at my relatives; I hope to die before we get to that point.
[Zena]

We don't send our children to other people's ... Thank God we stay in our house. [Amal]

Such restrictions are derived from the notion of maintaining a lifestyle in which their children do not feel that they are refugees or different to other children. Furthermore, when discussing sharing space and resources, participants identified that they value their household privacy; this makes it difficult for two households to share a fridge. One participant stated that despite her neighbours being akin to her sisters, “*Each household has its own privacy ... We were used to living as independent households [back in Syria]*” [Maria]. Additionally, participants

highlighted that a barrier to sharing resources is the consideration that their neighbours are experiencing the same difficulties as they are and therefore do not have resources to spare: “*We are all living in the same conditions*” [Sarah]. One participant indicated that it is difficult to ask those that have cars for help, as she does not want to be seen as a burden on others: “*It is not right to keep relying on your neighbours*” [Hanan]. Consequently, the limited resources available within the community restrict refugees’ ability to leverage their resources into a sharing economy.

Social cohesion and sharing practices

Refugee participants in group 1 described their sharing practices as based on their relationships with one another:

Didn't I tell you from the first time [you visited us] that the homes here in the building are like one home, thank God there is no difference. [Sarah]

We are like a family. [Zeinab]

They commented that other women in the community do not engage in their sharing practices because “*Some people like to keep things private but we [the refugees in the group engagement] are all experiencing the same thing and we came from the same socioeconomic class*” [Sarah]. Participants who opted for individual design engagements – and the women in group 2, who are a family unit and only engaged in social practices with each other – stated that they did not engage in sharing practices with other women in the community. They attributed this to not having good social relationships with their neighbours:

I do not mix with others ... I do not let my children play with the other children. [Chaza]

I go pay social visits [to the neighbours] sometimes but it is not the same as family.
[Malak]

Another participant stated that she does not like to feel in debt to anyone, even to her neighbours, and therefore does not partake in sharing: “*I would never ask for anything, because what if they want me to repay it at a time when I don't have enough money to repay it?*” [Hanan]. The lack of social cohesion between participants engaging on an individual basis and

those engaging in the group design engagements was also reflected in their lack of sharing and collective practices:

For example, [buying] collectively? No – I told you, my husband is extremely independent and likes to buy our things on his own. [Chaza]

This is another instance where we can see collective actions as confined within how refugee participants define their community.

Sharing of knowledge

The sharing of knowledge was considered by refugee participants as the most feasible form of community support they can provide one another. Participants highlighted how they had previously shared with each other knowledge of cheap apartments freeing up. As a result, all of them live in the same building – or, in two cases, in close proximity to it:

For example, Fatima would tell me, this person's apartment is now empty; if anyone wants a home, tell them. [Zeinab]

You know immediately [of a flat emptying]. [Fatima]

You even know before they move out because you would know they are struggling [with paying rent]. [Rola]

Sharing of knowledge was also extended to encompass used furniture sales and where to buy cheaper or discounted food:

If I see that a shop has sales or an item on sale I immediately tell the others. [Fatima]

I would know that someone is looking to buy something specific, so if I see it at a good price I tell them. [Zeinab]

Sharing of knowledge to cope with food insecurity was not restricted to the availability of cheaper products; it also extended to the sharing of ways to prepare food in order to cope with food insecurity. In one of the design engagements, a participant asked one of the older

participants about how to pickle an item of food so that she could set it aside for when their income is lower during the winter.

The importance of the sharing of knowledge to facilitate coping with food insecurity was further asserted through the co-creation of the booklet. During the co-creation process, refugee participants indicated that the best advice they can give newly arriving refugees is to seek out the knowledge of other refugees who arrived before them. Examples included in the booklet pertained to seeking advice about finding cheaper shops: *“Ask relatives and neighbours about shops that sell food at a cheaper price than others”* [Hanadi], and how to manage household finances: *“Discuss household expenses with other household members and seek advice from other refugee women”* [Maria].

The findings that constitute this theme highlight the importance of sharing peer-to-peer knowledge among refugee participants as they adapt to being refugees and being food insecure.

6.4.5 Potential technologies

My findings indicate that the use of technology by refugee participants in coping with food insecurity is limited. There were attempts to use mobile phones in order to increase their income; however, these were not successful. Despite this, the participants and I considered how technologies could be used to improve their food security through facilitating the sharing of knowledge and new forms of food purchasing.

The current role of technology in addressing food insecurity

Throughout the design engagements, participants reflected on the current and potential roles of technologies in supporting them in coping with food insecurity. At the time of the design engagements, participants did not consider that technology was playing a significant role in this respect. They did not view the e-voucher system as a technology they are using as it is not situated within their community and is not a system that they directly interact with. However, the findings in section 6.4.3 show that the restriction within the e-voucher system, as a humanitarian technology that limits refugees to only making food purchases, places refugee participants in a position of low agency when negotiating with shop owners. Furthermore, out of the set of technology cards, only the mobile phone dialogue card was used when participants were co-constructing narratives of coping with food insecurity. Within the context of food insecurity, mobile phones were only used to receive SMSs of when aid was being distributed. Two participants said that they had attempted to use Facebook to find jobs for themselves so

that they could contribute to their household income and therefore cope better with food insecurity. However, both indicated that it had not been helpful:

I saw on Facebook there was a job that I can do, I have a degree in administration you know, but when you click on it you see that they want you to go to Beirut for the interview ... I couldn't do that. [Chaza]

We have children so we can't leave our homes to go to work, but I keep looking on Facebook to see if there are jobs I can do while I am at home. But I haven't found anything. [Zena]

Zena, who had been a hairdresser in Syria, then elicited my help to set up a Facebook page for the hair salon that she runs from her house as she wanted to further advertise her services as a beautician to people in the town outside her community.

When prompted to further reflect on how technologies might play a role in improving their food security, refugee participants throughout the design engagements discussed several possibilities that stemmed from their current experiences and would also work to leverage the existing food coping strategies that were identified through the study.

Technologies for sharing of knowledge

After the booklet was completed, participants requested that it be digitised and made available online so that they could share their experiences and advice with others:

That way we can show it [the booklet] to others. [Yara]

Yes, I can share it [the booklet] on Facebook and WhatsApp. [Zena]

This request stimulated discussions that revisited the importance of sharing and receiving knowledge on coping with food insecurity and being a refugee. A website was made to host the booklet and shared with refugee participants for them to disseminate within their network.

Participants also discussed having a platform through which they could better access knowledge on current food sales and discounts as well as the prices of products in different shops, so that they could make a shopping plan and budget better before going into a shop.

Zena: What a nice idea [having an online list of items and prices].

Reem: Do you think it will help?

Sarah: Yes, it will help.

Zena: The list is nice because then you decide I want this thing or I don't want this thing. Either I can get it or I can't get it. I can decide based on its price.

An interview with a shop owner indicated that he is using Facebook to post about offers available in his shop:

I use my phone to post on our Facebook page when we have offers. [Mohammad]

However, refugee participants were not aware that he had a Facebook page for the shop despite some of them frequently visiting it to use their e-vouchers. This was the only shop owner who indicated using social media for marketing. Another shop owner indicated that they did not use social media marketing for the same reason that they had not become a registered shop with the WFP:

We already have a lot of Lebanese customers, thank God ... we do not want them [refugees] to come and overcrowd the shop and affect our existing customers. [Hakim]

Refugee participants also reflected on how technology might facilitate the sharing of other types of knowledge regarding shops. The importance of how they are treated by shop owners and how that often influences their choice of where to do their shopping was an emergent theme when discussing what technology might make more visible. One participant recounted how they would drive to a shop out of town which is much cheaper; however, they dislike going there because the shop owner is disrespectful toward Syrian refugees. Other participants indicated that even if a shop is cheaper, if the owner is rude or makes them feel uncomfortable then they will not do their shopping there:

I don't like him, he is unwelcoming, so I do not shop there. [Maria]

Even if it is cheaper, why should we benefit someone who is rude to us ... we should benefit the people that are good to us. [Fatima]

Participants explained that they already share this type of knowledge and their experiences in shops amongst themselves.

Technologies to facilitate food purchasing

Technology was also discussed as a tool to support refugee participants in food purchasing. Only three of the participants had access to transportation; those that did not saw value in a technology that would facilitate ordering products online and having them delivered to the settlement:

The shop is cheaper but it is far ... we can't go there. [Lara]

Delivery would be good for people like me, who don't have cars. [Maria]

When prompted to further discuss the possible benefits of online shopping, participants indicated that they could order from the same shop and then split delivery costs, which is in line with the current collective purchasing practices that they engage in. However, the idea of online shopping and delivery without visiting the shop raised several questions among participants:

But can we do that if we are using e-vouchers? They say that you have to use it in person.
[Rola]

But don't you want to go to the shop? Sometimes I see things in the shop that I want but had forgotten to put on my shopping list. [Zena]

The concern regarding whether they can engage in collective purchasing online due to the restrictions of the e-voucher system is another reflection of how the restrictions within aid technology clash with refugee participants' practices of coping with food insecurity.

All the shop owners registered with the WFP raised similar concerns: *"I do not mind doing deliveries, I would even cover half of the delivery cost but it would have to be for people buying using cash ... because for the e-voucher we need to make sure it is them"* [Jad]. However, one shop owner indicated that if a technological system maintained the level of verification required by the WFP, then he would not see a problem with an online ordering system.

The findings presented for this theme highlight how the current humanitarian technology that refugee participants rely on to access food aid restricts their ability to further leverage their practice of collective purchasing.

6.5 Discussion

The findings from this study further highlight the complexities of refugee experiences of food insecurity and the nuanced understanding needed to design technologies that contribute to refugee community resilience. Parallels can be drawn with HCI literature on food and refugees. Projects by Schmitt et al. (2016) and Irani et al. (2018) consider how technologies can be designed to map out food aid and address the knowledge gap over food stamps, respectively. However, my findings indicate that in order to move forward with designing technologies for sharing knowledge and facilitating food purchasing, I need to account for the temporality of refugee experiences and the low agency experienced by refugee participants. Furthermore, I need to consider how community values, and the current collective practices taking place within the community, feed into the configuration and design of technologies for community resilience.

6.5.1 Accounting for the temporality of refugee experience

My findings are in line with the current literature regarding refugee household food security and did not reveal any new household coping mechanisms. They do, however, provide a holistic understanding of how the coping mechanisms employed are shaped by refugee experiences of coping with food insecurity as well as their previous experiences. This understanding emphasises the need to support refugees in adapting to the new coping mechanisms that they need to adopt when they become refugees. My findings provide a rich account of refugee experiences of food insecurity that describes the interplay between the temporality of refugees' journeys and their food and financial practices.

In their recent study on the potential determinants of food security among refugees in the US, Nunnery and Dharod (2017) highlight how, for the recently resettled, coping with food insecurity was shaped by their previous experiences of food insecurity in the refugee camps where they lived before moving to the US. They found that eating one or two meals each day was normalised through their experiences in camps, as was relying on staple foods such as rice and pasta. Such mechanisms were also reported by the refugee participants I engaged with. However, given that the participants in my study had just recently become refugees, my findings show that coping with food insecurity was a relatively new experience that refugees

had to adapt to. Participants reported that in the initial phases of their refugee experiences, they had to learn how to shop on a budget as well as to prioritise staple foods. Similarly, refugees in Australia have indicated that limited food knowledge and preparation skills were contributors to experiences of food insecurity (Lawlis et al., 2018). My findings extend that understanding by highlighting how knowledge exchange among refugee participants aids them in acquiring new food skills needed to cope with food insecurity. Such findings indicate that as refugees' journeys progress, their informational and material needs change (e.g. finding a place to live with cheap rent was a primary concern initially, but once they were settled in, their concerns shifted towards finding local shops that sold cheaper food). The temporality of refugee practices of coping means that shifts in resources and knowledge needed to cope with food insecurity occur at different points in time. Such findings resonate with the work of Daurte et al. (2018), who emphasise the importance of the timeliness of information delivered to forced migrants.

The temporality of refugee experiences can also be seen when examining financial practices. Refugee participant accounts highlight how the experience of becoming a refugee is one of finding oneself in a new context, to which one has to adapt by learning new financial practices. This contrasts with the findings of Kaye et al. (2014), who highlighted that financial practices utilised are often related to upbringing. Therefore, there is a need to support refugees in adopting new practices in order to cope with their new contexts and food environments. Participants indicated that they had to adopt new practices they had not employed when they lived back in Syria. Additionally, previous research has recommended designing financial tools that facilitate users in creating short- and long-term financial goals (Vyas et al., 2016). This may prove to be more challenging in the context of refugees, as participants highlighted through the title of the booklet that they are in a state of day-to-day survival in which their food environment and the aid system are continuously shifting. Participants indicated that they often do not know what type of aid they are receiving and/or when their aid may be discontinued. The findings also indicate that in the early phases of the refugee journey, temporary households form that include extended family members. Consequently, there is a need to further understand the nature of how finances (Vyas et al., 2016) and aid are managed within such households.

6.5.2 Accounting for experiences of low agency in coping with food insecurity

Studies on coping with food insecurity among refugees in Lebanon have highlighted that severely food-insecure households are more likely to rely on gifts or welfare; often, they have exhausted all coping strategies and feel that they can't do anything (Ghattas et al., 2015). Participants in this study indicated that their experiences were similar; however, they

highlighted their reliance on negotiating with non-food-related stakeholders, such as the landlord and the bus driver, to be key in coping with food insecurity. This indicates that experiences of coping with food insecurity constitute an interplay between food coping mechanisms and negotiation strategies. The findings on participants' negotiation of payments resonate with previous research by Vyas and Dillahun (2017), who found that low-socioeconomic-status individuals in Australia negotiate more manageable payment schedules with service providers. However, in that context, these are formal negotiations with established water and energy service providers. This contrasts with the findings from this study, where refugee participants are informally negotiating payments with no definitive schedules and payments are made when money is available and/or they are pressured by service providers to pay.

Refugee participant narratives of their experiences of negotiating services and purchases surface experiences of low agency that are intimately tied to (1) the limited feedback mechanisms within the formal aid system, (2) fear of losing access to informal aid, (3) the nature of how e-vouchers are used, and (4) the limited availability of transportation. Their experiences of engaging with the formal and informal aid systems exhibited instances in which participants would have liked to query the nature of the aid being provided or report unjust aid distribution. However, they did not feel that they could do so, due to the lack of responsiveness of the formal aid system and the fear that 'complaining' would result in informal aid being withheld from them. The fact that participants wanted to co-create a booklet that reflected their experiences that they could show to NGO workers when they visited them, and their request to digitise it for further dissemination, reflects how refugee participants do want to provide feedback to the aid and host communities. The participants were highly motivated to document their experiences in a more proactive manner in which they had more agency regarding what to share, how to share it and with whom they share it.

Narratives also reflected limited refugee agency in negotiations due to the e-voucher system itself. Their initial limited understanding of the e-voucher system created a knowledge asymmetry that placed some refugee participants in a precarious position where they were reliant on others in managing their e-voucher. The narratives recounted show how the reliance on shop owners who might not have been trustworthy entailed interactions with the e-voucher system to be spaces in which refugee participants' vulnerabilities were amplified. Additionally, the restriction of the e-voucher system to food items created a space in which refugee participants were reliant on certain shop owners for purchasing non-food items. The

consequence was a relationship between refugee participants and shop owners in which refugees had to accept the higher prices of the items being sold to them. It is important to note that such negotiations, which enable both the refugees and the shop owners to work within a loophole in the e-voucher system, are undocumented and would need to remain so in order to maintain them as a means of coping with food insecurity. This is similar to the case identified by Vines et al. (2014), where participants of low socioeconomic status were concerned about the digital documentation of finances, which would result in the loss of government-provided benefits.

Lastly, the lack of transportation available to some refugees is a common contributor to food insecurity (Nunnery & Dharod, 2017). My findings support this: participants indicated that limited transportation reduces their ability to access shops with more competitive prices and leaves them reliant on nearby shops. The lack of access to competitive markets limits refugee agency in questioning the prices in shops available to them. Furthermore, my findings highlight how the lack of transportation is compounded by refugee participants feeling unsafe when accessing public transportation. Therefore we need to account for the need for the availability of 'safe' transportation. Dillahunt et al. (2019) identified that online grocery delivery technologies enable underserved communities to access healthier food options, especially when the technology allows for multiple forms of payment and prices are affordable. Refugee participants did identify that online grocery delivery might help them overcome the lack of safe transportation, and shops were found to already be providing grocery delivery as a service.

6.5.3 Accounting for cooperative experiences of coping with food insecurity

A recent study by Chaaban et al. (2018) calls for humanitarian aid organisations to account for community-based variables in order to improve the effectiveness and accuracy of food aid targeting. My findings further support this call by showing that several community practices contribute to households coping with food insecurity. Despite scarce resources and not wanting to be a burden on others, refugee participants are sharing food and medicine as a means of coping. Ganglbauer et al. (2014) have highlighted how online platforms for food sharing create a space in which sustainable food consumption can be strived for among communities. Within the context of refugee communities, sharing of food has been previously discussed as a means of creating spaces in which refugees may expand their social capital and therefore enhance their integration into their new communities (Almohamed et al., 2017). However, when exploring the possibility of the use of sharing platforms in order to aid in coping with food insecurity, participants strongly indicated that given that they are all experiencing poverty, it is difficult

for them to share resources any further within the community. My findings show that these sharing practices are limited to certain circles within the community and that some community members were not comfortable engaging in this manner with others. Participants engaging in sharing viewed this as a system of care where resources were shared in a manner that did not warrant any documentation and was premised on helping each other when in need. Such notions of care have been previously explored in other communities such as maker communities where we can draw parallels in that these acts of care collectively work towards keeping the community ‘afloat’ (Toombs et al., 2015). Although this system of care is frequently used, participants’ lack of documentation of it raises the question of whether documenting these acts of care would transform the system from one that is based on their relationships with one another to one purely based on the transaction that takes place when food is borrowed and returned.

While this system is one of caring to cope with food insecurity rather than more explicit self-mobilisation for change, refugee participants are engaging in collective purchasing that may be further expanded and leveraged as it does not rely on borrowing resources from one another. Furthermore, the study revealed that there is a lack of a unified sense of community, with some refugee participants not engaging with others; I needed to consider how a technology for collective purchasing would account for that. In the next chapter, I further explore these notions through (1) an overview of literature on alternative food networks and community technologies for food security and food sustainability, and (2) a study that explores the potential of a technology for collective purchasing to address refugee food insecurity and community resilience.

6.6 Adapted FCR

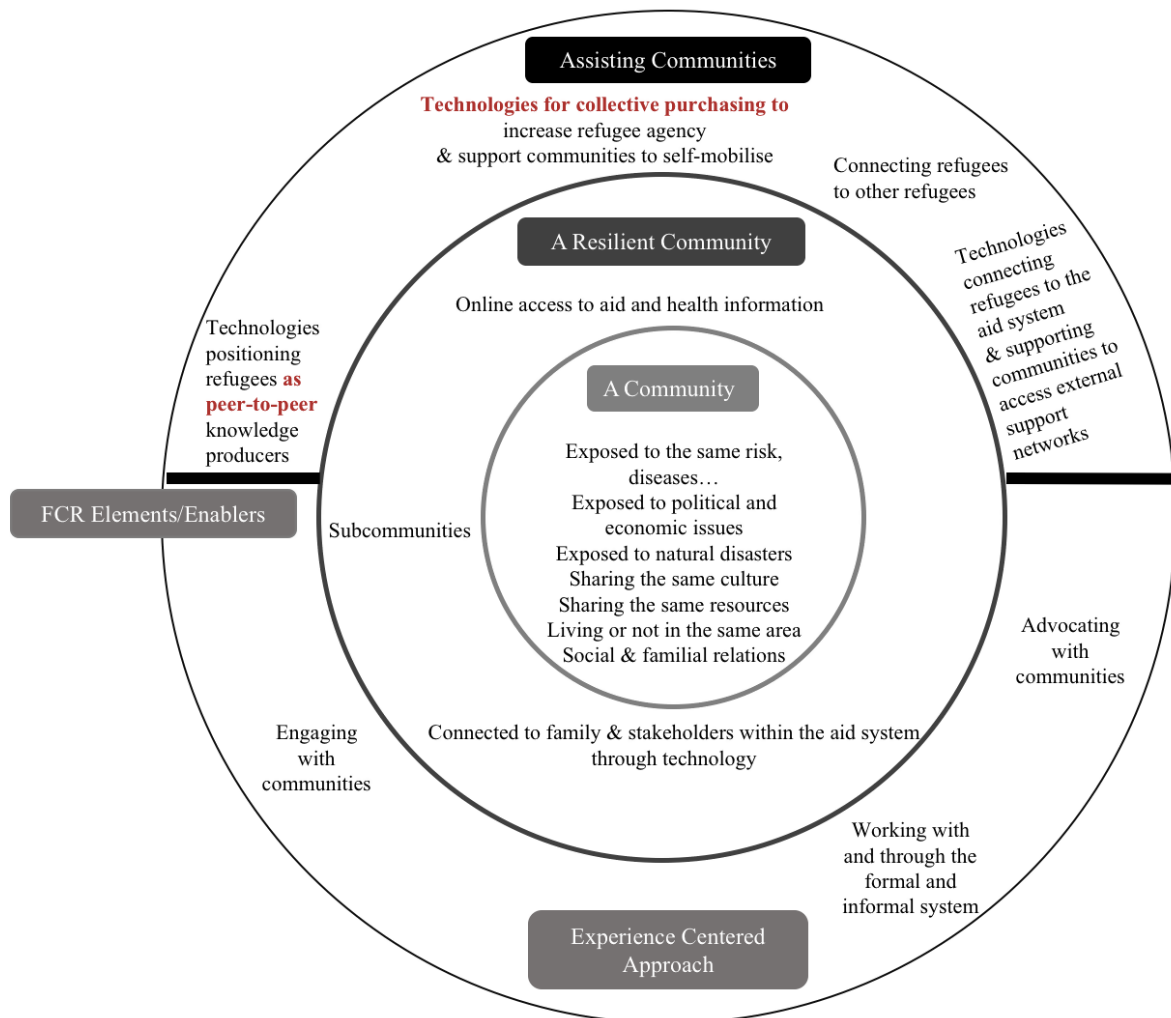


Figure 6.8 The adapted FCR based on the findings in this chapter (changes in red)

6.6.1 A resilient community

The findings presented in this chapter further highlight the presence of subcommunities within the geographically defined community; these are formed based on familial and social relationships (Figure 6.8). Additionally, I show how such relationships influence community practices of coping with food insecurity, thus highlighting the need for us to consider subcommunities when designing for refugee community resilience. Furthermore, the findings show that refugee participants adapt to their new context of food insecurity, which is in line with community resilience being enacted through adapting to shocks and stressors (IFRC, 2014).

6.6.3 Assisting communities

In this chapter, I built on the findings of [Chapter 4](#) and highlighted how the lack of agency experienced by refugee participants influences their ability to negotiate with shop owners. Furthermore, the low agency of refugee participants to query the aid system and flag injustice within formal and informal aid systems is indicative of how the refugee community is not

‘connected’ to service providers and aid infrastructure. Connectivity to external stakeholders and networks is considered to be a main element within the FCR in assisting communities. When considering the adaptation of refugees to new experiences, it is evident from the findings in this chapter that refugees connect to each other to facilitate the gaining of knowledge (e.g. on how to shop on a budget) so as to be more resilient to their new experiences of food insecurity. Such findings highlight that we need to start considering how we may design digital technologies that connect refugees to one another. Connecting refugees to each other for knowledge exchange may work towards mitigating the information asymmetry that left refugee participants vulnerable. The information asymmetry that resulted from not knowing food prices beforehand, the aid system and the e-voucher system made it difficult for participants to be resilient in the face of their new experiences of food insecurity. Furthermore, the lack of resources within the refugee community inhibits the sharing of resources, thus making it difficult for the community to ‘manage assets’ to work towards community resilience.

The limited availability of resources within the community, coupled with the low agency experienced by refugees, requires us to consider how humanitarian technologies may be designed and configured in a manner that connects refugees to external support networks and their peers, and increases their agency to enable them to self-mobilise. Consequently, I adapted the FCR to include designing technologies for collective purchasing and connecting refugees to other stakeholders and for peer-to-peer knowledge exchange as a means for assisting communities.

6.7 Chapter Summary

By focusing on refugee experiences of community resilience in response to food insecurity, the findings in this chapter further flesh out how the refugee community experiences food insecurity ([RQ1](#)). Reflecting on resilience as a conceptual model for food security, Bene et al. (2016) emphasise that resilience should be viewed as an active ability to absorb, adapt and transform during and after crises. Refugee participants’ narratives are in line with that definition, as well as the Framework for Community Resilience (FCR) guiding this thesis, as their experiences are of adaptation. However, the data also shows that participants’ experiences are of day-to-day survival and that they are not actively working towards addressing their underlying vulnerabilities or recovering from the shock of being food insecure. Such findings are in line with critiques of community resilience: Evans and Reid (2014) highlight how community resilience within contexts of poverty and crisis takes on the form of survival rather than development. Therefore, in the context of this refugee community, we find that their

resilience, characterised by adaptation, is not in line with the call for resilience to bridge between humanitarian and development approaches to food insecurity (Béné et al., 2016).

Furthermore, the findings in this chapter highlight that refugee experiences are temporal in nature; therefore the activities that they engage in to be resilient are also temporal (RQ1). Additionally, the collective activities in which participants currently engage to be resilient to food insecurity, such as sharing of food, vary depending on how they define their subcommunities. The findings regarding potential technologies also show how such definitions of communities influence how some participants are willing to interact with technologies for community resilience (RQ2). Social cohesion is not only a key descriptor of a resilient community, as defined by the FCR; it has also been shown to strengthen the resilience of communities (Béné et al., 2016). This further calls into question how refugee community resilience can be worked towards when there is a lack of social cohesion, and also how technologies for self-mobilisation, such as collective purchasing, could be designed and configured to account for subcommunities. This notion is further explored in the next chapter.

Additionally, the findings presented in this chapter highlight that the e-voucher system, as a humanitarian technology, contributes to refugee experiences of vulnerability (RQ3) and restricts participants' abilities to leverage existing co-operative practices that can contribute to their community resilience (RQ1). Experiences of low agency that were intimately tied to the e-voucher system call into question how humanitarian technologies to deliver aid may result in low agency and inhibit refugee communities' ability to work towards resilience (RQ1). It has been noted by academics that resilience literature has yet to consider how agency and power, within socio-political dynamics, affect the capacity of communities and even systems to be resilient. Furthermore, the findings regarding the e-voucher are in line with critiques of digital humanitarianism that express concern regarding how technologies replicate and/or amplify existing power relations within the humanitarian aid system (Jacobsen, 2015). Refugee participants had low agency when engaging with shop owners, due both to their own lack of familiarity with the e-voucher system and to shop owners leveraging restrictions within the e-voucher system to exercise their power as the new mediators of food aid (RQ3).

In summary, the findings from this chapter indicate that for food aid technologies to contribute to refugee community resilience, they should attempt to increase refugee agency in an effort to support self-mobilisation within the community. Additionally, technologies may be designed to leverage the cooperative practice of collective purchasing as well as for sharing of

information in order to facilitate refugees in coping with food insecurity. However, it is essential that such technologies should consider the temporality of refugee experiences by allowing for the sharing of knowledge that is relevant to participants at the stage they are currently in. Furthermore, it should be considered how humanitarian technologies may be configured to account for the lack of social cohesion that was surfaced within this case study. It is with these matters in mind that I move on to the following chapter, where I present a case study that directly builds on the findings and discussion above to demonstrate how a community-designed technology may be configured and designed to improve food security and refugee community resilience.

Chapter 7. Designing for Refugee Food Security and Community Resilience

7.1 Introduction

The study in [Chapter 6](#) highlighted the potential for technologies to improve food security through facilitating (1) food purchasing (through leveraging collective purchasing), and (2) the sharing of knowledge. These ideas are expanded on in this chapter through a study that envisioned a potential technology and mimicked its functionality with participants using prototypes. More specifically, in this study I respond to:

- *Research Question Two (RQ2)* by (1) outlining a possible technology that would enable collective purchasing and the sharing of knowledge, and (2) investigating the potential for such a technology to improve refugee food security, agency and in turn community resilience.
- *Research Question Three (RQ3)* by identifying the design considerations that need to be accounted for when designing such a technology.

I used multiple methods, including vignettes and user journey mapping, to further refine the ideas generated in the previous study ([Chapter 6](#)); this was followed by a study in which I used paper-prototypes. The study constituted of design engagements that were configured to mimic the processes that refugees would engage in if they did have a technology that facilitated collective purchasing and increased their agency in negotiating with shop owners. The study was informed through face-to-face semi-structured interviews with shop owners, some of whom are registered with the World Food Programme (WFP). The interviews also aimed at exploring with shop owners the feasibility of them engaging with refugees in a collective purchasing process.

7.2 Background

In this section, I present a synthesis of relevant literature regarding technologies that aim to facilitate food purchasing and collective purchasing, as well as knowledge-sharing platforms. This literature and the findings from [Chapter 6](#) were used to envision the potential technology mimicked in this chapter.

7.2.1 Technologies and current food purchasing interactions

Alternative food networks (AFNs) and online group shopping

AFNs, of which collective purchasing is a form, are food economies that have arisen mainly in Europe as part of local and environmental movements as well as anti-consumerist movements (Goodman et al., 2012). An element shared by AFNs is that they aim to connect local

communities directly with local producers and relationships between stakeholders are often defined by a common set of ideals (e.g. supporting organic food production) (Goodman et al., 2012). While some AFNs aim to facilitate community members purchasing food from local shops as individuals, others such as the Gruppi di Acquisto Solidali in Italy consist of groups of households coordinating to purchase foods from producers who are aligned with their ethical and solidarity principles (Fonte, 2013). Such models intend to leverage consumer agency in order to influence the food system and environment (Fonte, 2013). An examination of the motivations and functioning of such a collective purchasing group in Valencia (Spain) identified that the people involved are motivated by creating connections in the community and changing both the current food system and the social and political system in which they exist (Moragues-Faus, 2017). The study also showed that the group governance structure is comprised of several committees for the centralisation of orders, receiving and organising purchased foods and logistics (Moragues-Faus, 2017). Additionally, the group, like other AFNs, has established consumption criteria based on its principles; for example, it only purchases organic food from small producers it trusts and has direct contact with (Moragues-Faus, 2017). Motivated by the above research, Prost et al. (2018) encourage HCI researchers to design technologies that facilitate communities having more of a say in how their food is produced and distributed. However, we need to question how such models of AFNs, and the technologies that may mediate them, may change in contexts of extreme austerity and low agency, such as that of refugees experiencing food insecurity. There is, however, an ample amount of research on online group shopping that I can draw on. Platforms that enable online group shopping, such as Groupon, have been explored as more consumer-driven technologies, rather than being driven by environmental principles. Liu and Sutanto (2015) and Mladenow et al. (2016) outline the different business models for group purchasing that have been enabled through technology. The bottom-up model is one where individuals come together online to benefit from quantity discounts as well as to negotiate deals (a dynamic pricing process) with vendors (Liu & Sutanto, 2015; Mladenow et al., 2016). It is within the context of this bottom-up model that Mladenow et al. (2016) argue there is a shift in power from vendors to community members. However, such technologies have yet to be explored as a means of addressing food insecurity.

Food-sharing technologies

Advocates of sharing economies (swapping, trading, or renting products and services) argue that they have the potential to address limited access to resources as well as social inequalities (Botsman, 2014). Such rhetoric encourages the exploration of sharing economies as alternative

economies that aim to address food insecurity. Within the field of HCI, models of food sharing mediated through technology have been investigated. However, this has been primarily done from the perspective of sustainability and reduction of food waste rather than food security. Ganglbauer et al. (2014) explored the motives of a community using foodsharing.de in Germany. Foodsharing.de is a platform that mediates the offering and accepting of free food and also creates a space in which those engaging in food-sharing activities can negotiate where and when to meet to hand over food (Ganglbauer et al., 2014). The study found that while some participants were motivated by economic need, the majority were motivated by their social and ecological values (Ganglbauer et al., 2014). The study also identified how social media was used to help expand the community using the platform, but also for community members to voice frustrations when someone did not show up to the agreed collection/handover appointment (Ganglbauer et al., 2014). In an exploration of mobile applications intended to reduce domestic food waste, Farr-Wharton et al. (2014) highlight how trust was a main issue participants considered before engaging in food sharing to reduce their food surplus. Participants were more comfortable sharing and/or taking food from someone they knew or who was recommended by a trusted person (Farr-Wharton et al., 2014). This was due to food safety concerns as well as discomfort about sharing their address with strangers (Farr-Wharton et al., 2014). To alleviate mistrust, the paper suggests that user ratings may be employed as a means of informing sharing practices (Farr-Wharton et al., 2014).

The aforementioned studies were conducted within contexts where food sharing and AFNs were motivated by principles grounded in food sustainability; they have yet to be extended to contexts where economic need is the main motivator. Few studies have begun exploring sharing economies within contexts of poverty and limited access to products (e.g. food deserts). Dillahunt et al. (2019) conducted a pilot experiment in the USA with participants using an online grocery delivery service. The researchers identified that new models of online grocery delivery services, made possible through sharing economies, may improve access to healthy affordable food as they enable users to access a larger and more competitive market (Dillahunt et al., 2019). In a study on the use of Facebook to facilitate solidarity economies in Venezuela – where basic necessities, including food, are becoming scarce – Evans et al. (2018) identified that collective purchasing was initially mediated through Facebook groups to challenge the abusive practices of sellers of scarce goods such as toilet paper. However, these groups transformed into spaces for online solidarity strategies (Evans et al., 2018). Facebook groups were used as spaces to barter goods (in a manner similar to foodsharing.de), where people would post the goods they had to offer and then others in need would respond and negotiate a

barter and a meet-up time and location (Evans et al., 2018). Similar to AFNs, the Facebook groups had rules in place; however, these were more focused on how group members should engage with one another (e.g. they were only allowed to exchange items and not money; no outbidding allowed) rather than with local producers and vendors (Evans et al., 2018). The reasons such rules were put in place were to discourage people from behaving in their own self-interest and to maintain a level of solidarity (Evans et al., 2018).

Current food aid technologies and food purchasing interactions

Despite the aforementioned research on AFNs and sharing economies in relation to access to food and other goods, humanitarian technologies have yet to investigate the potential of such food economies in responding to food insecurity. However, technological innovation within the food aid sector has been growing. In a report by the Digital Humanitarian Network (Ko & Verity, 2016), it was identified that blockchain might play a role in humanitarian response through saving on costs and transaction times, increasing transparency and being a means by which information and assets are shared among humanitarian actors. “A blockchain is a shared log of transactions, with each user being able to track how much money and goods have been exchanged ... Each transaction forms a block of new information. The digital ledger is an expanding chain of interconnected blocks of information – hence the name, blockchain” (Talhouk et al., 2019). Furthermore, Ko and Verity’s report (2016) indicated that by layering applications such as smart contracts, blockchain can be used in information management, identification, supply chain tracking, cash programming and humanitarian financing. Smart contracts “are small bundles of code – or scripts – that can be recorded on a blockchain, and that participants can interact with in order to undertake simple tasks” (Scott, 2016) such as negotiating the sale of a product.

The World Food Programme (WFP) has spearheaded the use of the Ethereum, an open-source blockchain, to address challenges in providing food aid to refugees and others in need (World Food Programme, 2018). Their project, ‘Building Blocks’, aims at making cash-based transfer operations faster, cheaper and more secure. The project is currently running in a refugee camp in Jordan, where 10,000 Syrian refugees are redeeming their food aid on a blockchain-based system, thus giving the WFP a record of every transaction without sensitive data being shared with third parties (World Food Programme, 2018). Rather than transferring cash onto refugee debit cards, the system allocates an amount of cryptocurrency to refugees that they can then use in stores to purchase goods. Such systems increase efficiency, especially by reducing WFP’s costs of money transfers (World Food Programme, 2018). The move to use blockchain

technologies to facilitate transactions between shops and refugees receiving aid from the WFP entails more stringent documentation of transactions (World Food Programme, 2018).

The detailed level of documentation required by the blockchain technology being introduced by the WFP may conflict with refugees' current practices, identified in [Chapter 6](#), of negotiating with shop owners. Vines et al. (2014) highlight that hiding monetary transactions is a practice employed by participants managing a low income, due to fear of losing government benefits. The findings in Chapter 6 indicate that digital tools which document transactions within contexts in which refugees negotiate the use of food vouchers for non-food items, and buy on credit, may make more visible the loopholes that allow vital negotiations to take place. Furthermore, documenting such practices may contribute to aid organisations deeming shops to be unreliable. Refugee participants indicated that their negotiations to set up informal payment plans with service providers would be reliant upon the understanding of the individuals providing these services. This is in line with literature indicating the importance of social capital as a means of coping with poverty (Snow et al., 2017, 2016). Consequently, we need to critically evaluate how digital tools may facilitate such interactions without placing additional pressure on refugees to be held accountable by multiple service providers. Currently, one of the arguments for the use of blockchain technology in its current configuration in the Building Blocks project is that it allows refugees to carry with them a digital wallet and financial ID that includes their transaction history (World Food Programme, 2018). The documentation and making visible of such information may reduce refugees' ability to negotiate with service providers and shop owners based on social capital, instead shifting negotiations towards being based on the refugee's transaction history.

We may note that within literature on technologies that aim to facilitate AFNs and food sharing, blockchain technologies have yet to be fully explored and researched. Indeed, other than the provision of food aid, blockchain technologies have only been explored within the domain of food supply chains and food traceability (Lin et al., 2018). More recently, FairCoin has been developed as a cryptocurrency to be used by cooperatives; this is motivated by providing a currency for alternative anti-capitalist economies and is intended to be used in alternative economies that are socially and environmentally motivated (Scott, 2016). Consequently, there is space for the WFP's Building Blocks technology to expand and further explore how blockchain technologies may support collective purchasing as an AFN for refugees. In its current state, Building Blocks does not facilitate refugee negotiations with shop owners and may even restrict current negotiation practices. Furthermore, it does not take into account the

community practices employed by refugees to improve their food security, such as collective purchasing. The overlaying of blockchain technologies with smart contracts has the potential to facilitate collective purchasing as well as to increase refugee agency, as it may create a space for refugees to self-organise around the negotiation of purchases. Indeed, blockchain technologies have been theorised to facilitate collaboration and self-organisation (Scott, 2016).

7.2.2 Technologies and sharing of knowledge

In the previous chapter, refugee participants and I identified that the journey of Syrian refugees in Lebanon is characterised by adapting to cope with their new state of poverty and food insecurity. Participants' reflections on their experiences upon initially moving to Lebanon, and the co-creation of the booklet, highlighted the importance of peer-to-peer knowledge exchange as a means of learning how to cope with new contexts. Within HCI, several projects have investigated the design and development of information-sharing platforms in which local information is transmitted to refugees in response to an information deficit regarding services available to them (Duarte, Degbelo et al., 2018; Schreieck & Wiesche, 2017). However, the findings from [Chapter 6](#) emphasise that technologies should also consider the importance of being flexible and responsive to the different phases of a refugee's journey, thus providing relevant information as their context changes. Such a versatile information-sharing platform should go beyond sharing information on services, to include information on actual lived experiences of coping with food insecurity; for example, indicating towns that are considered safe for refugee women to navigate. The sharing of experiences of coping and adapting, rather than just information regarding services, calls for the co-creation of knowledge in a manner similar to that employed for the co-creation of the booklet and the advice provided within it. The knowledge shared to cope with food insecurity, as indicated by our participants, ranged from general knowledge regarding how to deal with household finances to very local knowledge regarding where to find food at lower prices. Consequently, the sharing of knowledge in a holistic manner that mimics the lived experiences of refugees, as well as their interactions with stakeholders and aid services, calls for the pooling of knowledge from multiple sources; including humanitarian organisations regarding services provided.

However, the process of co-creating knowledge from multiple stakeholders, including refugee communities and humanitarian organisations, may lead to tensions arising regarding transparency and types of knowledge shared (Simpson et al., 2017). This is especially true where participants emphasised that gaining knowledge regarding eligibility to aid was crucial. Transparency within humanitarian aid has been mostly explored from the perspective of making

transparent to donors how aid is used (Easterly & Pfutze, 2008). In a similar manner, HCI literature on food aid has mainly explored how digital tools may be used to better map and manage the distribution of food aid within a camp (Xu et al., 2015). However, the possibility of technologies enabling the co-creation of knowledge in a manner that allows refugees to better navigate the aid system is yet to be explored. Refugees undergo multiple food security assessments, based on which NGOs decide whether they are to receive aid or not (Janmyr & Mourad, 2018). Crowdsourcing – the process of outsourcing a task such as production of knowledge to a large network of people (Howe, 2006) – from refugees’ answers and outcomes of their food security assessments can be used as a means of making more transparent to refugees the premises on which some of them are entitled to aid and others are not. However, such an approach may prove to be problematic as it may enable refugees to ‘work the system’ in order to maximise the aid they receive. Given the limited funding available to NGOs, such transparency may not be welcomed by aid organisations.

Additionally, I found that the skill of shopping on a budget was an acquired gendered skill within this community, mostly practised by women. Participants indicated that knowledge of what ingredients to substitute and ability to do the food purchasing themselves were key coping mechanisms within their experience of food insecurity. Recipe planning has previously been identified as a practice adopted in order to reduce food waste (Comber et al., 2013). My findings indicate that planning flexible recipes in which ingredients are interchangeable is essential. Projects such as Fisher et al. (2017), in which researchers are exploring the development of a refugee cookbook as a means of maintaining heritage, may be further enhanced to support the sharing of recipe adaptations, to cope with cost and availability of ingredients. The sharing of such knowledge across gender divides may allow for shifts in gender roles; specifically, enabling male refugees to make more informed decisions when food shopping in contexts perceived to be unsafe for women. The documentation of such recipe adaptations could be further used as advocacy and activism tools in a manner similar to Parker et al. (2013, 2012) as they reflect the changes in food quality and in turn the quality of life experienced by refugees.

Current food aid technologies and knowledge sharing

The Dalili app was developed and is being piloted in Lebanon by the WFP (World Food Programme, 2018). The app aims to share with refugees knowledge related to food prices. It does so by displaying the prices of food items in different shops in the vicinity of refugee communities and informal settlements. It allows for price comparisons to be made by refugees by enabling them to create shopping baskets and see costs of items across different shops. There

is potential for the Dalili app to be expanded to facilitate the peer-to-peer exchange of refugee experiences and knowledge in a manner similar to the co-created booklet. Indeed, the concept behind this app falls into line with the findings of [Chapter 6](#), where refugee participants highlighted the importance of knowing the price of food beforehand. They indicated that this enables them to engage in more informed purchasing practices. Additionally, requiring shops that refugees are reliant on to publicly share their prices may increase refugee agency as it makes more visible the opportunistic pricing strategy some shops are employing. However, the technology does not account for the other forms of knowledge that participants indicated that they shared, such as their lived experiences and ways to navigate the aid system. Additionally, while the app does have a rating function where refugees either give a thumbs-up or a thumbs-down for shops they have visited, it does not allow for refugees to share the experiences that have resulted in this feedback, nor to flag shops in which they have received ill treatment. Lastly, there is room for the knowledge shared within the app to further facilitate current food practices through sharing knowledge with refugees regarding items where they may benefit from deals and discounts if they collectively purchase in large quantities.

In conclusion, both the Building Block blockchain technology and the Dalili app are humanitarian technologies aiming to improve refugee food security; however, they do not account for the temporality of refugee experiences, refugee experiences of low agency or their cooperative experiences of food insecurity. Both technologies have the potential to be expanded to facilitate the formation of AFNs and to incorporate current refugee collective practices of knowledge sharing and collective purchasing. Indeed, there is space for such technologies to expand to facilitate further negotiations between refugees and shop owners, especially as participants indicated challenges in negotiating prices of food and other products with shops. For example, the Dalili app could be extended to enable refugees to collectively purchase items from shops to benefit from discounts for purchasing in bulk. Furthermore, the blockchain technology employed by the WFP could be used to facilitate open bidding and negotiation of purchasing and delivery costs for large community-based orders, which would encourage shops in the vicinity of the refugee community to set more competitive prices for both food and non-food items.

To my knowledge, there are no existing technologies that enable collective purchasing in a manner that allows refugees to share knowledge and to increase their agency in their interactions with other stakeholders in the aid system in order to contribute to refugee community resilience. I hence combine the findings from [Chapter 6](#), the literature presented in

this section and the current technologies the WFP is beginning to employ to envision a possible technology that contributes to refugee food security and community resilience. I also use existing WFP technologies to create a prototype of the potential technology presented in the next section.

7.3 Envisioning collective purchasing and sharing of knowledge as a technologically mediated experience

Drawing on the aforementioned synthesis, I reflected on how the current humanitarian technologies can be expanded to account for refugee experiences of low agency and their cooperative practices for coping with food insecurity. In this section, I outline what a technology that facilitated collective purchasing and the sharing of knowledge might look like, based on a critical appraisal of available technologies and the integration of the results of my previous study ([Chapter 6](#)). It is important to note that, given that I have adopted a community-based approach, accounting for the temporality of refugee experiences meant that the technological design envisioned is one that could be used by refugee participants at the time of this study.

7.3.1 Accounting for refugee experiences of low agency

To account for refugee experiences of low agency, a technology should challenge current factors that are decreasing their agency when negotiating with shop owners. These include (1) shop owners who allow them to use their e-vouchers for non-food items deciding to increase their prices due to their reliance on them, and (2) limited access to transportation. These factors may be addressed by the technological design allowing for:

- 1) Refugees to order food online and have it delivered to the settlement.
- 2) Refugees to cross-pay for each other's items. Cross-paying means that participants can interchange their cash and e-vouchers amongst themselves so that they enable buying non-food items without relying on the shop owner. An example: if A only has an e-voucher to do her shopping but wants to buy non-food items, B's cash can be used to buy the non-food items, while A can use her voucher to purchase food that amounts to the same monetary value as the non-food items that B purchased for A.
- 3) Prices of items to be made visible and comparable across shops.
- 4) Refugees to share knowledge regarding their shopping experiences through providing richer feedback that creates a space for them to flag ill treatment in shops.
- 5) Refugees to negotiate prices with shop owners.

7.3.2 Accounting for refugee cooperative experiences of coping

To account for refugee cooperative experiences of coping with food insecurity, the technological design should enable and facilitate collective purchasing as a form of an AFN, in a manner that also contributes to increasing refugee agency. To do so, the technological design should allow for:

- 1) Information regarding deals and discounts that refugee community members may benefit from if they collectively purchase in bulk, to be communicated to refugees.
- 2) Refugee community members to negotiate amongst themselves to create a shared purchasing list.
- 3) Refugee community members to leverage their collective consumer agency to negotiate for better prices.
- 4) Refugee community members engaging in a collective purchase to come to an agreement regarding where to proceed with the purchase.
- 5) Trust to be built between the refugee community members and shops.

These expected allowances of the technological design provided the basis of the data collection conducted in this case study.

7.3.3 Defining a Possible Technological Design

In order to further define a possible technological design with the aforementioned features, I first conducted two research engagements with refugee participants where I used vignettes to further explore the ideas generated in the first study presented in [Chapter 6](#). The data collected through the vignettes was then used to inform a user journey mapping exercise. The journey mapping exercise aimed to map out the possible processes, interactions and experiences that constitute engaging in collective purchasing.

Vignettes

The vignettes were presented to refugee participants in March 2018 over two design engagements (approximately 45 minutes each). Vignettes are short scenarios that are presented to participants, followed by a series of questions through which responses are elicited (Barter & Renold, 1999). The design engagements aimed at further refining the technological design ideas generated and presented in the previous chapter. The findings from the vignettes were used to inform the design of the study through providing information that facilitated the journey mapping exercise. Furthermore, the research was audio recorded and transcribed. The data

generated through the vignettes was also analysed with the data generated from the study, as detailed in section 7.4.5.

The vignettes were used to facilitate gaining a deeper understanding of refugee participants' practices that would interplay with the proposed technological designs as well as explore the possible interactions that might take place if someone in the community or another stakeholder abuses the system. In the two vignettes, a refugee woman, 'Aziza', lives in a settlement similar to the participants', and is struggling with food insecurity. In the first vignette, Aziza is considering with her neighbours whether to start engaging in collective purchasing. The vignettes then introduce several factors for participants to consider in the form of "What If questions", such as negotiating loans amongst themselves, pooling resources so that those with vouchers can buy non-food items, preparing shopping lists, negotiating with shop owners and the mode in which purchases would be supplied. The second vignette focuses on Aziza exploring ways in which she can share and access knowledge that would support her in coping with food insecurity as well as increasing her agency. In this vignette, Aziza is seeking to report a shop owner who treats refugees poorly, share with others her experience in the shop and gain from other refugees knowledge on how other shop owners treat them. Refugee participants were asked to respond to questions regarding how they thought Aziza should go about reporting the shop.

User journey mapping exercise

Along with Dr Andrew Garbett, one of my collaborators in Open Lab, I defined the process of collective purchasing through a user journey mapping exercise (Tomitsch et al., 2018). User journey mapping exercises allow us to outline and describe the important steps that users, in this case refugees, may engage in as they interact with a technology/service (Tomitsch et al., 2018). Andrew Garbett worked with me in this process as he is knowledgeable in designing both blockchain systems and mobile applications. Therefore, engaging with him in the user journey mapping exercise allowed me to define the process of collective purchasing in a manner the built on WFP's existing Building Blocks (World Food Programme, 2018) project and the Dalili app (World Food Programme, 2018), which have been detailed in [Chapter 1](#).

The user journey mapping exercise was based on the features of the technological design defined earlier in section 7.3. Additionally, I thematically analysed the data collected through the vignettes and drew out key themes that informed the exercise. The key themes that emerged highlighted that:

- 1) Refugee participants are selective regarding the items they are ready to swap for other brands in order to benefit from discounts. For example, they would hesitate to swap the brand of tea that they use, but would not mind swapping the brand of laundry detergent.
- 2) They would want to discuss the experiences they have had in a shop before agreeing on a review for the shop.
- 3) They would give loans to one another if they socialise often, and they would expect to be repaid within two weeks.
- 4) If a refugee participant engaging in a collective purchase with others does not meet the terms of the collective purchase (i.e. does not pay her share on time) then they would expect her not to participate in future purchases.
- 5) Refugee participants who receive aid through the e-voucher system do a large shop once a month where they use all the money in their e-voucher to buy items to get them through the month. They also then supplement these large shops once every week or every two weeks. The smaller shopping trips are usually for perishables such as vegetables.
- 6) How far are refugee participants are willing to travel to access a shop with discounts and offers.
- 7) The modes of payments and ways in which products may be supplied that refugee participants would be willing to engage in are dependent on the proximity of the shop and their familiarity with the shop owner.

The aforementioned themes aided in formulating the user journey mapping exercise and in turn the study design and materials. The outputs of the user journey mapping exercise (definitions of users and user experiences) were then used to formulate the study design and materials.

Through the user journey mapping exercise, we:

- 1) Defined multiple users based on data from the previous engagement. Users included:
 - User 1*: a refugee who socialises in a group with her neighbours (i.e. a participant from group 1).
 - User 2*: a refugee who only socialises with her relatives (i.e. a participant from group 2).
 - User 3*: a refugee who is receiving food aid through a food voucher.
 - User 4*: a refugee who is receiving food aid in the form of cash.
 - User 5*: a refugee who is not receiving any food aid.

User 6: a shop owner registered with the WFP.

User 7: a shop owner not registered with the WFP.

2) Plotted out the main stages of the expected refugee user experiences (users 1–5) as follows:

- 1) Setting individual shopping budgets (cash and voucher budgets).
- 2) Setting shopping preferences (i.e. what item is the participant ready to swap for another item).
- 3) Creating individual shopping lists.
- 4) Considering offers that would lead to individuals making changes to their individual shopping list.
- 5) Creating a collective shopping list.
- 6) Tendering where refugee participants consider bids made to them by shops.
- 7) Negotiating and finalising an agreement with a shop. This agreement would include items to be purchased, prices, offers, discounts, a payment plan, and how items would be supplied to those partaking in the purchase.
- 8) Paying for goods.
- 9) Receiving/collection of goods.

3) Plotted out the main stages of the shop owners' expected user experiences (users 6 and 7) as follows:

- 1) Reviewing orders placed by communities.
- 2) Making an offer.
- 3) Viewing offers made by other shop owners.
- 4) Amending offer.
- 5) Negotiating and finalising an agreement with a community. This agreement would include items to be purchased, prices, offers, discounts, a payment plan, and how items would be supplied to those partaking in the purchase.
- 6) Receiving payment for goods.
- 7) Delivering goods.

It is important to note that the payment of goods and the receiving/collecting/delivering of goods do not necessarily have to take place in the linear manner in which they are presented in the plotting of the main stages.

- 4) Identified possible scenarios that may arise that require more specific consideration:
 - 1) Refugee participants being unfamiliar with online shopping.
 - 2) Shopping lists for weekly shops varying from shopping lists for monthly shops.
 - 3) Refugee participants not factoring in the transportation budget.
 - 4) Refugee participants not wanting to engage in a collective purchase but instead wanting to create their own separate collective purchase.
 - 5) Needing to recruit more people into the collective purchase in order to benefit from an offer.
 - 6) Refugee participants being in debt to one another.
 - 7) Refugee participants knowing that a shop owner who has made a bid is discriminatory against refugees.
 - 8) A purchase is supplied to refugee participants by the shop; however some items are missing

Based on the user journey mapping exercise, I formulated the design of the study I conducted with refugee participants (figure 7.1) to meet the objectives of this chapter, as well as the semi-structured interviews I conducted with shop owners. I further elaborate on the study design and interviews in the methods section below.

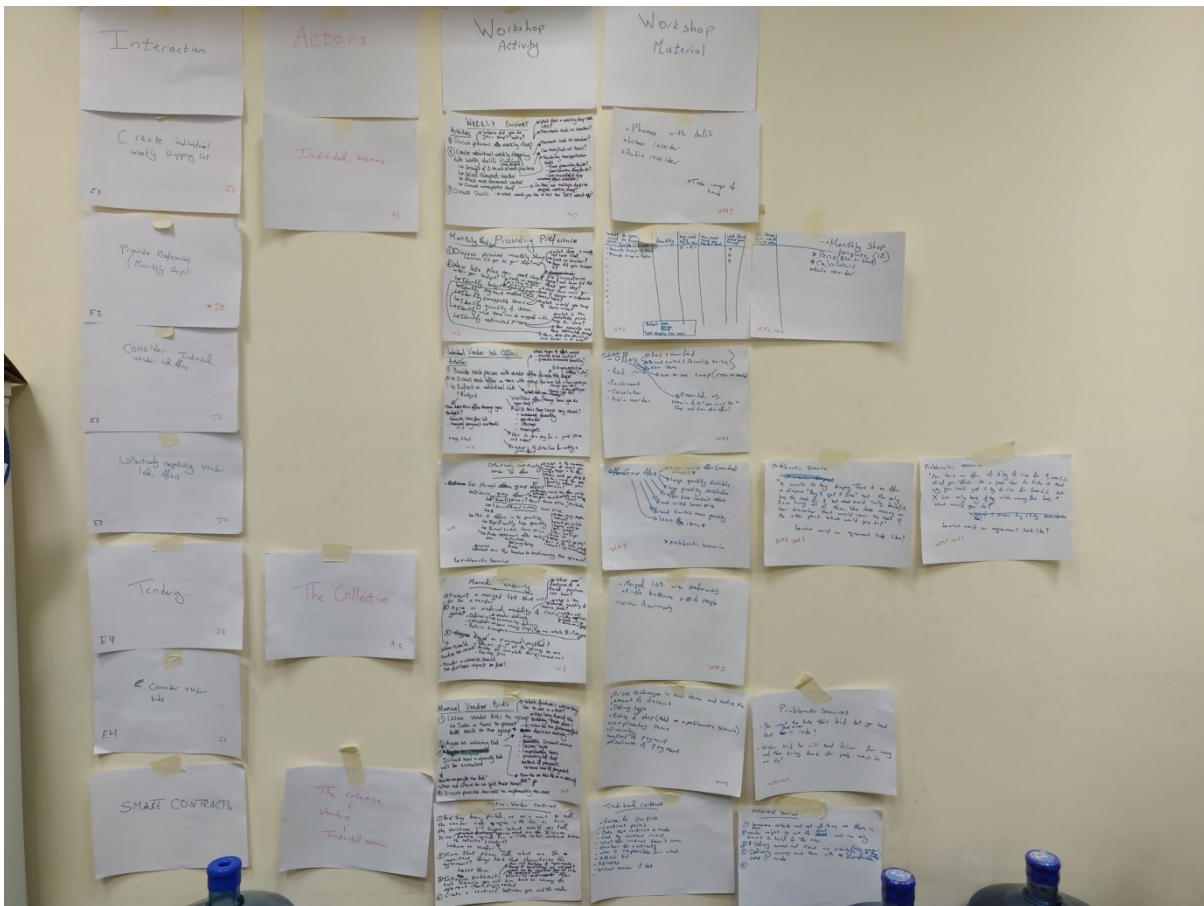


Figure 7.4 The outputs of the user journey mapping exercise, where we defined the interactions (user experiences), the users (actors) involved in the experience, and the workshop activities (data collection tools) used to mimic the experiences.

7.4 Methods

7.4.1 Participant recruitment

Participants who had engaged in the previous studies were approached to continue their participation in the research (table 7.1). I visited the settlement and asked those who had participated in group engagements (group 1) if we could have a group meeting to discuss the next steps. I also knocked on the doors of those who had participated on an individual basis, but only Malak, Lara and Dalia (who constituted group 2) answered. The participants in groups 1 and 2 informed me that the other participants had moved and/or returned to Syria.

The shop owners who had previously participated in the study were approached to take further part in the research. Only one shop owner, Jad, indicated that he did not want to participate any further due to time constraints. He did, however, allow me to enter the shop and take note of product prices and offers available there. Meanwhile, the refugee participants indicated that they had recently heard of a new shop that was affordable but in another town. I approached the owner of that shop (Khatib) and he consented to participate in the study.

Building number	Household number	Number of participants within the household	Pseudonym	Relationship between participants within the household	Participated in an individual or group basis
1	1	1	Sarah	-	Group 1
	2	2	Maria, Zeinab	In-laws	Group 1
	3	1	Hala	-	Group 1
	-	-	Chaza	-	Moved away
	5	1	Zena	-	Group 1
	6	1	Hanadi	-	Group 1
2	-	-	Hanan	-	Moved away
	-	-	Yara	-	Moved away
	9,10	3	Malak, Lara, Dalia	A mother and her two daughters	Group 2
Community Neighbours	11	1	Fatima	-	Group 1
Community Neighbours	12	1	Rola	-	Group 1
Total	10 households	11 participants		-	Group 1: 8 participants Group 2: 3 participants

Table 7.4 Breakdown of refugee participants

7.4.3 Data collection

In this study, I adopted a research through Experience-Centred Design (ECD) approach, where I aimed to mimic the intended new experience of collective purchasing mediated through technology. I conducted five design engagements in which refugee participants were asked to engage in activities that mimicked the process of collective purchasing that was defined through the user journey mapping exercise. These engagements used already existing technologies such as the Dalili app and paper-prototypes. I also conducted interviews with shop owners in order to gain their perspectives on how they would respond to a refugee community that was attempting to engage in collective purchasing.

Interviews with shop owners

I conducted two sets of face-to-face semi-structured interviews with shop owners. The first interview (average time: 20 minutes) was conducted to gain an understanding of their utilisation of the Dalili app as well as the offers and discounts that they provide to Syrian refugees. We also probed on whether they provided home delivery as a service.

Shop Number	Shop Location Relative to the Refugee Settlement	Shop Owner pseudonym	WFP Status? Retailer
1	In the town square of the town in which the refugee community is settled (5 minutes' drive from the settlement)	Mohammad	Registered
2	In the town square of the town in which the refugee community is settled (5 minutes' drive from the settlement)	Larissa	Not registered
3	In the town square of the town in which the refugee community is settled in (5 minutes' drive from the settlement)	Hakim	Not registered
4 (withdrew participation)	In another town that is a 30-minute drive from the settlement	Jad	Registered
5	In another town a 45-minute drive from the settlement	Khatib	Registered
Total			Registered: 2 Not registered: 2

Table 7.5 Breakdown of shop owners who participated in the study

The shop owners were interviewed again after I had compiled a master shopping list that merged the individual shopping lists of each refugee participant. I presented the merged list to the shop owners and asked for their feedback and how they would bid on such a shopping list (average time: 25 minutes). The aim of these interviews was to understand the feasibility and readiness of shop owners to engage in the process of collective purchasing. None of the shop owners were comfortable with the use of an audio recorder. Therefore, I took detailed notes of their responses.

Design engagements with refugee participants

The data collection and design activities were conducted through five key design engagements over the course of three months (October–December 2018). All the design engagements were conducted in Arabic and audio recorded. As with the previous case study, I spent four days a week in the settlement and maintained continuous contact with the community over WhatsApp during the times I was not visiting. Additionally, I maintained the norms of how I had engaged with the community during the previous study (i.e. me tutoring the children and the participants

deciding where we are meeting). I further reflect on these aspects of my research approach in [Chapter 8](#).

The five key design engagements conducted with refugee participants were as follows:

‘Virtual shopping list’ engagement (Engagement 1): Here participants were asked to use the Dalili app to create a shopping list for what they wanted to buy that week and another for their usual monthly shop. The aim of this engagement was twofold: (1) for me to observe their comfort in conducting online purchasing, and (2) to facilitate their envisioning a future in which they might use a digital tool to conduct their shopping. The participants were asked to engage with the functions of the Dalili app that enabled the creation of a shopping basket. They did so in pairs; one person in each pair was asked to describe out loud – as per the Think-Aloud protocol (Tomitsch et al., 2018) – to the other participant the steps they were taking to create their shopping list. Participants were also asked to express their thoughts and feelings as they engaged in the creation of a shopping list using a smartphone application. At the end of the activity, participants were asked to reflect on their experience of using the Dalili app to create a shopping list, their weekly and monthly budgets, and how such a technology could contribute to their food security and their agency in engaging with shop owners and the WFP. The engagement ran for approximately 60 minutes.

‘Individual shopping list’ engagement (Engagement 2): This focused on mimicking the process of creating an individual monthly shopping list, estimating individual shopping budgets and setting shopping preferences. This step was necessary as participants were asked to reflect on which items they would swap for other brands in order to save money collectively. The engagement ran for approximately 90 minutes. Each refugee participant was given a sheet to fill in (figure 7.2, [Appendix G](#)) where they had to specify:

- 1) Their budget:
 - a. cash available to them for a monthly shop
 - b. food aid available to them through their food voucher
 - c. transportation cost
- 2) The items that they want to buy for this month (including item brand name and/or type).
- 3) How much they are willing to pay for each item (A).
- 4) The quantities that they want to buy of each item (B).
- 5) The total cost of each item ($A \times B$).
- 6) The mode of payment for the item as per the WFP regulations (cash or voucher).

7) Their readiness to swap an item for another brand or type if an offer or discount is available, and what they are willing to swap that item with.

رقم المنتج	ما هي المنتجات التي ترغب في شرائها هذا الشهر؟ يرجى ذكر المنتجات اثناء بما في ذلك اسم العلامة التجارية و / أو النوع والكمية الفردية.	كم ستدفعي مقابل هذا المنتج في الليرات اللبنانية؟	ما هي الكمية أو العدد التي ترغب في شرائها لهذا المنتج؟	ما هي التكلفة الإجمالية لهذا المنتج؟ (x)	هل ستدفع نقداً أو تقسيمة؟	هل أنت مستعد لمبادلة هذا المنتج؟	إذا كانت اجابتك نعم ، يرجى ذكر العلامات التجارية و / أو أنواع المنتجات التي ترغب في استبدالها بها؟
1	رز حبوب	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
2	سكر	٥٠٠	١٠ كغ	٥٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
3	سكر الحبوب (١٠ كغ) سكر الأيمن - كغ	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
4	زيتون	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
5	زيتون	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
6	زيتون	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
7	سكر الحبوب (١٠ كغ) سكر الأيمن - كغ	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
8	سكر الحبوب (١٠ كغ) سكر الأيمن - كغ	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
9	سكر الحبوب (١٠ كغ) سكر الأيمن - كغ	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	
10	سكر الحبوب (١٠ كغ) سكر الأيمن - كغ	١٠٠٠	١٠ كغ	١٠٠٠٠	<input type="checkbox"/> نقدا <input checked="" type="checkbox"/> قسيمة	<input type="checkbox"/> نعم <input checked="" type="checkbox"/> كلا	

الكلفة الاجمالية للتسوق (ل.د.) المجموع: 89,000 (جمع): 89,000	ميزانية (ل.د.) نقدا: 17,000 قسيمة: 72,000 المجموع: 89,000
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Figure 7.5 The sheet given to participants to create their individual shopping list

‘Offers’ engagement (Engagement 3): In preparation for this engagement, I visited the shops whose owners were participating in the study (table 7.2) and took note of prices and offers available for items on the shopping lists provided by participants. I then presented the offers to participants in the form of flyers (figure 7.3); they were asked to discuss the offers amongst themselves and make any changes to their individual shopping lists based on any offers they opted to accept. They documented the changes on tracing paper (figure 7.3), which they overlaid on their individual shopping lists. I purposefully selected offers that would allow us to explore the following interactions:

- 1) Participants needing to include more people in the collective purchase in order to get an offer.
- 2) One participant needing to swap brands in order to get an offer.
- 3) Participants needing to consider the value of offers that provided gifts they often needed in their household (i.e. glass cups) vs offers that saved them money.
- 4) Participants needing to consider what they should do with any surplus of an item.
- 5) Participants needing to consider changing the type of item they were purchasing (e.g. from Australian rice to Egyptian rice).

This engagement was intended to mimic the process through which participants might identify the offers that they could benefit from collectively, as well as the intra-community negotiations

that they would need to engage in to maximise the collective benefit (e.g. convincing others to switch brands so they could all benefit from an offer). The engagement also aimed to explore the feasibility of such intra-community negotiations as a form of self-mobilisation. This engagement took approximately 1 hour 40 minutes.

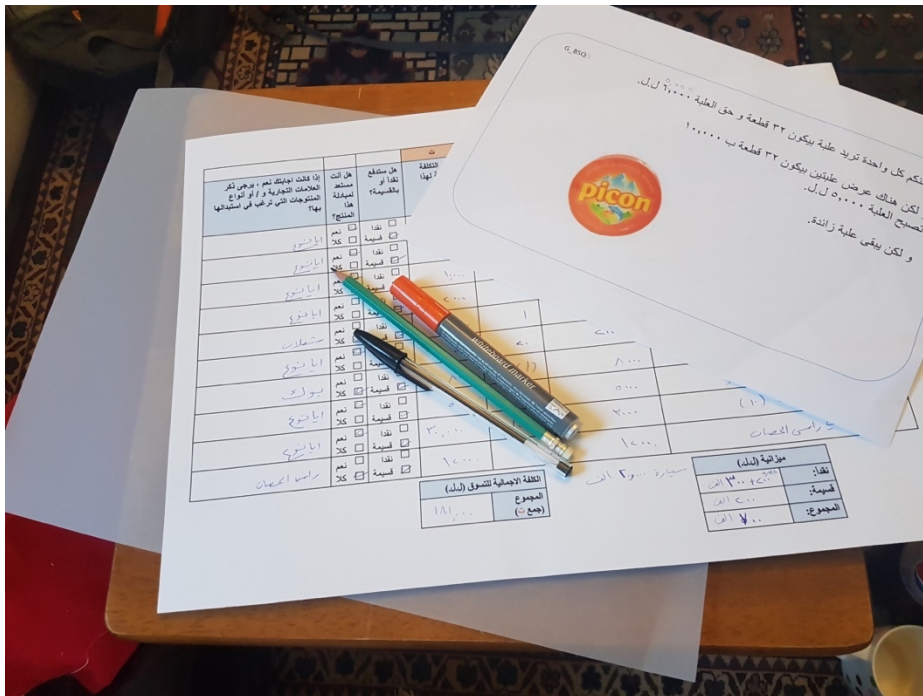


Figure 7.6 The tracing paper, the individual shopping list and a flyer of an offer

‘Tendering’ engagement (Engagement 4): I took the individualised shopping list of each participant and merged them into a master shopping list that I then took to the participating shop owners and asked them how they would bid on such a list. This was a necessary step to explore the feasibility of shop owners engaging in the process of collective purchasing. Their responses informed the creation of bids that varied in:

- 1) Distance of the store from the settlement.
- 2) Store rating of Bad, Good or Very Good. The ratings were intentionally left vague in order to create a space for participants to define the different criteria they would use to evaluate a store.
- 3) Discounts and offers given (e.g. a 10% discount on the whole purchase vs a 5% discount on the whole purchase and a glass cup for each buyer).
- 4) The time at which payment should be made (e.g. upon agreement, upon delivery).
- 5) The modality in which products would be supplied (e.g. delivery, collection).

Refugee participants were asked to reflect on the bids, discuss the pros and cons of each, and set out any changes they would request from the shops regarding the bids. The aim of this

process was again to observe how they would negotiate amongst themselves (make a collective decision) and the value that they would place on the different elements of the bid. This engagement lasted approximately 60 minutes.

'Making a deal' engagement (Engagement 5): Following on from the bids presented in engagement 4 and the discussions by participants, I asked them to select the bid that they considered the most suitable. We then engaged in a role-playing activity in which the participants were asked to select one person to make a phone call to the shop owner (played by me) who had provided the winning bid, negotiate any terms they would like changed and finalise the offer. The aim of this engagement was to observe how refugee participants would negotiate with shop owners. The shop owner script I used in the role-playing activity was based on notes of the responses I had obtained from the interviews with shop owners. This engagement lasted approximately 40 minutes.

7.4.4 Data collection methods and ECD

The methods presented in this chapter were guided by the main elements of ECD as shown in the table below (7.3).

Engagement	Dialogue Defined as <i>a relational form of communication in which knowledge and identity are co-constructed.</i>	Multi-voicedness Defined as <i>acknowledging the multiplicity of voices within engagements and the tensions that may arise due to varying perspectives.</i>	Responsiveness Defined as <i>being empathetic and engaging in active listening to respond to participants' experiences and perspectives.</i>
Vignettes	Discussing the vignettes based on their values and beliefs regarding how community members should interact with one another.	Invoked the multiple voices of participants in group 1 versus group 2 regarding collective purchasing.	Vignettes were created based on data previously collected and therefore merged my perspective with that of the participants.
User journey mapping exercise			Bringing together refugee values with the values of a technology developer and designer and reflecting on the tensions between what the system needs and the values of refugees.
Virtual shopping list engagement	Reflecting on a potential new experience.	Working in pairs and reflecting on what their shopping lists look like and their experience of the Dalili app.	
Individual shopping lists engagement	Refugee participants co-created knowledge regarding how to create shopping lists.		
Offers engagement		The offers are based on offers in shops; therefore they reflect data collected from shop owners.	The offers are based on offers in shops; refugee participants used the information to make decisions regarding their actual shop that month.
Tendering engagement		The offers are based on offers in shops; therefore they reflect data collected from shop owners.	
Making a deal engagement	Participants reflected on and played out how they envisioned future dialogue with shop owners around a collective purchase.		

Table 7.6 Breakdown of how the design engagements in this study were designed to evoke dialogue, multi-voicedness and/or responsiveness

All design engagements with refugee participants and interviews with shop owners were conducted in Arabic, our mother tongue. Design engagements with refugee participants were audio recorded, whereas the interviews with shop owners were not. In the case of the shop owner interviews, I took detailed notes; immediately after each interview I would go over the quick handwritten notes and elaborate on them based on my recollection. Throughout all the engagements I took reflective notes of my interactions with participants as well as feedback they provided regarding the design process. I also took note of any elements of the data collected that participants placed specific emphasis on.

7.4.5 Data analysis

Transcription and translation were conducted by a professional transcriber who is a native Lebanese, is proficient in both Arabic and English and has previously conducted research with Syrian refugees. I provided her with the glossary of words I had developed during the previous studies (Chapters [4](#) and [6](#)) and discussed with her how she would maintain the glossary in a manner similar to what I had previously done. The glossary was used to maintain consistency in the translation process and to ensure that the meanings of the words in Arabic were not lost in translation. Notes I took during the data collection process and the interviews with the shop owners were digitised and then integrated into the transcripts, by myself, in instances where this was applicable. Thematic analysis was conducted in six main phases (Braun & Clarke, 2006, 2013):

- 1) *Getting familiar with the data:* I listened to the audio recordings to fully immerse myself in the data. Furthermore, as a quality precaution I checked the accuracy of the transcripts by reading them as I was listening to the audio. I then read through all the transcripts one more time and took note of important/interesting pieces of data.
- 2) *Coding:* Transcripts and notes were imported into NVivo 10 for Mac. Using NVivo 10, I systematically revisited the transcripts and notes and coded the data. Data was first coded in a descriptive manner, through which codes were created that reflected the content of what was being said. I then conducted a second round of coding for any latent meanings and interpretations. I was inclusive when coding the data to ensure that the process was thorough and that each data item was given equal attention. This was done to ensure that the themes that would emerge further down the process were not based on a few anecdotal examples.

- 3) *Identifying potential themes:* After the data was coded, I went through all the codes and some of the data that was attributed to the codes and began systematically categorising them into larger themes, firstly to provide a holistic account of what collective purchasing might look like and secondly to respond to the research questions posed in this chapter. Codes were clustered based on any overlaps as well as on the multiple perspectives expressed by participants on the same issues. Through this process, a meaningful pattern began to arise in the form of the themes that are presented in this chapter.
- 4) *Reviewing potential themes:* In this phase, I reviewed the themes created by reading the data allocated to each theme. At this stage, I presented the themes back to participants for member checking. This was done to ensure that the themes were meaningfully capturing the data shared with me by participants. Themes identified by participants to be incomplete were revisited with participants and discussions were held to further define them. Themes and the corresponding data were then presented to my supervisory team for quality checks and were reviewed based on their coherency, consistency and distinctiveness.
- 5) *Defining themes:* Based on the discussions that took place during the previous phase, I defined the themes by identifying how they responded to the research objectives of this chapter and the overall research questions of the thesis. In this process, I created an outline of how the themes created a rich narrative of possible future refugee experiences of collective purchasing, as well as how their possible future experiences related to designing technologies for community resilience. This phase ensured that the data was interpreted in a manner that went beyond just paraphrasing and that the themes presented a narrative that reflected the data and topic at hand.
- 6) *Writing up:* I documented the themes in the form of this chapter as well as a conference paper that was submitted for review. In this stage of the analysis process, I embedded the themes within the wider scholarly research on food security, community resilience and digital humanitarianism.

7.5 Findings

Reflections and responses instigated through the data collection process identified that collective purchasing, mediated through technology, has the potential to improve refugee food security as well as refugee agency within their interactions with shop owners and the WFP. Furthermore, participants highlighted their readiness to engage in a collective purchasing platform while outlining key social and technological factors that needed to be considered in the design and configuration of said platform. Trust was a factor emphasised by participants: they highlighted the need for intra-community trust, trust between the community and shop owners and trust in the collective purchasing system itself. Another factor considered to be essential by participants was community commitment and coordination of the collective purchasing initiative. Lastly, my findings provide insight into user interface design considerations that would support refugee participants in collective purchasing.

7.5.1 Potential for collective purchasing to improve refugee food security

Data collected through the vignettes and design engagements highlighted the potential for collective purchasing to improve refugee food security. Participants indicated that collective purchasing mediated through technology would enable them to buy in bulk and benefit from lower prices, discounts and offers. Additionally, they highlighted their hopes that a technology for collective purchasing would lead to a more competitive market through price transparency and ratings of shops. Collective purchasing would also allow the refugee community to overcome the current high transportation costs that create a space in which nearby shops are opportunistic and maintain higher prices.

Potential for lower prices through wholesale

Refugee participants discussed how through engaging in collective purchasing, they would be able to purchase both food and non-food products in larger quantities and therefore benefit from offers and discounts that result in cheaper prices. Participants discussed how that would affect the price of rice:

So, by this I would be saving on the price of a kilogram [of rice]. [Hala]

I would be saving on the price of 3 kg! [Maria]

Participants also elaborated on how their purchasing practices would change accordingly, as saving on some items would allow them to purchase more food and/or enable them to purchase items they would not have been able to otherwise:

It's a difference of 1500LL ... with the 1500LL you can get three cans of beans. [Fatima]

The most important point in all of this is to look at discounts and offers. There is always an item that is expensive ... so you need to save up on other items to pay for it. [Dalia]

Other participants projected that through collective purchasing allowing them to access lower prices, they would be able to purchase more non-perishable food items such as rice, and cleaning detergent, and store any surplus for the next month:

Zena: I can use this offer and get 7 kg and then the coming month I wouldn't need to buy rice, for example!

Sarah: So each month, we should get one product like this [of a bigger quantity] ... and that way, the next month you don't have to buy from it.

Yes, so it's better to get the promotion and even if the detergent lasted more than a month but we don't have to worry about its expense later on! [Zeinab]

However, while shop owners indicated that they would provide lower prices, discounts and offers for large purchases, one of them highlighted how upon becoming a WFP registered shop, he received guidance from the WFP on how to engage with refugees during food aid transactions. The guidance discouraged him from selling in bulk:

I don't sell in bulk because he [a refugee] will take them and sell them. The WFP asked us to be careful about that. [Khatib]

He elaborated that although these were only guidelines and not strict rules, he is wary of not following them, so as not to ruin his relationship with the WFP.

Potential for collective purchasing to create a more competitive market

Participants expressed hope that a collective purchasing system mediated through technology would create a more competitive market that also addressed the opportunistic pricing tactics of nearby shops.

When using the Dalili app, participants discussed how shop owners being able to view each other's prices through the app might result in more competitive pricing practices:

Jad [A shop owner] will lower its prices when they see that the prices of Samer are less than his prices. [Malak]

One participant also indicated that the WFP could aim to recruit shops that are providing offers, which are made visible through the app, and consequently encourage other registered shops to provide offers and cheaper prices:

What would be good is if we can suggest shops that have offers to the UN [WFP], maybe then the shops would be encouraged to do more offers. [Fatima]

We can suggest to the UN that we want to shop from this shop. We will say this shop is cheaper and treats us better ... we would give them the name of the shop and they can then negotiate with the shop. [Lara]

Lastly, the potential for collective purchasing to minimise transportation costs was discussed among refugee participants as they reflected on how collective purchasing facilitated by a technology could introduce new ways of shopping. Participants reiterated that currently, nearby shops are opportunistic in their pricing as they know that refugees without any transportation cannot access more competitive shops outside the town:

Hanadi: I wish that Mohammad [a shop owner] lowers their prices ...

Sarah: Yes, they only need to lower their prices ...

Rola: I mean, each item they add to it 500LL.

Mohammad [a shop owner] got more expensive. At first he was doing business as usual but over time he started upping his prices and it became opportunistic. [Malak]

They abuse the fact that they are nearby, they are opportunistic. [Fatima]

Refugee participants even used the app to compare prices between the nearby shop owned by Mohammad and a shop further away, owned by Jad:

I compared my shopping list from Jad's with that from Mohammad; there is a difference of around 500LL in each product. [Rola]

Refugee participants indicated that currently, transportation costs are a barrier to accessing cheaper shops like Jad's, and that any discounts available in shops outside the town would not be beneficial as the amount that they would save would equate to the money they would have to put towards transportation:

Hala: Some people have transportation, so they are going to get things for cheaper?

Fatima: And the person that doesn't have a car, it is hard for them.

Hala: Yes, you have to get a taxi and they are expensive.

When you are on a voucher, you have to buy from the nearest shop that takes vouchers ... now you can go to another town and use the voucher there, but paying for the car hire amounts to the same amount of money that the shop near you is overcharging you.

[Rola]

Participants indicated that collective purchasing mediated through technology would enable them to negotiate new ways of being supplied their purchases, including having them delivered to the settlement, as well as dividing transportation costs among the people engaging in the collective purchase:

Yes, it is nice this way! Many people don't have any transportation. If you want to go to a far place, you need to put 15,000LL for transportation and then you would be spending as much as you are spending here in the village – so you paid as transportation the amount you saved from getting cheaper products! So the issue of free transportation is good for people who don't have a car! [Hala]

We can divide the delivery cost across all of us. [Hanadi]

We can divide it amongst us – I would end up paying 1000 rather than 5000 to go to another town and 5000 to come back. [Maria]

The findings highlight how they envisioned new experiences in which they used collective purchasing to improve their food security.

7.5.2 Potential for collective purchasing to improve refugee agency

Throughout the discussions based on the vignettes, as well as the design engagements, refugee participants reflected on how technologically mediated collective purchasing might create a space in which they could practise more agency in negotiating with shop owners as well as their interactions with the WFP. They also reflected on how collective purchasing might allow them to circumnavigate voucher restrictions.

Increasing agency in price negotiation

When using the Dalili app, participants discussed how they intended to use it to challenge the prices of shop owners:

Yes, for example, if Mohammad [shop owner] tried to increase the price of a product, we can show him the exact prices he specified on the application. [Rola]

Yes, if I found out that more than one thing is more expensive than what he said in the app, then I would tell him and I wouldn't go back to his store! [Fatima]

Registered shop owners indicated that when the Dalili app was first made available, the WFP would update the price lists. That was problematic for them as the prices were not always up to date and refugees would challenge them based on the pricing in the app:

At first, the UN [WFP] put the prices on the app and that would cause us problems because they [the refugees] would come in and see that the prices have changed and that would cause us problems. In the end, refugees are our customers. So we would call them [the WFP] and they would update the prices. [Mohammad]

Such experiences recounted by shop owners indicate how refugees are already using information regarding food pricing to practise agency in negotiating food prices.

Increasing agency by providing the WFP with feedback

Discussions among participants also circled back to those from the previous chapter where they discussed their low agency in providing the WFP with feedback. They reflected on how a technological system might enable them to better provide the WFP with feedback on prices and would result in more competition among shops in regards to quality of service:

We will tell them which shops we want to visit and then they can register them. [Rola]

In addition, one participant highlighted how such a technology should reflect multiple voices in order to result in more effective feedback:

It is important that it is more than one person saying this because one voice isn't heard: you need multiple voices. [Malak]

Such notions of coordinating the provision of feedback within the community were supported by other refugee participants.

Increasing agency through circumnavigating the voucher system

In the previous chapter, refugee participants indicated how the current voucher system restricts their agency as it results in them using a loophole to buy non-food items from a shop owner. As a result, they have low agency in negotiating with that shop owner. When discussing the possibility of engaging in collective purchasing, through the use of the vignettes, participants highlighted how collective purchasing might allow them to circumnavigate the restrictions of the e-voucher system without using the loophole:

I can use my cash to buy you something like Persil [laundry detergent] and you can buy me food instead, using your voucher. [Rola]

Such findings show how refugee participants could coordinate so that one person could use cash to buy non-food items for another community member, who would repay them by buying them food using their e-voucher. In this way they would be reducing the power asymmetry between them and shop owners that has formed due to restrictions within the e-voucher system.

7.5.3 Refugee and shop owner readiness to engage in collective purchasing

Throughout the study, both refugee participants and shop owners identified their readiness to engage in collective purchasing and co-created narratives of current and possible future experiences of collective purchasing.

Refugee community readiness to engage in collective purchasing

While reflecting on the vignettes, refugee participants discussed their current practices of collective purchasing:

Zeinab: We are already doing that – we buy some and split it [oil] amongst us also by approximation.

Fatima: It is because it is expensive, so no one person can buy it alone.

Participants identified how they already share transportation costs, as well as sometimes trusting one woman to do their shopping for them.

If there is a lot of us, then we go together to the vegetable market. [Rola]

For example, Zeinab [a participant] is the boss in this building; we ask her to buy us stuff and we pay her. [Hala]

Other than expressing their readiness to cross-pay and divide delivery costs (as previously mentioned), when discussing offers available in shops in engagement 3, participants discussed their readiness to collectively purchase items so that they might benefit from offers that required them to purchase larger quantities of the item:

Hanadi: So now, imagine that we can get any promotion we want to!

Sarah: So why not, we can get the promotion.

Maria: So of course all of us will get it!

Fatima: I would get the 10 kg from this promotion [on a detergent called Persil].

Rola: Me too! I would get the 10 kg.

Reem: So you would share the 20 kg between you two?

Rola: Yes, I don't have a problem! I use Persil a lot!

Refugee participants also showed readiness to switch brands of items they usually purchased in order for the collective to benefit from offers available:

Sarah: The margarine? Yes, I'll buy the cheaper one.

Maria: I wrote that I would change also to 'al areej'! if we find a cheaper one, I would change to it. No problem.

I said I am ready to swap brands for all of them ... I will take whatever is the cheapest.

[Rola]

We can substitute everything when we find cheaper things. [Malak]

Even on an individual level, some participants opted to increase the quantity of an item they were buying once they were made aware of the availability of an offer:

Reem: How many kg did you write on the paper before you saw the promotion?

Hanadi: Two kg.

Reem: OK ... so you are willing to change and get the 4 kg because you saw that there is a promotion?

Hanadi: Yes ... I can write it down on the paper.

Two participants, Maria and Hala, even indicated that they were going to start shopping together so that they could benefit from the deals. They said that they would buy an item in larger quantities in order to benefit from offers, and divide the quantity between the two of them:

Yes, I will try from now on to get offers ... next time, Maria and I are going to go shopping together. [Hala]

We can view the instance presented above as one in which refugee participants have begun self-mobilising to engage in collective purchasing in their current everyday lives.

Shop owner readiness to engage in collective purchasing

While discussing with refugee participants how collective purchasing might lead the character in the vignette to benefit from better deals and be able to negotiate discounts with shop owners,

one participant, Fatima, said: *“it has never happened before, they tell you this is the price and it won't change – there are no discounts, even 250LL.”* Despite this impression, my interviews with the shop owners identified that they engage in multiple activities that reflect their readiness to engage in a technology that would enable them to bid on collective purchases.

Shop owners highlighted that they are ready to provide delivery services to online orders:

I would cover delivery of items if they buy a lot, even if it is somewhere far. [Hakim]

If people order then, yes, we would deliver. [Mohammad]

All the shop owners highlighted that they are currently offering transportation for refugee customers, especially if they frequently purchase large quantities from their shop. One shop owner attributed his increase in sales to that service:

Having a driver helps with sales. People buy from here because we drive them back home. [Mohammad]

We have a driver: they [refugees] come buy things and we take them home but not if it is too far. We do this for everyone that doesn't have a car: it helps people so that they don't have to carry it and pay for a taxi. [Larissa]

During the interviews, when probing the potential for shop owners to provide discounts and offers to customers buying a large quantity of items from their shop, they stated that they were already providing offers and discounts:

For example, if they buy a big purchase I give them a kg of rice ... or the horsehead tea, I deduct 250LL off of it. It all depends on the cost of the item and the item's profit margin. [Khatib]

You get customers that argue with us about prices and we try to please them.
[Mohammad]

I give them gifts. I give them free chocolate or juice if they bought a lot like 300,000LL ... I would give them things that range in value from 2000 to 5000LL.
[Khatib]

When people buy large amounts, we give them discounts. [Hakim]

Shop owners even expressed their readiness to use technology within this space. Several of the shop owners were using Matjari, the WFP mobile application, which allows them to update the prices and items that show up on Dalili:

I use the Matjari app to update prices. [Khatib]

I update the Matjari app every time items and prices change. [Mohammad]

One shop owner uses a Facebook page to promote his shop through sharing the offers he has available:

We also have a Facebook group where we post about offers available in the shop.
[Mohammad]

However, refugee participants were unaware of the Facebook group, even though they often visited the shop as it was the closest one to them. Furthermore, refugee participants indicated that they do not use any form of technology to directly communicate with shop owners.

7.5.4 Key factors for the success of a collective purchasing platform

Despite the readiness of participants to engage in collective purchasing through technology, both refugees and shop owners highlighted several aspects that would need to be in place for such a system to create the experience that they envisioned and improve refugee food security. Intra-community trust, community trust in the shop owner, and trust in the technological platform were all considered to be essential. Furthermore, refugee participants indicated that for the technology to be successful, community commitment and coordination would be necessary, and that the technology should be designed to facilitate their shopping experience.

Intra-community trust

When reflecting on the vignettes, where the main character was asking others if they would engage in collective purchasing, refugee participants indicated that engaging in such collective action requires those involved in the process to know one another:

Reem: Does it matter how well Hana and Rasha know each other?

Fatima: The closer the person, the better

And this friend is not like the other friend. [Dalia]

Participants in group 2 indicated that because they do not socialise with the other women in the community, they would not engage in collective purchasing with people outside their group:

We would not join others in collective purchasing – there would be problems with other people ... like when to go to the supermarket, etc. – we don't mix with our neighbours. My husband won't agree to it he won't agree to trust people. [Malak]

When reflecting on whom to include in a collective purchase, participants in group 1 indicated that they could recruit one of their neighbours and also some of their relatives in order to benefit from the deals presented to them in engagement 3:

I was also telling them, Rawya [one of their neighbours, who did not consent to take part in the study] buys 2 kg each month. [Zena]

Reem: Yes! So you would divide the amount ... so please change it and write down that you would get the 20 kg. Maria, what about you?

Maria: I need someone to share with me.

Reem: So you want someone to share with you! Who's the person that you might ask?

Maria: Maybe my sister-in-law, Zena ...

If I know other people that want to buy rice during the month; for example, my cousins would want to buy but they're not here with us so I can tell them. [Fatima]

Participants also highlighted that collective purchasing might require them placing their trust in a community member who would liaise with the shop owners:

Reem: Based on what would you select that person?

Lara: Someone known in the community ... now if you trust me, for example, you would give me the money.

Furthermore, when discussing who would liaise with shop owners, refugee participants highlighted that they would be placing their trust in that person's shopping skills:

Also, we need to know if they know how to pick items; like, do they know how to pick good vegetables or not? [Rola]

When selecting a person to role play and negotiate with the shop owner in engagement 5, group 1 selected Fatima, saying, "*Fatima should do it, she is good at talking [negotiating]*" [Maria]. They trusted her shopping and negotiation skills. During the design engagements, participants would also ask Fatima about the prices of items and the offers available.

Community trust in shop owners

Throughout the study, refugee participants expressed concern regarding shop owners not fulfilling their part of the agreements made. This emphasised the need to establish trust between the community and shop owners in order for them to engage in such purchases. More specifically, participants expressed concern regarding being tricked by shop owners; they therefore trusted going to a shop more than ordering online:

Hanadi: But what if they [a shop owner] tricked us?

Fatima: Believe me, they can't do this [trick them] when you're there in the shop.

Refugee participants also expressed concerned regarding the shop owners not fulfilling deliveries as agreed upon:

I'm serious now ... there should be some trust here. because we might really go and buy the products and he can promise that he would deliver them but what if I returned back home and he didn't; even after a few days!! He can deny that I bought from him. [Rola]

What if he didn't deliver the products to our house? Even if he tells us that he will do so. We don't have any evidence. [Fatima]

As mentioned in [Chapter 6](#), participants indicated that they usually rely on each other's knowledge and experiences to establish whether a shop and/or a shop owner are good:

We discuss these things [treatment in shops] all the time. [Zeinab]

Further to that, their discussions reiterated that knowledge about how the shop treated participants would influence which shops refugees would engage with when collectively purchasing:

Reem: And if we want to choose between the two?

Fatima: I'd choose the one with a very good evaluation.

Sarah: I would also choose the one which has a good evaluation.

Reem: So regardless of the discount; if the evaluation is bad ...

Zena: Yes, I don't like people who treat you bad at any place.

This led to discussions regarding whether the technological system should show ratings of shops that reflected (1) treatment by the shop owner, (2) the availability of offers, (3) the availability of delivery, (4) competitive prices, and (5) readiness to negotiate:

We would want to see the rating of a shop based on prices and based on treatment.

[Maria]

Like I told you, a good shop would have offers, be cheaper. [Fatima]

Reem: Would it be good to know and rate a shop based on if it has delivery?

Dalia: Yes, because a lot of people don't have transportation.

A shop owner that tells you, why are you buying this? buy this instead it is cheaper or better. [Lara]

Due to distrust in shop owners, participants indicated that they would want to pay for the items upon delivery rather than upon ordering:

I prefer checking the items when he delivers them and then pay him. [Rola]

Furthermore, during the role-playing activity in engagement 5, the participant liaising with the shop owner, played by myself, wanted to reiterate the collective order with the shop owner item by item:

Fatima: I'm checking the offer ... 1 kg of red lentils for 1350LL, 2 kg for 2700LL. Is this a good brand of lentils?

Reem: Yes, it's good. we have the same one as the one you ordered.

Fatima: But there is a brand which is not original or good.

Reem: Which one do you prefer? Do you have a specific name?

Fatima: So if you have from 'Chtaura' with the same price that's listed here; not more expensive. So I accept up to 1500LL and I can take around 5 kg. This is for the soup.

You also listed the black lentils for 1350LL ... are these loose or in a bag?

Such an itemised approach reflects the importance of agreeing on the details as an aspect of proceeding with a purchase from a shop owner, in which each purchase item is scrutinised and agreed upon.

Community trust in the collective purchasing platform

When exploring the possibility of using an app like Dalili to create shopping baskets, participants expressed distrust about the system getting their orders right and resulting in a correct delivery:

And I can't trust this ... I might order 5 kg of margarine and they might get me 2 kg.
[Malak]

I might ask him for red lentils but he might get the smooth one which I don't want.
[Hanadi]

Despite me discussing with participants how new technologies such as blockchain, fingerprint recognition and other online transaction tools can be put in place in order to hold shop owners accountable to the agreements they have made, refugee participants found it hard to place trust in a technology:

Reem: OK, so let's say there is a system which only allows withdrawing money from the card, only when you confirm that you have received the products at your house. Does it work like this?

Fatima: Currently this system isn't there.

Reem: We are imagining if there was such a system.

Fatima: This system is impossible; but if it was there then it's fine. because I mean the trust issue is important.

This distrust extended to participants feeling that neither they nor the system could hold a shop owner accountable in a case of mistakes in the delivery:

Reem: You can then tell him that you want another kind of lentils and he delivers it again. Does this improve the system?

Maria: Yes, it does.

Rola: Yes, it improves, but this would only happen in our dreams!

Additionally, despite shop owners indicating that they update the Dalili app frequently, a few participants who were very familiar with multiple shops in the vicinity expressed their suspicion that the items and prices listed in those shops were not up to date:

Hanadi: There are a lot of things that aren't included in the list.

Zena: They're not listed but I want them ... do you understand me?

Maria: Yes, there are some items that I know that they are found in the store but are not listed here. For example, the Nescafé powder isn't listed here.

Therefore, a technology within this space should support refugees in ascertaining the trustfulness of the technology itself as well as the interactions it is mediating.

Community commitment and coordination

Refugee participants identified that in order for collective purchasing to be successful, commitment from community members is required as well as coordination. One participant indicated that collective purchasing would only “*work if you and all the neighbours have agreed and you have planned ... you know what I mean, that way you won't end up with only one person doing it because then they don't benefit from it*” [Sarah].

Furthermore, during the reflection on vignettes, refugee participants said that at an individual level, engaging in collective purchasing requires no preparation at all:

Reem: How do you think each woman should prepare before meeting with the other women?

Zeinab: Don't need to, I know what I need to buy.

Rola: I know how much I can spend.

However, throughout the design engagements, participants continuously discussed the practicalities of engaging in collective purchasing and how they would need to coordinate with one another. This included coordinating when the collective purchase would happen, based on their budgets:

It might work but also it might not ... maybe this week I don't need to buy anything but my neighbour does; but the other one doesn't, you know what I mean? ... maybe this week I don't have money to pay. [Dalia]

Participants further elaborated that collective purchasing might work for the items they consider staples and purchase every month:

It [collective purchasing] can work for cleaning products, ghee, oil, rice, sugar and these types of things. [Maria]

[We can do collective purchasing] every month, because they [the WFP] have put us back on the voucher so now using the vouchers I go get items: rice, sugar, ghee, oil ... the essentials I get with the vouchers and I keep them in the house. [Sarah]

A monthly collective purchase was indicated to be the most feasible option, as all participants on food aid receive money on their e-voucher on the same day: “Yes, on the 5th of the month or the 6th” [Rola]. Consequently, participants in group 1 agreed on coordinating the collective purchase as follows when negotiating with the shop owner in the role-play activity in engagement 5:

So if I already know that the store has cheap prices and doesn't deliver before a week, then I would do a list at the beginning of the month and tell him that we need to receive the products by the 5th day. [Hanadi]

Reem: OK, let's agree that I [the shop owner] will deliver the products on the 7th of the month?

Zena: Yes, fine.

Hala: Yes.

Rola: But we will choose the list of products before ... because by this time everything I have at home would not be available anymore.

Participants also indicated that coordination was needed within the community upon delivery of items so that no one person would be burdened with dividing the items purchased:

Fatima: So no one [person] should be obliged to get the 20 kg and distribute to all of us!

Sarah: Sometimes some people might get bothered if they are asked to get the products for all and then divide among each other.

Zena: Yes, distributing and dividing the amount is hard.

A suggested alternative was to negotiate with the shop owner regarding dividing offers prior to delivery/collection:

I can tell the owner, for example, to give me the 40 kg promotion and weigh 5 kg of it for me ... if my cousin was with me then she would also tell him to weigh 5 kg for her.

[Fatima]

Participant coordination was also observed when they were merging their individual shopping lists into the master shopping list that would be used in the collective purchase. During engagements 3 and 4, participants engaging in a collective purchase together began convincing one another to switch brands, take part in offers and change preference regarding how they wanted the items to be supplied in order to generate a master list and a deal that would benefit all of them:

Reem: What would you do here? Sarah, would you think of changing to Persil to get this promotion?

Sarah: Yes, if it was good! Because I bought it once but didn't like it.

Zena: Persil is the best brand!

Sarah: I felt it was like salt and it didn't clean well!

Hanadi: No, it's good! my washing machine is automatic so it's good.

Rola: Yes, but I find it easier and faster because I know the prices and what are the best products. So I would get the same ones always.

Maria: Yes, but now for example – why wouldn't I get an offer on shaalan rice? Or aseel margarine for example.

Reem: So because you divide your voucher over a month; do you think that you might sometimes ask for delivery and other times you can go to the store?

Fatima: You can try, for example.

Rola: Yes, I can try [and join this time].

Furthermore, in order to better facilitate coordination in putting together a collective purchase order and to ensure that participants benefit from such an activity, they identified that any technology mediating purchases should clearly show offers available:

But it [Dalili app] is not showing us the promotions on each. [Fatima]

It should include the offers! for example with one mortadella you get one bag of salt. [Zena]

Hanadi: It's nice that the offers would be included on the app!

Maria: Yes, so that we would know what offers are on certain items!

To further inform coordination regarding possible brand switches, participants highlighted that they would like the technology to show the brands available for each item:

Hanadi: We usually don't choose the expensive brand ... it's expensive.

Zena: [while scrolling through the Dalili app] Is there any cheaper brand?

Reem: And you don't want to cook 'kabse' this month? So, you don't need the 'Shaalaa' brand?

Maria: Yes, we want it ...

Fatima: She didn't see it ... She just saw the 1 kg bag. [laughing]

Maria: I saw the 1 kg bag, but I think it's not the same brand.

The data collected highlight the coordinated steps that refugee participants would need to engage in to self-mobilise to purchase food, as well as the ways in which a technological platform might support that through the provision of necessary information.

Design of the collective purchasing platform

While using the Dalili application in the first design engagement, participants expressed hesitance regarding the experience of shopping online/through a mobile application. Consequently, throughout the design engagements, participants would often discuss how certain design elements needed to be in place in order for them to engage in collective purchasing mediated through a technology.

They highlighted how they wanted the app to match what qualifies to them as a good shopping experience. They discussed how the Dalili app fails to mimic that experience as items in it are not categorised, thus making it harder to put together their shopping list:

Maria: Example: you enter the store where everything is divided into sections; one for detergents, one for canned food ...

Reem: But in the app they're not divided?

Maria: No.

One participant indicated that the technology could facilitate her selecting her swapping preferences by showing her brands she could swap her current selection with:

An app should show that I can swap an item for a cheaper one. [Rola]

Participants also highlighted that the lack of clarity regarding the quantity of the item presented in the app made it difficult for them to find the items that they usually buy:

Hanadi: We usually get the 2 kg rice bag.

Reem: Did you choose it now?

Hanadi: No, I chose the one before it, I don't know how much kgs it was.

Zena: Quantity is not clear so hard to see if it is cheaper than what we get.

I can't compare items in this case since I didn't know the exact quantities we can choose ... [Sarah]

Yes, so if 1 kg of a product is for 1000LL, then if we get 5 kg of the same item would it be cheaper? Or more expensive? So that we know how to buy [referring to collective purchase]. [Hanadi]

These interface design considerations would support refugee participants in engaging in collective purchasing.

7.6 Discussion

The findings from this study indicate that there is a readiness among the refugee community, as well as shop owners, to interact together and transact in a technologically mediated manner. This readiness also extended to engaging in collective purchasing. I further surfaced the current practices of engaging in collective purchasing at a small scale, along with refugee participants' readiness to change their shopping habits, for example by switching brands, in order to leverage their consumer agency. This can be viewed as a form of self-mobilisation that is called for within the Framework for Community Resilience (FCR). Furthermore, the notion of negotiating on price in the case of large purchasing orders is already present, as shop owners indicated that they provide offers and discounts when shoppers buy in large quantities. Increasing refugee knowledge regarding available offers and discounts and enabling them to share that knowledge with one another to negotiate collective deals may increase refugee agency and in turn community resilience.

Online collective purchasing is also made more feasible through the current practice of delivery that shop owners are engaging in; this may address food insecurity in a manner similar to that discussed in Dillahunt et al.'s (2019) research on online delivery as a means of addressing food scarcity. The readiness of participants to engage in food transactions in this manner, and their current practices of doing so, provide a space in which we can explore an AFN that is mediated through technology and helps overcome the barrier of limited transportation that refugee participants expressed as a contributor to their food insecurity.

However, because existing AFNs in Europe have a sustainability approach, the values motivating them and the policies that define their interactions with each other and shop owners may differ. In the case of refugees, engaging in collective purchasing is very much motivated by food poverty, as well as a notion of challenging the existing economy in which they are experiencing low agency. Consequently, within this context I identified elements that need to be accounted for when designing a technology within this space; these differ from those highlighted in the literature on food-sharing platforms and AFNs (Prost et al., 2018; Goodman et al., 2012; Ganglbauer et al., 2014; Malmborg et al., 2015). Trust is an issue that has been identified by Wharton et al. (2014), but there it was related to food safety concerns and discomfort participants had about sharing their address. In the context of collective purchasing for refugee food security, participants' trust-related issues arose from fear of not receiving purchases as per the agreements made with shop owners. Furthermore, they indicated distrust towards the technology itself as well as shop owners. Issues around trust in external actors are further compounded by intra-community trust, which needs further consideration when working towards the scaling of a potential technology. A study in Venezuela showed how Facebook can be used as a space in which individuals may coordinate with one another regarding the sharing of food or swapping of items (Evans et al., 2018). A technology to mediate collective purchasing should similarly support coordination amongst refugee community members.

With these findings in mind, we can start exploring how existing humanitarian technologies may be expanded to facilitate collective purchasing and the formation of an AFN in which refugees have more agency and can work towards improving their food security. In the next section I discuss how both the Dalili app and the WFP's Building Blocks project may be expanded to enable refugee communities to engage in collective purchasing. I use my findings and existing HCI literature to reflect on how the technologies may be expanded in a manner that addresses issues around trust and coordination that were surfaced in the study. In this way, I show how existing humanitarian technologies may be extended to facilitate supporting community coordination and self-mobilisation, engaging in online shopping and negotiation with shop owners.

7.6.1 Addressing issues around trust

Both the Dalili app and blockchain technologies currently being piloted by the WFP may be expanded to account for intra-community trust, refugee trust in shop owners and refugee trust in a technology that mediates collective purchasing.

Studies on food-sharing technologies have only identified mistrust of others to be a key challenge that needs to be addressed; trust in the technology itself has not been questioned. This may be because the studies have been conducted in contexts of high technology literacy. Distrust in technologies has, however, been investigated with communities of relatively low technological literacy. Vines et al. (2012) identified that digital financial services were perceived by older citizens in the United Kingdom to be less trustworthy as they do not “absorb some of the responsibility of a transaction” in the same manner that cheques do. Furthermore, when engaging with community members of low socioeconomic status managing low incomes, Vines et al. (2014) also identified that there is distrust in online transactions due to concerns about the security provided by the technology. While participants in my study did express concern about digital transactions and distrust towards the technology, this was more intimately related to their distrust in the ability of the technology to hold shop owners accountable. It is in this particular area that blockchain technologies may be expanded to ensure accountability and trust. A report published by the United Nations Research Institute for Social Development brings forth the vision for blockchain 2.0 technologies that may facilitate “trust-enabling decentralized cooperatives, or distributed collaborative organizations” (Scott, 2016). A smart contract is an algorithm that overlays a blockchain and is executable once predefined rules are met (Swan, 2015). Smart contracts can be used to minimise the trust needed between refugees and shop owners as they can place their trust in the predefined smart contracts made upon agreement to be executed once all the conditions have been fulfilled. As long as the negotiation phase between the refugees engaging in a collective purchase and the shop owners details the rules of their agreement (i.e. delivery time), then the use of a smart contract would ensure that both parties are held accountable (Swan, 2015). This is because smart contracts by definition are self-verifiable, self-executable and difficult to tamper with (Swan, 2015). With smart contracts in place, refugee participants can trust the system to hold the currency attached to the agreement within the smart contract; it will not be transferred unless the terms of the agreement are met. With such smart contracts in place, refugee participants would have more agency when it came to challenging transactions, as this would give them the ability to declare a condition in the smart contract unmet. This vision moves away from seeing blockchain technologies as only records of currency transactions, as they are currently being used by the WFP. However,

engaging in negotiations that would result in a smart contract may be challenging as we have yet to explore how traditional written and verbal agreements can be automated into smart contracts (Al Khalil et al., 2017). In an investigation of programmable donations that might be mediated through smart contracts, HCI researchers used leaflets that participants were asked to fill in using a template stating the offer, conditions and validating source for each contract (Elsden et al., 2019). Further research is needed to further contextualise such research to contexts of low literacy and Arabic-speaking communities such as that of the refugee participants in this study, in a manner which results in trusted interfaces that reflect the reliability of smart contracts (Hawlitshchek et al., 2018).

Trust in the other actors using the platform (i.e. shop owners) may be further amplified through a rating system, as discussed by participants as well as existing literature (Farr-Wharton et al., 2014; Balaam et al., 2015); and also through allowing refugee community members to prompt shop owners for more up-to-date pricing lists in response to their distrust of the price lists available in the Dalili app. In their analysis of the strengths, weaknesses, opportunities and threats of online group shopping from the perspective of businesses/suppliers, Mladenow et al. (2016) discuss how the social nature of bottom-up online group shopping, where individuals come together online to benefit from quantity discounts and negotiate prices with vendors, may be viewed as a threat by suppliers, given the impact that word of mouth has on future transactions. However, when looking at such a model from the perspective of refugee communities, word of mouth would increase their agency as well as facilitate assessing the trustworthiness of shop owners. The communication of reputations of actors within e-commerce systems has been highlighted as a mediator of trustworthiness (Marti & Garcia-Molina, 2006). Making transparent the transaction history of actors in peer-to-peer commerce systems can contribute the building of trust (Marti & Garcia-Molina, 2006); this can be facilitated through the use of blockchain technologies (Scott, 2016).

7.6.2 Designing for Intra-Community Trust and Coordination

The findings from the study highlight that despite a readiness to engage in collective purchasing, issues around trusting the people with which you were engaging in the purchase were emphasised by participants. Previous literature on food sharing has identified that individual ratings of individuals, as a form of sharing of information, may be used to increase trust (Farr-Wharton et al., 2014). However, my findings indicate that refugee participants viewed trust to be very relational and dependent on their current social circles and familial relationships. Consequently, a technological system that aims to support refugees to self-

mobilise to engage in collective purchases should be considerate of their notions of trust. Referral systems have been identified as a means of building trust among people in disadvantaged communities engaging in a sharing economy (Dillahunt & Malone, 2015). Creating a space for referrals to be made may encourage refugees to join larger groups of individuals who are interested in collective purchasing, thus resulting in larger group sizes (Vertical scaling up). However, the insistence of participants on limiting their collective purchasing within their current social networks entails that the system should allow for horizontal scaling, through the formation of multiple groups that want to engage in collective purchasing. Horizontal scaling within civic technologies is common as groups start to form based on motives, interests and values (Evans et al., 2018; Garbett et al., 2016). In a study of the online and offline communities in a sharing economy, it was identified that geographic communities were more important to users than their online community (Vaskelainen & Piscicelli, 2018). Additionally, Celata et al. (2017) identified that a sense of community was essential in eliciting users' active participation in self-regulation of peer-to-peer exchanges. In their framing of community commerce, Moser et al. (2017) emphasised the importance of the community having a shared identity. However, they highlighted that in the context of Mom-to-Mom sales groups, social bonding was not a relevant factor in the formation of the online groups' shared identity (Moser et al., 2017). My findings contrast with the aforementioned literature as they show that a sense of community is already predefined within the refugee settlement. Therefore, rather than a technology supporting the growing of that community through merging in new members, it should allow for the formation of multiple collective purchasing groups that vary in size and can be configured to reflect the values and social interactions of each group. Garbett (2017) highlights that existing platforms for sharing economies are bound by the agendas of the service providers and often only facilitate transactions. However, through providing communities with reconfigurable technologies, such as App movement (Garbett, 2017), refugee communities can begin to create technological spaces for collective purchasing that reflect their values (i.e. defining "who can join us in a collective purchase").

The reconfigurability of the technology is also needed when considering the findings regarding community coordination. Refugee participants highlighted the variability of their purchasing routines, which may conflict with any fixed parameters bounded within the technology. Furthermore, through indicating that they preferred to maintain the social aspect of preparing for the collective purchase, they highlighted the need to maintain that aspect of collective purchasing. This may contrast with other models of AFNs, in which committees are formed

(Fonte, 2013). Indeed, participants said that they would meet and compile their shopping lists, and throughout the design engagement activities, participants negotiated among themselves regarding switching brands so that they could collectively benefit from offers and discounts. The importance of this social aspect is also in line with refugees viewing their collective practices such as sharing of food (the favour system) as intimately tied to their social relationships. In stark contrast to online group shopping research, where individuals build their community online (Mladenow et al., 2016), my findings indicate that existing offline community relationships and interactions are the entry point for collective purchasing. The social nature of these community interactions reflects the presence of tacit care, which we need to consider and maintain. Such notions have previously been investigated in other community contexts such as hackerspaces, where Toombs et al. (2015) identified the critical role that care plays in the functioning and maintenance of these spaces. Within this context we need to consider the importance of the social nature of these interactions and negotiations, which may entail keeping them offline, in a way similar to how refugee participants do not document food borrowed from one another but rather rely on the notion of supporting one another to hold people accountable ([Chapter 6](#)). Therefore, a technological system for collective purchasing should facilitate refugee participants coming together as a group and inputting the final outcomes of their social engagements that pertain to collective purchasing, rather than documenting the negotiations that take place between them. Doing so may lead to more transactional relationships between refugee participants, which may conflict with their relational and social values that form the fabric of their current interactions with one another.

7.7 Adapted FCR

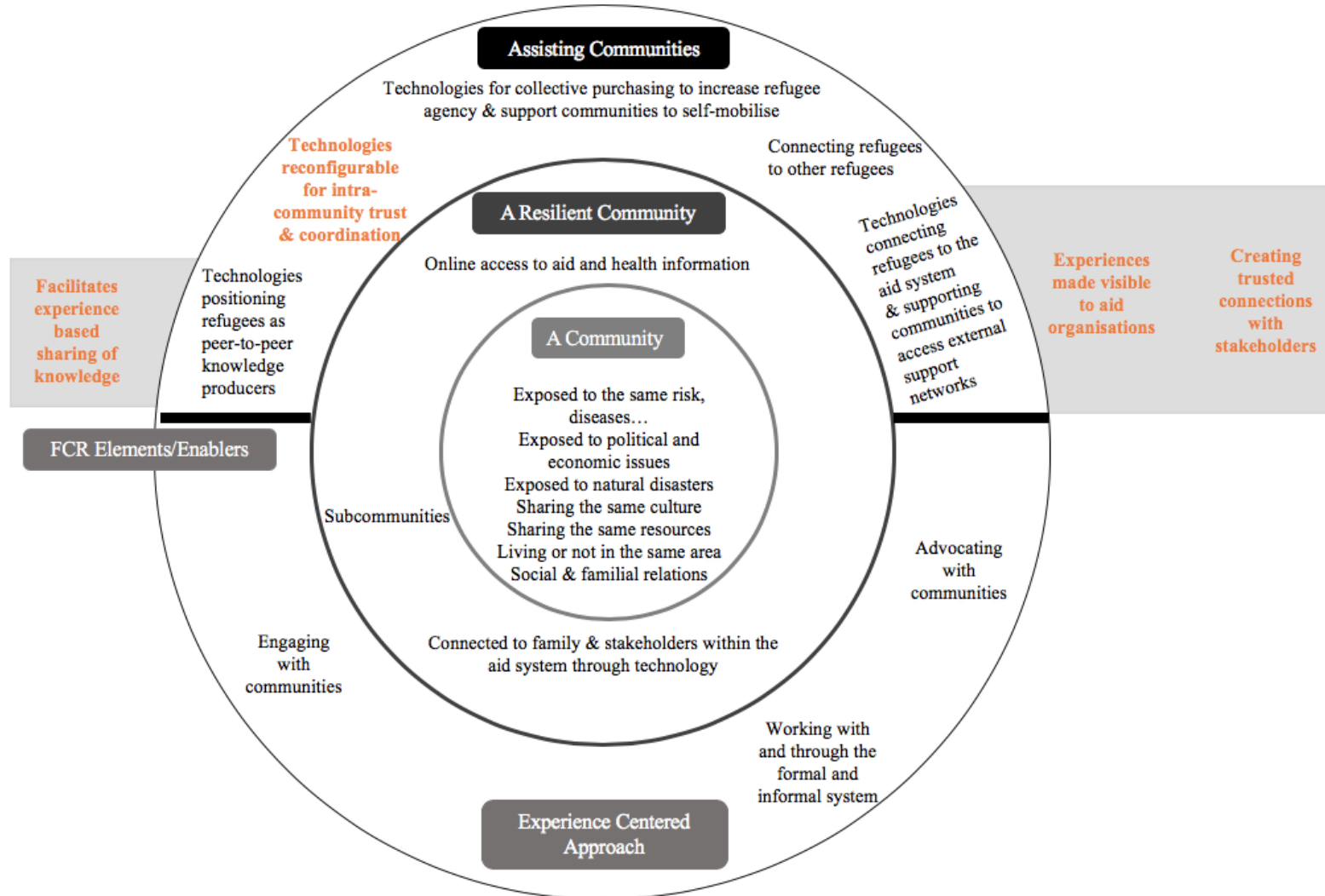


Figure 7.7 Adapted FCR based on findings in this chapter (changes in orange)

7.7.1 A Resilient Community

The findings in this chapter highlight how the existence of subcommunities within the settlement calls for us to design reconfigurable technologies through which the subcommunities can define how they would want to interact with one another. The use of reconfigurable technologies within this space would allow existing social norms to be integrated into the process of collective purchasing and ultimately into how refugees work towards their community resilience. While collective purchasing may encourage the inclusion of others outside the existing social circles (e.g. cousins of members within that social circle), it may not contribute to bridging between social circles. However, through horizontal scaling of the technology and as a consequence collective purchasing, we can start considering how community resilience can be achieved through addressing the food insecurity of multiple subcommunities that are bound within the geographic definition of their community (e.g. refugees living in one refugee settlement).

7.7.2 Assisting Communities

Self-mobilisation

My findings indicate that technologically mediated collective purchasing would enable refugee community members to self-mobilise to better negotiate food (and non-food) prices. Indeed, the findings highlight instances in which the participants began to coordinate to engage in collective purchasing. Additionally, they highlighted the importance of being able to trust other refugees, thus indicating the importance of intra-community trust when self-mobilising. The findings show the potential for a platform for collective purchasing to increase refugees' consumer agency as they collectively enter into a negotiation phase with shop owners. Additionally, engaging in collective purchasing was found to enable refugee participants to circumnavigate the voucher system that results in them being reliant on vendors conducting grey transactions (selling non-food items while scanning food items). Furthermore, while the limited availability of resources within the community does not allow for food sharing as a means of addressing food insecurity, collective purchasing creates a space for an AFN that is feasible, given the readiness of both refugee participants and shop owners to engage in such an alternative economy.

Connectivity

Through engaging in the study, I found that there is distrust among refugees towards shop owners. Therefore, I adapt the FCR to indicate that we need to design for trusted connections between refugees and other stakeholders. While it is important to facilitate the building of trust

in other stakeholders, technologies such as blockchain may enable refugees to place their trust in the technological platform itself.

Furthermore, refugee participants indicated that a technology for collective purchasing would facilitate them in providing the WFP with feedback regarding their experiences in shops, through rating shops based on multiple aspects including how they are treated there. Therefore, I have amended the FCR to account for how technologies can support refugee communities to be connected to aid organisations in a manner through which they can communicate their experiences. Connecting refugee communities to shop owners through a transparent negotiation process will not only work towards making pricing strategies employed by shop owners more competitive; it will also make visible to other refugee communities the negotiation strategies and offers that other refugees are employing. Such transparency would facilitate peer-to-peer sharing of knowledge.

7.8 Chapter Summary

In conclusion, this chapter responds to Research Question Two ([RQ2](#)) by showing how a community-designed technology for collective purchasing can contribute to refugee community resilience through increasing refugee agency and supporting self-mobilisation. Indeed, through the study presented in this chapter, I was able to show the feasibility of such a technology as well as the potential for it to connect refugees and shop owners in a negotiation process through which refugee participants could co-ordinate and practise their agency to increase their food security. The findings show how, through creating a space in which refugees may co-ordinate to create collective purchasing lists, they can leverage their consumer agency (Fonte, 2013) to benefit from discounts and offers available to them. Furthermore, the negotiation processes create a line of connectivity between refugee participants and shop owners, through which refugees not only access information regarding prices but can also actively engage with shop owners as stakeholders within the aid system. Such connections work towards countering the critiques of humanitarian technologies distancing communities from the aid system ([RQ3](#)) (Duffield, 2016). Furthermore, through increasing refugee agency, the technology would configure refugees as active agents that have a voice in how their aid is used and how they want to interact within the aid system. Such configurations may create spaces through which refugees may practise agency to challenge the socio-political and economic experiences that maintain their marginalisation ([RQ3](#)). This is furthered through the proposed technology allowing refugees to share their experiences of marginalisation with aid agencies through rating shops. However, for such a technological platform to work towards countering

the critiques of digital humanitarianism and contribute to community resilience, it should be reconfigurable to subcommunities' preferences as well as facilitating trusted connections.

Chapter 8. Exploring Experience-Centred Design for Designing Digital Technologies for Refugee Community Resilience

8.1 Introduction

One of the core elements of the FCR is adopting a people-centred approach. In [Chapter 3](#), I made the case for adopting Experience-Centred Design (ECD) as such an approach while conducting the research presented in this thesis. Subsequently, in each data chapter in which I engaged with refugee participants, I detailed the methods used and how they aligned with the multiple elements of ECD. In this chapter, I present findings that support ECD as a people-centred approach that can be applied to designing technologies for refugee community resilience. I demonstrate how ECD can be applied when designing in and with a refugee community. Moreover, my findings highlight how flexible design practices and my adoption of multiple roles allowed for successful design engagements that resulted in the findings in [Chapters 6](#) and [7](#). In this way I show the value of the research approach adopted in my PhD ([Chapter 3](#)) and extend the ECD literature to support research conducted with communities in humanitarian contexts. In doing so, I begin responding to Research Question Four ([RQ4](#)).

8.2 Methods

The data presented in this chapter stem from data collected from engagements with refugee participants recruited to take part in the studies presented in this thesis ([Chapters 6](#) and [7](#)).

8.2.1 Data collection with refugee participants

Throughout the data collection processes presented in [Chapters 6](#) and [7](#), I continuously prompted refugee participants to provide feedback. Furthermore, in [Chapter 6](#), during the wrap-up engagement, I instigated evaluation discussions regarding the design research process. Feedback provided throughout the research process was audio recorded as part of the design engagements. To enhance the readability of this chapter, I provide [table 8.1](#), which summarises the methods used across [Chapters 6](#) and [7](#).

Chapter	Engagement	Dialogue Defined as <i>a relational form of communication in which knowledge and identity are co-constructed.</i>	Multi-voicedness Defined as <i>acknowledging the multiplicity of voices within engagements and the tensions that may arise due to varying perspectives.</i>	Responsiveness Defined as <i>being empathetic and engaging in active listening to respond to participants' experiences and perspectives.</i>
6	Introductory engagement	Overview of possible methods: Initiated the co-creation of a shared understanding regarding how the research would be conducted.		Agreeing to tutor: Responding to participants' values and needs and considering from my perspective how I can contribute to the community.
	Introductory follow-on engagement		Running introductory design engagement individually: Reflecting on the social dynamics in play. Running individual sessions: Capturing the multiple voices despite community not wanting to come together.	Running individual sessions: Engaging with the multiple values being expressed by participants regarding how they wanted to engage with the research and with one another.
	Configuring a space for the design engagement	Co-creation of shared understanding of how the research will be conducted. Allowing participants' values, culture and beliefs to contribute		

		towards defining a space for the dialogue.		
Narrative-Building Engagement	Use of dialogue cards: invoked participants to co-create shared narratives of experiences. Using the cards to share my experiences, as well as the experiences of my parents and grandparents during the Lebanese civil war: Sharing understanding of each other's identity.		The stakeholder cards allowed refugee participants to reflect on the multiple perspectives of stakeholders and others in their community.	Justifying placement of cards created a space for attentive listening and discussion in which empathetic understanding was practised as differences in perspectives were highlighted.
Validation engagement			Brought together data from all participants while still being respectful of the social dynamics.	Showed attentive listening, empathy and reciprocity as the data was were analysed from my perspective.
Content-design (booklet) engagement	Artefact co-created based on shared understanding of one another and knowledge generated through previous engagements.		Design decisions that needed to be made led to further identification of the multiple voices in the community.	Empathy: understanding one another from multiple perspectives (my perspective on how a booklet should be made and participants' perspectives).

	Wrap-up engagement	Further dialogue regarding how we should proceed with the research.		Obtained feedback about the process.
	Interviews with shop owners		Inclusion of the voices of shop owners as well as accounting for the power dynamics between refugees and shop owners.	
7	Vignettes	Discussing decisions about what the characters in the vignettes should do based on their values and beliefs regarding how community members should interact with one another.	Invoked the multiple voices of participants in group 1 versus group 2 regarding collective purchasing.	Vignettes were created based on data previously collected and therefore merged my perspective with that of participants.
	User journey mapping exercise			Bringing together refugee values with the values of a technology developer and designer (Andrew Garbett) and reflecting on the tensions between what the system needs and the values of refugees.
	Virtual shopping list engagement	Reflecting on a potential new experience.	Working in pairs and reflecting on what their shopping lists look like and their experience of using the Dalili app.	

Individual shopping lists engagement	Refugee participants co-created knowledge regarding how to create shopping lists.		
Offers engagement		The offers were based on offers in shops; therefore they reflected data collected from shop owners.	The offers were based on offers in shops and refugee participants used the information to make decisions regarding their actual shop that month.
Tendering engagement		The offers were based on offers in shops; therefore they reflected data collected from shop owners.	
Making a deal engagement	Participants reflected on and played out how they envisioned future dialogue with shop owners around a collective purchase.		

Table 8.1 Summarising methods used in Chapters 6 and 7 and how they are aligned with ECD

8.2.2 Data collected through reflections

Over the three years during which I engaged with this refugee community, I maintained a reflective journal that was the main tool for engaging in continuous reflection, as detailed in my research approach ([Chapter 3](#)).

In this journal I made quick handwritten notes of incidents that were related to the process of engaging with the refugee community, as the incidents happened. I also noted down how I felt at the moment when the incident happened. Every evening upon arriving home from a day in the refugee settlement, I revisited my notes and digitised them. I then reflected on my notes and expanded on them based on my experiences, values and beliefs, as well as how I had/would respond to them during engagements. Each journal entry was dated.

8.2.3 Data analysis

As previously mentioned in [Chapters 6](#) and [7](#), all design engagements with refugee participants were audio recorded and transcribed. To analyse the data for the purpose of answering Research Question Four ([Chapter 1](#)), I went through the transcripts and extracted the data in which refugee participants and myself discussed our engagements, the methods used and the relationship between myself and the community. I then merged this data with the digitised notes from my journal. I did this systematically by augmenting the data from participants with the notes from my reflective journal, based on the dates of the journal entries.

Thematic Analysis (Braun & Clarke, 2013, 2006) was conducted on this data in a manner similar to that demonstrated in the previous chapters:

- 1) *Getting familiar with the data*: I read through all the merged data and took note of important/interesting pieces of data.
- 2) *Coding*: The data was imported into NVivo 10 for Mac. The data from all engagements were analysed as one corpus in order for the analysis to holistically capture the interactions and engagements I had with participants over the three years in which the study was conducted. Using Nvivo 10, I systematically revisited the transcripts and notes and coded the data. Data was first coded in a descriptive manner through which codes were created that reflected the content of what was being said. I then conducted a second round of coding for any latent meanings and interpretations. I also categorically coded the data in relation to the different elements of ECD that are detailed

in [Chapter 3](#). This was done in order for me to analyse the data in relation to the different methods employed as part of the research approach I adopted.

I was inclusive when coding the data to ensure that the coding process was thorough and each data item was given equal attention. Inclusivity was necessary to ensure that the themes that would emerge further down the process were not based on a few anecdotal examples.

- 3) *Identifying potential themes*: After the data was coded, I went through all the codes, and the data that was attributed to the codes. I then began systematically categorising them into larger themes that related to my research approach. Codes were clustered based on any overlaps and on the multiple perspectives expressed by participants regarding the engagements. Through this process a meaningful pattern began to emerge in the form of the themes that are presented in this chapter.
- 4) *Reviewing potential themes*: In this phase, I reviewed the themes created by reading the data allocated to each theme. Themes and the corresponding data were then presented to my supervisory team for quality checks and were reviewed based on their coherency, consistency and distinctiveness.
- 5) *Defining themes*: Based on the discussions that took place during the previous phase, I defined the themes by identifying how they responded to Research Question Four and the existing literature presented in Chapter 3. In this process, I created an outline of how the themes create a rich narrative of my experiences as well as refugee participants' experiences of engaging in the research studies. This phase ensured that the data was interpreted in a manner that went beyond just paraphrasing and that the themes presented a narrative that reflected the data and topic at hand.
- 6) *Writing up*: In the final stage of the TA process, I documented the themes in the form of this chapter as well as a conference paper that was published at the 2019 Designing Interactive Systems Conference. In this stage of the analysis process, I embedded the themes within the wider scholarly research on ECD, and HCI literature engaging with vulnerable communities and refugees ([Chapter 3](#)).

8.3 Findings

8.3.1 Responsiveness and multi-voicedness as flexibility in the design process

In the study presented in [Chapter 6](#), I detailed how I presented refugee participants with multiple methods that they could engage with in the data collection process. Furthermore, I was open to the multiple voices within the community regarding how they wanted to engage with other participants in the study (i.e. participate individually or in a group setting). Through being flexible regarding the data collection process, I was able to provide participants with new modalities of engaging in research.

When selecting the use of dialogue cards in the introductory engagements (table 8.1), refugee participants stated that the method was “*different than the methods other researchers have used with us*” [Zena]; this contributed to their interest in engaging in the study. Further to that, accounting for participant individual preferences regarding how they wanted to take part entailed that participants expressed themselves in the way and the space in which they felt the most comfortable. Participants who opted to use the diaries highlighted that these would allow them to “*reflect on the things we are discussing*” [Sarah], as well as express themselves through literature that they felt represented them: “*I can write a poem by a Syrian poet that talks about being a refugee*” [Yara].

Furthermore, engaging in dialogue with participants allowed for the co-construction of a shared understanding regarding how the research would be conducted and how to adapt to existing community tensions. This was particularly important since the more I engaged with participants, the more I realised that there had been community disputes that had resulted in some women not socialising with others. These tensions within the community are also evident in the findings in [Chapters 6](#) and [7](#), which indicated that refugee participants interacted within subcommunities that they had formed based on their social and familial relations.

8.3.2 Dialogical configuration of the design space

Leaving the setting up of the space in which the research was to be conducted to refugee participants resulted in the space conforming to their customs. They set up the space to be a series of futons placed on the floor around a room so that everyone could sit facing each other. Sitting on the floor is customary in Syria. Unbeknown to myself, by abiding with how participants had configured the space I was conforming to customs that they saw value in. This gave me the opportunity to engage in dialogue with my participants regarding their customs and their relationships with other researchers. Participants compared that aspect of the research to other studies they had previously engaged with:

We offer them [other researchers] chairs to sit on because they are Lebanese ... but can you imagine they don't sit with us [on the floor] ... When you first knocked on our door, we thought you might be like them and we did not want to let you in but now we know you are different. [Malak]

In some cases, the configuration of the design space by participants entailed them including other daily activities as part of the design engagement. This included food preparation as well as threading of eyebrows. This further opened up a space in which I was able to engage in dialogue with the participants regarding their activities and sharing similar experiences.

8.3.3 Dialogical co-construction of shared understandings of identity

The use of the dialogue cards, and participating in dialogue around the activities that the women were engaging in during the research process, aided in overcoming the challenges I faced in sharing my identity.

Initially, I was very aware that, despite being Lebanese and sharing the same language and customs as Syrians, I still come from a very different background to the women I was working with. These differences stem from (1) my socioeconomic status, (2) my level of education, (3) living as an unmarried woman abroad in the UK, and (4) being born into the Druze religion rather than the Muslim religion. The controversial role that the Syrian Druze community has played in the Syrian war (Phillips, 2015) also made me consider the possible animosity some refugees might have towards me based on the religion I was born in to. However, the dialogical approach I adopted helped participants and myself to reach a shared understanding of our identities.

During an engagement where Zena was threading Fatima's eyebrows, participants discussed how when they first moved to Lebanon, they were shocked at the prices for such services. I then explained that in the UK it is also expensive, so I too do not go to a professional to shape my eyebrows. One participant responded by saying, "*See – you are like us, what happened to you when you moved there is like what happened to us*" [Zeinab].

In another instance, while one participant was preparing food for her children, she said: "*Reem, I am your age and I have two children, how come you are not married?*" [Maria]. I was worried that if I responded by saying that I believe women should not marry young and rather focus on

their education and career, I would distance myself from the participants. Therefore, rather than responding by stating my beliefs, I shared details of my previous failed relationship which conflicted with my career ambitions, as well as how my parents had encouraged me to attain higher education. The sharing of this experience instigated participants to discuss how a woman should always do what she is most comfortable doing and the influence parents have on their children's values.

Participants also questioned me regarding my religious beliefs. From the name of the bakery from which I had brought snacks, and my dialect, participants discerned the area in Lebanon where I am from and asked: "*Are you Druze?*" [Malak]. After some hesitation, I indicated that I am Druze but that my parents' dislike of the religious tensions that arose during the Lebanese civil war has contributed to my belief that religion should not influence my relationships with others. Three participants proceeded to recount how in Syria they were happily living in a community of Muslims and Druze. This triggered me to use the dialogue cards to share my experience of fleeing to Syria during the 2006 Israeli–Lebanese war, as well as how my mother's family fled to Syria during the Lebanese civil war. In the retelling of both experiences, I emphasised my appreciation of the hospitality shown to me and my family by the Syrian community through the sharing of food. Through these discussions, participants indicated that my experiences might be the reason I understand them more than other Lebanese.

Using the dialogue cards to talk about living abroad and food, as well as conversing with participants about household activities taking place during the engagements, facilitated the sharing of my own experiences. Consequently, a shared understanding of my identity was co-constructed not through simply responding to participant questions but rather through dialogue in which everyone identified similar experiences and developed a shared understanding of each other. Upon further reflection, I identified that sharing my experiences contributed to the creation of a safe space for myself. Within that space I felt comfortable and overcame the anxiety that had stemmed from my knowledge that my different background might alienate me from the refugee participants.

8.3.4 Dialogical and responsive methods towards meaningful relationships and outcomes

The overall feedback for the design process was positive: one participant highlighted that "*It is fun and something we have not done before*" [Hanan]. The dialogical nature in the engagements, it was indicated, allowed participants to fully express the complexity of their experiences of food insecurity as well as showing them that I was engaging in attentive

listening. One participant stated that *“At least with you we were discussing logical things! In a humane way where there is respect!”* [Dalia]. Another participant highlighted that the use of the dialogue cards was responsive – it *“was good because we can see what we have discussed and what we missed”* [Chaza] – thus further enriching their reflection on their experiences as well as ensuring that a shared understanding of those experiences was emerging and being documented.

The dialogical nature of the design process greatly contributed to the formation of meaningful relationships with participants:

Don’t think we let just anyone come sit with us like you do. [Hanadi]

You have become like one of us. [Yara]

Participants even indicated that engaging in the design process had become part of their daily routine: *“We have gotten used to having you here”* [Zena].

Reaching a shared understanding through dialogue with participants regarding the roles that I might take on during the research process provided an added value to the research. Reaching an understanding regarding how I could benefit the community through my capacity as an English tutor to the children in the settlement was appreciated by refugee participants:

We always say no one has visited us who has been as loyal to us and towards working with us like you have. [Zeinab]

Another form of beneficence appreciated by participants was the designing of the artefact that reflected their experiences of food security ([Chapter 6](#)). They saw the booklet not only as a tool to be used when engaging with NGO representatives about food insecurity, but also as a means of sharing their experiences. This highlights the responsiveness that the booklet represented. Participants expressed that they would like a digital form of the booklet to be made so that they could share it online through social media. This was done, and I am communicating it to relevant humanitarian stakeholders. Furthermore, by bringing in the voices of shop owners in [Chapter 7](#), the study highlighted the discounts that refugees could access if they further leveraged their collective purchasing practices. As indicated in [Chapter 7](#), some refugee participants decided to start purchasing items together that they had not collectively purchased before. Additionally, participants said that they wanted copies of the offers I had identified

during the study in Chapter 7 so that they could keep an eye out for them when they did their shopping.

Lastly, the design process contributed to participants shifting their views on research. When revisiting the settlement to wrap up the studies, participants informed me that they no longer engage in research projects in which they are going to be just interviewed and/or surveyed. They highlighted that after engaging in the studies (Chapters 6 and 7), they now value research approaches in which the researcher aims to understand their lives as well as produce meaningful outcomes.

8.4 Discussion

Upon analysing my experiences of conducting research with refugee participants and data from participants regarding their experiences of the research process, it became evident that my research approach, which incorporates ECD and other literature on engaging with refugees, facilitated engaging with the community. Indeed, dialogical and responsive flexible methods allowed me to account for community tensions and to co-create a shared understanding regarding our identities relative to one another and the research itself. Furthermore, the research approach employed in this thesis contributed towards creating a safe space, both for me as a researcher and for the refugee participants.

8.4.1 Creating a safe space through dialogue and responsiveness

Duarte et al. (2018, 2019) reflect on the creation of safe spaces for young forced migrants in Germany through the use of dynamic consent forms, group work, reflective processes and tailoring content to the interests of participants. I add to this knowledge by highlighting how responsive flexible design processes and dialogue enabled the creation of safe spaces for participants and myself.

Being responsive to community tensions through a flexible design process which showed an understanding of participants' current social norms resulted in participants rotating where the engagement took place depending on their comfort and daily social interactions (table 8.1). Consequently, the design process was not confined to a physical space (i.e. someone's home); rather it became an independent space in itself. The creation of a safe independent space was important, given that within refugee settlements there are no communal spaces allocated for community members to come together. Moreover, the flexibility of the mode of engagement,

individual vs. group, meant that community tensions did not hinder participants from feeling comfortable during the design process.

Having participants configure the space for seating allowed me to naturally conform to their customs, which further enhanced participant-researcher relationships. Additionally, participants in group engagements integrated the design process into their social activity of having a daily coffee (table 8.1). This further integrated both the process and myself into their social routines. Indeed, it blurred the lines between engaging in design research and engaging in normal everyday activities, thus integrating the design process and myself into daily community interactions. Previous accounts of designing with rural communities have regarded community activities, separate to the design process, as a means of closing the power gap between researchers and participants (Winschiers-Theophilus et al., 2010). I believe that integrating such activities into the design space allowed for me to share my experiences with participants and consequently establish a shared understanding of our experiences of living in a new country, despite the differences in our financial situations.

Both Duarte et al. (2019) and Brown and Choi (2018) highlight that tailoring the content discussed in design workshops and the pace at which activities are conducted contribute to ensuring that refugee participants are comfortable. My findings show that such flexibility should be extended to being responsive to how participants want to contribute to the study. Tailoring the design process to account for participant preferences not only allowed for participants to engage in a modality they were comfortable with; it also avoided community tensions that might have hindered the design process and even marginalised certain community members. This flexibility should also extend to allowing participants to configure their design space as it contributes towards the creation of a safe space.

Further to that, having a dialogical approach enabled me to feel safe within the design research space. Initially, I was anxious about the differences in backgrounds between the participants and myself leading to animosity towards me and/or alienation from participants. However, using a dialogical approach enabled me to engage with participants by sharing my experiences, thus avoiding situations in which I might have felt interrogated. It also allowed for the formation of a shared understanding of my identity and how it related to my participants. Such a shared understanding also contributed to the formation of meaningful relationships between the participants and myself. The building of such relationships in long-term research engagements

has been highlighted by other ECD researchers such as Clarke (2014) as facilitating reaching a shared understanding with participants.

8.4.2 Co-constructing a shared understanding of the research

Being heard has been previously identified by Human-Computer Interaction (HCI) researchers as a valuable outcome for refugees engaging in design activities (Brown & Choi, 2018). However, in the case of my research, participants valued outcomes that documented their experiences and could be used to engage with other stakeholders in the humanitarian system. Additionally, I found it essential to co-construct with participants the different roles I might take on, in this case as a tutor, to successfully contribute to the community. My findings show that working in refugee communities places pressure on design researchers to take on multiple roles. Throughout the studies presented in Chapters [6](#) and [7](#), we saw how I flexibly adopted four roles: public health educator, tutor, conveyer of information regarding discounts in shops and design researcher. Adopting these roles required a lot of reflection and dialogue with participants regarding my qualifications and what I could feasibly offer the community.

Lastly, it is important to note that having a dialogical approach contributed to making participants feel heard and consequently shifted their views, both on how they would prefer to engage in research and on their interactions with other researchers. Adopting an ECD approach in which the data collection tools and engagements facilitated dialogue and empathy proved successful when engaging with this refugee community. Indeed, facilitating continuous dialogue allowed me to understand participants' experiences, and in turn to visibly empathise with them through documenting those experiences in a co-designed booklet that they felt reflected their experiences of food insecurity. Such a dialogical approach may be considered as a form of empowering refugees in design research (Brown & Choi, 2018); it allows a co-constructed understanding of the value of research to develop throughout the design/research engagements.

In this context, I believe that flexibility in researchers'/designers' roles and the design process is a new form of responsiveness within ECD. It is through dialogue that the roles of researchers/designers are shaped with participants, and a shared understanding can emerge regarding where and when within the design process flexibility should be applied.

8.5 ECD as a People-Centred Approach for Refugee Community Resilience

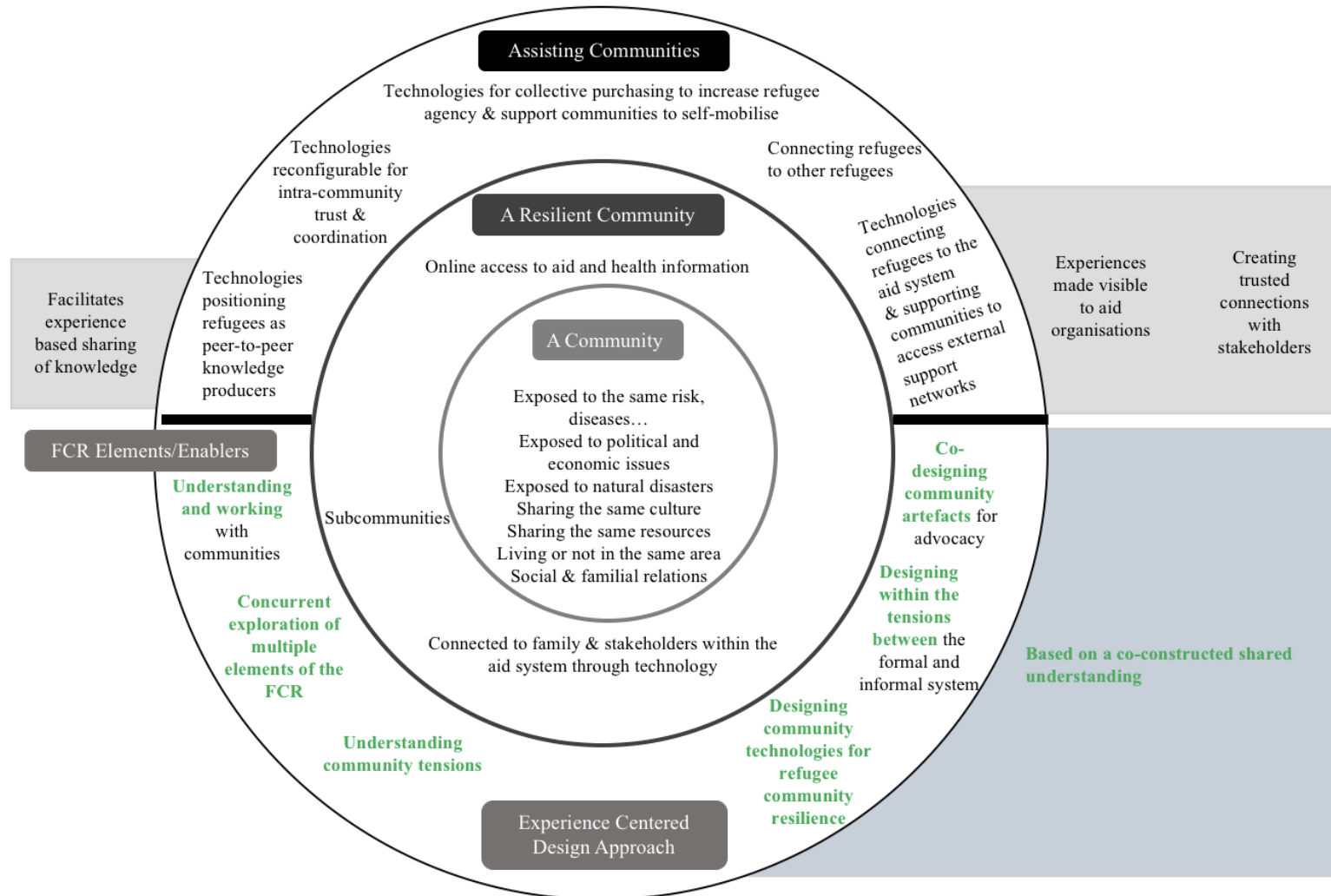


Figure 8.8 The adapted FCR based on the findings in this chapter (changes in green)

While the FCR emphasises having a people-centred approach that engages with communities and advocates for their involvement in decision making, the framework fails to specify when and how this people-centred approach should be applied. In this chapter, I have shown how ECD may be applied as the people-centred approach within the FCR. I highlight the value of ECD as an approach when conducting community resilience research with refugee communities, as it facilitates the co-construction of a shared understanding of the multiple elements of the FCR, researcher identity and the value of the research in itself. Furthermore, it contributes to working towards designing community technologies for refugee community resilience.

8.5.1 Concurrent exploration of multiple elements of the FCR

In my methodology chapter ([Chapter 3](#)), I argued that adopting an ECD approach would be appropriate in refugee contexts as it would allow me to gain an understanding of the past and present experiences of refugees and the interplay between their experiences, values and beliefs (McCarthy & Wright, 2007). The findings in [Chapters 4](#) and [6](#) highlighted that resilience is viewed by refugee participants as synonymous with adaptation as they compared their current experiences of purchasing food as refugees with their previous experiences back in their home country. It was through that comparative lens (of Syrian citizen vs. refugee in Lebanon) and the exploration of self-mobilisation as an element of community resilience that refugee participants discussed their lack of agency and their belief that they could not take action in Lebanon as it was not their country. Additionally, ECD's accounting for the socio-political and economic factors (McCarthy & Wright, 2007, 2015) that marginalise refugee communities allowed for participants and myself to co-create a shared understanding of how their lack of agency and connectivity contributes to their experiences of food insecurity. This holistic understanding led to designing a holistic technology for refugee food security and community resilience. Indeed, accounting for experiences of marginalisation in refugee food insecurity is what led to envisioning a possible new experience together: a technology for collective purchasing might increase their food security and contribute to refugee community resilience, not merely increasing refugee food security but also supporting refugee agency, connectivity and self-mobilisation. Consequently, we can view how ECD's alignment with social change, as described in my methodology chapter, creates a space in which multiple elements of the FCR may be investigated in relation to one another (food security, connectivity and self-mobilisation). It also identifies new context-specific factors such as lack of agency that need to be addressed when working towards refugee community resilience.

8.5.2 Co-designing artefacts for advocacy

It has been argued that ECD may empower participants as it gives a voice to those who do not usually have one (McCarthy & Wright, 2007; Wright et al., 2018). The technological design aimed to increase refugee agency, and that may be considered as a form of empowerment. In addition, as discussed, the findings from this chapter show how engaging in studies guided by an ECD approach also empowered refugees with regard to how they engage in research. Furthermore, through reaching a shared understanding regarding meaningful outcomes, the booklet co-created with refugee participants was designed to be used to support community advocacy, which is in line with the FCR's guidance on a people-centred approach. Therefore, we can see how through adopting an ECD approach, we may, as we engage with refugee communities, develop artefacts that may not work directly towards a holistic solution for community resilience but rather serve as advocacy tools.

8.5.3 Understanding and working with communities and understanding community tensions

Through employing the approach presented in [Chapter 3](#), which builds on ECD as a research methodology, I was able to successfully work with a refugee community in a manner that created a safe space for both myself and the participants. Furthermore, the approach allowed for creating a shared understanding of meaningful outcomes and my identity as a researcher within this space.

ECD's dialogical and responsive approach also allowed me to gain an understanding of the community dynamics, tensions and the formation of subcommunities. The FCR gives consideration to the complexity of defining a community. However, it does not outline how to go about defining a community with participants, nor does it engage with the practicalities of working within a geographically defined community that is home to subcommunities that arise from social interactions and familial relations. In this chapter, I show the value of ECD in giving the researcher/designer a deeper understanding of community tensions as well as how to work within and around such complexities. Such understandings were also extended to my exploration of a technological design for collective purchasing with refugee participants, where we reflected on whom to include in our collective purchase ([Chapter 7](#)).

8.5.4 Designing within the tensions between the formal and the informal systems

In this research I aimed to understand refugee participants' current experiences of food insecurity and community resilience as well as their envisioned future experiences, as called

for in ECD (McCarthy & Wright, 2007). By doing so I was able to gain an understanding of the existing tensions between refugee collective practices for coping with food insecurity and the e-voucher system they are using to access aid. Indeed, the findings in Chapters [6](#) and [7](#) highlighted that the current e-voucher system restricts refugees' ability to engage in collective purchasing and creates experiences of vulnerability in which they need to defer their agency to shop owners. Such an understanding contributed to the envisioning of a technology for collective purchasing that aims to circumnavigate such experiences of vulnerability and envision a new way in which digitised food aid can contribute to refugee community resilience.

8.6 Chapter Summary

In conclusion, the findings in this chapter directly respond to Research Question Four ([Chapter 1](#)) by reflecting on how having an ECD approach contributes to designing technologies for refugee community resilience. I highlight the importance of dialogical and responsive methods that capture the multiple voices of community members and stakeholders within the aid system and empathetically respond to community tensions and participant expectations respectively. I show how employing such methods allows for the co-creation of a shared understanding of research, meaningful outcomes and identities. In this way, such an approach contributes to the building of relationships between participants and the researcher and creates a safe space based on shared understandings of experiences. The outcomes of such an approach were essential in gaining the necessary understanding of the community and their experiences of resilience that underpins the findings presented in Chapters 4, 6 and 7.

Chapter 9. Discussion

9.1 Introduction

HCI scholars have discussed how technologies may support resilience through enabling the continuation of day-to-day activities and maintaining social relationships (Mark & Semaan, 2008; Mark, Mark et al., 2009; Al-ani et al., 2010) in countries of conflict. However, HCI has yet to fully consider resilience within refugee contexts or technology's contribution to the concept of community resilience. This chapter reflects on the findings of the data chapters and brings the discussion back to the research questions presented in [Chapter 1](#). I also present an adapted framework for refugee community resilience that accounts for the current and potential role of technologies.

9.2 Community Resilience as Experienced by a Syrian Refugee Community in Lebanon

9.2.1 Community resilience experienced as subcommunities

The findings in Chapters 4, 6 and 7 highlight that when interrogating *how community resilience is experienced by Syrian refugee community members (RQ1)*, we first need to understand how they experience community. My findings show that refugee participants defined their community by the familial and social relations that they have. In Chapter 4, we saw how participants did not identify all their neighbours in the settlement to be part of their community. In [Chapter 6](#), I showed how familial and social relations influence how refugee participants experience community resilience: some actions taken to cope with food insecurity, such as the food favour system, were confined within the subcommunities that formed within the settlement. When mimicking the possible experience of collective purchasing in [Chapter 7](#), some participants indicated that they would only extend their act of self-mobilising to be resilient to food insecurity to relatives (e.g. cousins), while others wanted to confine the collective purchase to their existing subcommunity. Throughout the thesis we saw that there were two subcommunities within the refugee settlement: group 1 and group 2. Group 1 was larger and was formed based on familial and social relations; group 2 was much smaller and was restricted to family relations. Therefore, when answering the question of how community resilience is experienced by a Syrian refugee community in Lebanon, we find that it is experienced as subcommunities within refugee settlements. Further to that, in [Chapter 7](#), group 1 leveraged their familial and social relations to create a larger subcommunity to engage in collective purchasing, which might result in benefiting from more discounts. Research on the role of social capital has highlighted that individuals with higher social capital are more resilient (Poortinga, 2012). Therefore, we need to acknowledge that because community resilience is experienced as subcommunities, further investigation is needed into how to ensure equitable

resilience between subcommunities. Such explorations would contribute to our understandings of the interplay between individual, community and national resilience (Kimhi, 2014).

9.2.2 Community resilience inhibited by limited agency

The findings in this thesis also highlight that currently, Syrian refugee community resilience in Lebanon is limited by low agency within the aid system. Refugee participants I engaged with felt that they had no agency to self-mobilise in order to work towards their resilience. This theme emerged in [Chapter 4](#) when I was scoping refugee understandings of community resilience and persisted when exploring refugee experiences of coping with food insecurity. In [Chapter 6](#) the findings paint a picture of how refugee participants' limited agency was experienced through their inability to negotiate with shop owners and provide feedback to the aid system. Their limited agency was exacerbated by the restrictions of the e-voucher system, which meant that they had to rely on shop owners to engage in grey-area transactions in which they felt unable to negotiate prices, and by their limited access to safe transportation to reach shops with more competitive prices. Participants co-constructed narratives in which shop owners abused the food aid system, by withdrawing more money and/or charging higher prices; they were unable to challenge and/or report this due to their limited agency. Such experiences of abuse are not only indicative of limited agency but may also be viewed to be in breach of the humanitarian principle of 'humanity'. This principle explicitly states that "all human beings are equal in dignity and rights, thus all human life should be respected and protected and human suffering reduced" (Howard et al., 2012, p.45). However, the experiences of abuse by the shop owners indicate that that principle is not upheld.

Therefore, we need to consider how the self-mobilisation element of the FCR (IFRC, 2014) can be enacted within a context where refugees feel unable to practise their agency as they are residing in a country that is not theirs and where they do not have rights. In a more recent report on community resilience in contexts of conflict, the IFRC have stated that

To enable resilience, humanitarians must not be expected to address the underlying causes of chronic vulnerability, when those causes are often deeply political. However, evidence of resilience may be used to inform humanitarians on a deeper level about how the population of concern has adapted to conflict, and to what extent those adaptations are compatible with war or peace. This heightened conflict sensitivity will improve the quality and accountability to the response, and, context permitting, transition to early recovery. (IFRC, 2015)

My findings in [Chapter 4](#) show that the refugee participants I worked with are not in the recovery phase but rather perceive resilience to be intimately tied to their ability to survive. Through focusing on community resilience in the face of their current situation of food insecurity, my findings highlight how the limited agency of refugees when engaging with the food aid system and when employing coping mechanisms for food security is not only a barrier to community resilience; it also creates spaces in which refugees are vulnerable and unable to leverage their coping mechanisms to their full potential.

In the case of the existing e-voucher system (Chapters [6](#) and [7](#)), used for food aid, we see how situating the technology in local shops not only distanced refugees from aid organisations (Duffield, 2016) but also contributed to the vulnerabilities they experience. Narratives of increased vulnerabilities when interacting with Lebanese shop owners may be reflective of the current socio-political tensions between refugees and Lebanese host communities that are propagated by the Lebanese media (Thorleifsson, 2016a; Sanyal, 2017; Driscoll, 2018). Consequently, within such contexts we need to be critical of how technologies may maintain lines of accountability through which refugees may have the agency to flag negative experiences that limit their ability to be resilient.

9.2.3 Community resilience as limited connectivity to external stakeholders

Supporting communities to be connected to external stakeholders is a key element of supporting community resilience (IFRC, 2014). Findings from Chapters [4](#) and [6](#) show that refugee participants did not feel connected to external stakeholders in the aid system in a manner that allowed them to provide feedback and query aid. In [Chapter 4](#), I was able to identify that smartphones were being used by refugees to access health and aid information, thus contributing to them being healthy and knowledgeable, which are key descriptors within the FCR of a resilient community. However, the research identified that refugees currently use smartphones to remain connected with their families and that smartphones play no role in connecting refugees to the humanitarian aid system. This was supplemented in [Chapter 6](#) by the lack of evidence of technology playing a role in connecting refugees to the aid system in order to report abuse by shop owners. My review of mobile applications for refugees ([Chapter 5](#)) showed that they furthered the positioning of refugees as information consumers as they were not configured to allow refugees to produce and share knowledge. The review demonstrated that currently, applications are not being used to facilitate refugees connecting to each other and other stakeholders within the humanitarian system. These findings contrast with

how refugees currently connect with one another in order to share knowledge, as discussed in [Chapter 5](#). Indeed, participants highlighted the importance of sharing of knowledge amongst each other as they adapt to being refugees.

In conclusion, community resilience is experienced by Syrian refugees who participated in this study as limited actions of self-mobilisation, such as the sharing of food and knowledge within their subcommunities. Such actions are those of survival (as indicated in [Chapter 4](#)) and not of recovery. Furthermore, self-mobilisation to leverage such community actions to work towards community resilience is limited by refugee participants' low agency and limited connectivity to the humanitarian aid system. Technologies are currently not supporting refugees in connecting them to external stakeholders; nor are they connecting them to share knowledge in a manner that supports self-mobilisation as a pathway to community resilience.

9.3 Community-Designed Technologies' Contribution to Refugee Community Resilience

When inquiring into *how community-designed technologies can contribute to refugee community resilience (RO2)*, I found that technologies may play a role in increasing refugee agency and consequently their ability to self-mobilise and increase their connection to external stakeholders in the aid system. This research focused on designing a technology that leverages existing refugee practices of collective purchasing and knowledge sharing as a means of coping with food insecurity. My research identified that there is room for technologies designed with a refugee community to connect refugees to other stakeholders (shop owners registered with the World Food Programme (WFP)), in a manner that allows refugees to increase their agency and self-mobilise, all the while building on existing technologies the WFP is deploying.

9.3.1 Creating a space for collective practices

Findings from [Chapter 6](#) highlighted that refugee participants already share knowledge amongst themselves in order to support one another while they are adapting to their new context of being refugees. Such actions can be viewed as collective practices that refugees engage in to support each other. Participants were also engaging in collective purchasing when they had cash available to them, so that they could afford foods they would otherwise have been unable to. In [Chapter 5](#), we saw that currently, smartphone applications are not being designed and configured to support refugees in sharing peer-to-peer knowledge, nor are they designed to support them in self-mobilising.

Through conducting a design study ([Chapter 7](#)) of an envisioned technology for collective purchasing I found that there was a readiness to adopt the technology among both refugees and shop owners, which creates a space in which existing collective practices may be leveraged. Indeed, mimicking interactions that would be mediated by a technology for collective purchasing created a space in which refugee participants came together in their subcommunities to coordinate amongst each other the creation of a collective shopping list. They changed their shopping preferences so that they might collectively benefit from discounts and also considered extending their subcommunities to other refugees related to them. The design engagements instigated conversations within subcommunities: we witnessed refugee participants coordinating among themselves how they would divide offers and deals. However, the findings and discussion in [Chapter 7](#) also highlight that in order for a technology to support such forms of self-mobilisation, it should be reconfigurable to suit the existing social interactions that refugees maintain within their subcommunities.

9.3.2 Increasing agency and trusted connections

One of the persistent themes across all the engagements presented with refugee participants was their limited agency. In Chapter 4, they identified that their limited agency as refugees limited their ability to self-mobilise and take action to build their community resilience. Additionally, as discussed when answering [Research Question One](#), they experience limited agency in their interactions with stakeholders within the aid system, such as shop owners. Through running a design study in [Chapter 7](#), I showed how a technological platform for collective purchasing could potentially increase refugee agency through enabling refugees to come together to form collective purchasing lists that they can use to negotiate better deals from shop owners. The collective shopping list was then used to discuss with shop owners the possible benefits and discounts that refugees would benefit from. Such outcomes reflect how collective purchasing can increase refugee consumer agency in a similar manner to other Alternative Food Networks (AFNs) (Fonte, 2013).

Additionally, through enabling collective purchasing, refugee participants were able to consider how they could swap credit on their e-vouchers for non-food items amongst themselves. In this way they could reduce their reliance on the willingness of shop owners to engage in grey-area transactions that enable them to buy non-food items using their e-vouchers; consequently, they would increase their agency in negotiating prices. The findings and discussion in [Chapter 7](#) speak to re-envisioning existing food aid technologies such as the WFP's Building Blocks project in a manner that enables the formation of an AFN in which refugees are active agents

within the aid system who can challenge the existing food aid market, in which they have had experiences of abuse.

Such a configuration of technologies to enable refugees to become active agents requires that the technology mediates trusted connections between refugee community members and other stakeholders (referred to in the FCR as ‘external networks’). The study presented in [Chapter 7](#) highlighted how a technology to mediate collective purchasing may connect refugees to shop owners through a negotiation process in which refugees may purchase food in bulk and thereby benefit from discounts, offers and online delivery. The findings also showed that refugees’ negative experiences with shop owners contributed to their lack of trust in shop owners fulfilling their end of a collective purchase agreement. Further, refugee participants expressed distrust in the ability of a technology to hold shop owners accountable. In [Chapter 7](#), I discussed the importance of technologies within this space being designed in a way that views a resilient community not as one that is simply connected to an external network, but one that is connected in a trusted manner. Blockchain technologies that are already being deployed by the WFP may be extended to do exactly that (Scott, 2016). Connecting refugees to stakeholders in a trusted manner, with lines of accountability and pathways through which refugees may hold other stakeholders accountable, is essential when we start accounting for the socio-political dynamics in which humanitarian technologies are deployed.

In conclusion, when answering the question of *How Can Community-Designed Technologies Contribute to Refugee Community Resilience?* ([RQ 2](#)), we find that technologies are being used as sources of information (as shown in Chapters [4](#) and [5](#)). However, they fail in enabling refugees to self-mobilise in a manner that contributes to building their community resilience. The limited agency experienced by refugees, along with their inability to leverage their already existing collective practices, form a gap that community-designed technologies may address. Through mimicking the possible new experience of collective purchasing ([Chapter 7](#)), refugee participants enacted how they would self-mobilise as they formed subcommunities to work towards their resilience through negotiating better food prices. Additionally, my findings indicate that a technology that mediates collective purchasing and online delivery would connect refugees to more shop owners, who are not necessarily in their immediate vicinity, thus increasing their access to the external network of shop owners.

The findings show the importance of refugees not only being connected to this external network, but being connected in a trusted manner. Designing a technological system that holds

shop owners accountable allows refugees to place their trust in the system rather than in shop owners, some of whom they have had negative interactions with.

9.4 Community-Designed Technologies Responding to and Countering Critiques of Community Resilience and Digital Humanitarianism

The technology envisioned in [Chapter 7](#) aims to build refugee community resilience through enabling refugee self-mobilisation and connectivity to external stakeholders, as described in my response to Research Question Two. Such a community-designed technology can be used when discussing *how technologies can work towards responding and countering the critiques of community resilience and digital humanitarianism (RO3)* that are presented in [Chapter 2](#).

9.4.1 Countering community resilience and humanitarian technologies as abandonment

The technological design proposed in [Chapter 7](#) aims to not only be a modality to dispense aid and information but also a means of connecting refugees to the aid system in a manner that increases their agency. Such technologies can work towards countering the critiques of community resilience as a concept of abandonment (Evans & Reid, 2014) and humanitarian technologies as facilitating managing crises from afar (Duffield, 2016). By designing technologies that increase refugee agency and connect refugees to the aid system, we create a space in which refugees can hold aid actors accountable. Therefore, rather than technology distancing aid organisations from their beneficiaries, it creates lines of more direct communication between refugee communities and the aid system, so that refugees can more proactively engage with it. This would counter Duffield and Sandvik's concern regarding the blurring of lines of accountability that results from technologies distancing aid organisations from their beneficiaries (Duffield, 2012b, 2013, 2016).

In [Chapter 6](#), refugee participants recounted their experiences of interacting with the existing food aid technology, the e-voucher system. This can be viewed as a tool that shifts the responsibility of distributing food aid from humanitarian organisations to shop owners (Sandvik et al., 2014; Duffield, 2016). The findings in Chapters [6](#) and [7](#) show how when the technology was introduced, shop owners were advised to ensure that food aid was not abused by not selling it in bulk. The technology introduces restrictions to ensure that food aid is only used to purchase food. However, shop owners are able to circumnavigate that restriction at their own discretion, as we saw through refugee participants' narratives of engaging in grey-area transactions to buy non-food items. Within these narratives, participants indicated an inability to flag experiences of abuse by shop owners.

This shift in responsibilities not only allows for the bunkerisation of aid workers (Duffield, 2012a); it also shifts the responsibility of dispensing aid to shop owners, who now take on the role of the gatekeepers of food aid. This shift contributes to an asymmetry in power that has resulted in instances where shop owners took advantage of their control over the e-voucher system to syphon off refugee aid ([Chapter 6](#)). As previously mentioned in my response to Research Question Two, the interactions of shop owners as recounted by refugee participants are in breach in of the humanitarian principle of humanity. Cardia et al.'s (2017) framework provides guidance for how to integrate the four humanitarian principles into humanitarian technologies to ensure that they function within the guidelines of humanitarian response. However, my findings indicate that we also need to consider how humanitarian technologies can ensure that the new gatekeepers of digital aid (i.e. shop owners) maintain the humanitarian principles. Through engaging in Experience-Centred Design (ECD), I was able to envision with refugee participants a technology that allows for establishing trusted connections in which shop owners can be rated and held accountable to the deals negotiated with refugees ([Chapter 7](#)). Such a system creates formalised lines of accountability through which refugees may flag experiences of vulnerability and those where humanitarian principles were not upheld.

Another angle through which we can work towards countering technologies for community resilience being tools of abandonment that may leave refugees more vulnerable is through bridging the digital divide. The narratives co-constructed in [Chapter 6](#) painted a picture in which refugees' relatively low technological literacy created a space in which they were at a disadvantage when interacting with shop owners who are mediating the use of e-vouchers. Participants recounted how their lack of understanding of the e-voucher system meant that they had to place their trust in more technologically literate stakeholders (i.e. the shop owners); that resulted in negative experiences in which some of their aid was stolen. Further, in [Chapter 7](#), when we were exploring how technologies might be able to hold shop owners accountable for collective purchase deals, I had to explain to refugee participants how new innovations including blockchain technologies could help achieve this.

The findings extend the current knowledge within HCI, which has highlighted how refugees have a limited understanding of how their data is being used (Shoemaker et al., 2019), and how when technologies are tied to access to services, refugees do not prioritise the privacy and security of their data (Coles-Kemp & Jensen, 2019). Reductionist definitions of the digital divide conceptualise it as existing between those that have access to technologies and those who do not. However, more recent takes have identified digital literacy as a contributor to the

digital divide (Rogers, 2001). In an evaluation of geographical information platforms designed to be used by refugees in Germany, Duarte et al. (Duarte, 2018) identified that limited digital literacy among refugees makes these tools less effective. The increased digitisation of services for refugees has also been found to amplify pressures on refugees to always remain connected (Coles-Kemp et al., 2018). Jacobsen (2015) expresses similar concerns regarding the precarity that refugees experience as aid technologies ask them to share data that may be misused and may place them in a more vulnerable position. My findings do not interrogate that concern but rather compound it with how aid technologies are experienced by refugees and interplay with the digital divide. Therefore, as we start moving towards the digitising of aid, we also need to consider how we may build refugee capacities for using technology, while building their digital literacies and not just their data literacies (Maitland, 2019). Overcoming the digital divide not only includes improving access to technologies; it should also work towards building refugee capabilities in using technologies and understanding the humanitarian technologies that they may interact with on a day-to-day basis. Such an approach is in line with Oosterlaken's (2012) approach to addressing the digital divide, where it is emphasised that, rather than technology itself, human development should be at the centre of addressing the digital divide.

In conclusion, within this specific context we need to consider how tensions between Lebanese host communities and Syrian refugees (Thorleifsson, 2016a; Achilli et al., 2017), which are exacerbated by political rhetoric expressed in the media (Driscoll, 2018), contribute to humanitarian technologies creating new spaces for refugee experiences of vulnerability. To do so we need to be critical of where aid technologies are situated and with whom and how we may increase refugee digital literacy, so that refugees may identify and report experiences in which the technology plays a role in their wider experiences of marginalisation and abandonment.

9.4.2 Challenging the status quo

The added vulnerabilities resulting from the digitisation of food aid interplay with the current social and political marginalisation that refugee participants experience in Lebanon (Thorleifsson, 2016b; Janmyr, 2016). These further contribute to the power asymmetry between refugees and shop owners. In the Introduction ([Chapter 1](#)), I presented how existing socioeconomic policies in Lebanon contribute to the continuous marginalisation of refugees and an environment in which they lack political and social agency. The proposed technology ([Chapter 7](#)) does not work towards changing the social and political milieu in which refugees are viewed as problematic communities that should not be given liberties which may make their

presence in the host community more permanent (Achilli et al., 2017; Thorleifsson, 2016a; Janmyr, 2016). In my findings I show how technologies may increase refugee agency and enable self-mobilisation in a manner that does not directly oppose the existing policies of the host community, through creating spaces for negotiation between refugees and local actors such as shopkeepers.

Within this context, I argue that the proposed technology in [Chapter 7](#) is designed for day-to-day community resilience that works within the current restrictive policies but also aims to transform the role of refugees within society. Configuring technologies that enable refugees to take on more active roles in their interactions with stakeholders/host community members may create a space in which refugees are no longer perceived as passive beneficiaries of aid but rather as engaged members of society. Indeed, after engaging with Syrian refugee women through community radio shows that were managed and hosted by the refugee community, Lebanese healthcare providers identified that they became more aware of how engaged the refugees were concerning their health issues. With a similar motivation, Neuenhaus designed a smartphone application that aims at connecting refugees to members of their German host community, with the aim of creating empathetic relationships (Neuenhaus & Aly, 2017). Mediating interactions in which refugees have more agency, technologies would counter narratives propagated by far-right movements in which refugees are dehumanised and presented as passive ‘numbers’ of people that would be a burden on their hosts (Esses et al., 2013; Driscoll, 2018).

In conclusion, if technologies for community resilience are to counter the critiques of community resilience as a concept that maintains the status quo, designing technologies to enable refugee self-mobilisation (by creating spaces for refugee coordination and agency) becomes integral. In [Chapter 7](#), I show how this can be done by designing a technology that works towards community resilience in a manner that offsets refugees’ day-to-day experiences of marginalisation and contributes to supporting refugees in becoming active agents within the aid system, negotiating with other stakeholders.

Such an approach to technologies for refugee community resilience becomes more and more pertinent when we start considering the future of refugee communities. Refugee futures are typically one of two possible experiences: first, remaining refugees for multiple generations, similar to the experiences of Palestinian refugees; second, returning to their home country to rebuild new communities and governance structures. If we examine the Palestinian refugee

context in Lebanon, we can view resilience being enacted through simply remaining in a hostile environment in which national policies maintain Palestinian refugee experiences of marginalisation (Suleiman, 2006). My findings (Chapters 4 and 6) indicate that the experiences of Syrian refugees are similar in that resilience is viewed as surviving in their current context of marginalisation. This is in line with critiques of community resilience as a concept that maintains a dystopian environment in which communities are in a perpetual state of survival (Evans & Reid, 2014). As the Syrian refugee context becomes more and more protracted, we need to consider how designing technologies for Syria refugee community resilience may result in a future which is different from that of Palestinian refugees, and how community resilience and technologies within that space can enable refugees to challenge the status quo. The second possible future for Syrian refugees, which has gained traction within host countries, involves calls for repatriation that encourage refugees to go back to Syria and rebuild (Keith & Shawaf, 2018). Within that space we need to consider how the aid system and aid technologies themselves may create spaces in which refugees build capacities to self-mobilise towards rebuilding. Therefore, we should not view humanitarian technologies simply as a means of delivering aid but rather as a means of building refugee capabilities (Sen, 2001), so that once back home they may bounce back to a better future than that they experienced as refugees. My findings show how a community-designed technology that aims at increasing refugee agency in their interactions with shop owners shifted refugee participants from being just passive aid beneficiaries to agents that actively coordinate with one another, engage (i.e. connect) with other stakeholders and build communities of practice (Anyidoho, 2010; Wenger, 1999) that take action towards being resilient.

9.5 An Experience-Centred Design Approach to Design Technologies for Refugee Community Resilience

Several HCI and design researchers have documented and reflected on methods they have employed when engaging with refugees and designing technologies to support refugees in meeting their needs (Brown & Choi, 2018; Almohamed & Vyas, 2016a; Duarte, Brendel et al., 2018; Fisher et al., 2019). However, these methods have not been framed within engaging with a community, nor as tools within a humanitarian framework such as the FCR.

The findings and discussion in [Chapter 8](#) directly respond to [Research Question Four](#). In that chapter I showed the value of employing an ECD approach when designing with refugee communities. I showed how dialogical and responsive methods, guided by an ECD approach, contributed to the creation of a safe space for myself and the participants as well as enabled the co-construction of a shared understanding regarding the expectations of the research study. The

process of creating such a shared understanding created a space in which refugee participants were empowered to voice their expectations regarding the research process and how they might benefit from engaging with the researcher. Within the context of Syrian refugees who have been over-researched (Habib, 2019), such an approach becomes even more relevant.

Additionally, in the discussion of [Chapter 8](#) I highlighted how an ECD approach enabled me to have a holistic approach to understanding refugee experiences, which accounted for the social and political factors that limit refugee community resilience. Such an understanding resulted in a technological design that not only aimed at improving refugee food security but also addressed the limited agency and connectivity that refugee participants had within the aid system. Such a holistic approach is aligned with literature stating that the benefit of community resilience as a concept is that it breaks down the silos in which humanitarian research and interventions are conducted (Béné et al., 2016).

My research (Chapters [4](#) and [6](#)) shows that through gaining an understanding of refugee experiences of community resilience and coping with food insecurity, I was able to identify community dynamics and experiences of low agency as important factors to consider when designing for community resilience and the values that influence these experiences (e.g. a high value placed on familial relations). I was also able to capture the current practices adopted by a refugee community and how those practices are restricted by existing humanitarian technologies (the e-voucher system) and other stakeholders. A review conducted on humanitarian technologies for refugee health needs identified that current technologies maintain the patriarchal values of the humanitarian aid system, where refugees are viewed as only beneficiaries of aid with a minimal proactive role (Mesmar et al., 2016). The tensions that arise between the restrictions of the e-voucher system and the practices that refugees engage in to collectively improve their food security, and consequently their resilience, can be seen as symptoms of this top-down design approach. Such a top-down approach to designing humanitarian technologies is in direct opposition to the concept of community resilience, where communities are viewed as active agents that should self-mobilise.

The findings in this thesis indicate that in order to promote community resilience, humanitarian technologies should build on and leverage the collective practices that refugee communities engage in. The e-voucher system deployed by the WFP does generate valuable data regarding how food aid is used by refugees to inform future food aid interventions. However, my findings show that refugees circumnavigate the restrictions in the e-voucher system, thus resulting in

food items that cost the same as non-food items being scanned into the system. This means that the e-voucher system as a humanitarian technology is generating inaccurate and fabricated data, on which the WFP will be basing future interventions. As HCI researchers, we need to consider how we can design technologies that embrace refugee practices in a manner that avoids the circumnavigating of the system and therefore fabricated data. Consequently, the design process of humanitarian technologies should begin to engage with refugee communities to capture refugee values and practices, as well as learning from the vulnerabilities that have risen from existing humanitarian technologies. ECD does exactly that. The move to use blockchain technologies to facilitate transactions between shop owners and refugees receiving aid from WFP entails more stringent documentation of transactions (Juskalian, 2018), as well as a live transaction log where irregular behaviours may be more easily flagged. Such systems increase efficiency, especially by reducing WFP's costs of money transfers (Juskalian, 2018), and are in line with the WFP's values of providing aid in the most efficient manner. However, they allow little room for the negotiations considered vital by refugee participants, and may make more visible the loopholes employed by refugees and shop owners. By using an ECD approach in which refugee perspectives were included in the design process, I was able to re-envision, with participants, how blockchain technologies might be used to avoid increasing refugee vulnerabilities and work towards refugee community resilience. Accordingly, I argue for technology designers within this space to contemplate how their technology not only facilitates the delivery of aid but also creates new experiences for refugee communities. My findings show ECD to be a valuable methodology that responds to Maitland's (2019) call to include refugees in the design of humanitarian technologies, and policies related to their design and deployment. That being said, I acknowledge that aid organisations are often rapidly responding to the needs of refugee communities and are working on a scale that is significantly larger than that addressed in this PhD. Consequently, moving forward, the field of HCI should inquire into the design processes of humanitarian organisations and work towards understanding how ECD can be integrated into them.

9.5.1 An approach to engaging in Experience-Centred Design with refugee communities

To that end, I build on the findings in [Chapter 8](#) to further refine the research approach presented in [Chapter 3](#).

A community-based flexible approach

When adopting a community-based approach, researchers within this space should respond to existing community tensions and community needs that may fall outside the scope of the study

and/or project. We need to adopt ECD's call for openness for co-creating knowledge pertaining to the value of the work being conducted. Doing so creates a space in which both the researcher and participants can adapt to unexpected factors that may alter the research plan. Therefore, research for refugee community resilience needs to be inherently flexible so that shared understandings that develop through the initial phases guide the study design and methods as well as how the researcher/designer interacts with participants.

Meaningful outcomes

My findings highlight that when engaging in design research with refugee communities, the expected outcomes should be agreed upon through dialogical approaches. These approaches should be adopted for the researcher/designer to communicate their personal skill set with which they might contribute to the community, and then reach an agreement regarding how they might benefit the community in the present while working towards doing so in the future through the research findings generated. Consequently, meaningful outcomes can be achieved through the researcher taking on multiple roles within the community (e.g. as a tutor).

Dialogue and multi-voicedness

As shown in [Chapter 8](#), dialogical methods can be used as a means of creating a safe space for both the researcher and refugee participants. Through accounting for the multiple perspectives within the community and engaging in dialogue, participants and the researcher can co-create a shared understanding regarding each other and the research. Furthermore, engaging with other stakeholders such as shop owners results in the inclusion of voices from outside the refugee community.

Responsiveness, attentive listening and empathy

My research highlights that through being responsive to what refugee participants considered to be meaningful outcomes, opening up the design space to be configured by participants and the process of co-creating a booklet, I was able to engage with participants in a manner that reflected empathy and attentive listening. Such engagements contributed to the building of meaningful relationships between us. Therefore, researchers should use methods that aim to reflect their responsiveness to refugee experiences and allow them to show empathy. The co-creation of artefacts may facilitate this.

Researcher safety

My initial research approach ([Chapter 3](#)) highlighted the recommended measures to keep researchers safe when conducting research in refugee settlements. Findings in [Chapter 8](#) further augmented this by illustrating the importance of the creation of a safe space for researchers to communicate their identity and positionality to refugee participants. This is especially pertinent when working in contexts of religious sensitivity and when the researcher is of a different socioeconomic background. Dialogical and responsive methods can be used by the researcher to communicate their own experiences, through which both refugees and the researcher can identify commonalities and work towards building a shared understanding of one another.

Continuous reflection

Being responsive and engaging in dialogue meant that I could not consider myself to be an objective listener. Indeed, with ECD the researcher is an active member within dialogue and contributes their perspective towards co-creating shared knowledge with participants. However, such engagements required continuous reflection on my own identity, assumptions and perspectives. In this manner I was able to reflect on my own interactions and identity, as well as the social interactions among refugee participants. Through reflection I was able to reach the methodological findings presented in this thesis and understand the power dynamics that influenced the everyday lives of participants. Lastly, continuously reflecting on the design process in itself made me more conscious of how the research could be configured to create a space for participants to speak and be heard. For this reflexive practice, I adopted an auto-ethnographical approach (Holman Jones, 2007) in documenting and reflecting on the design engagements. I kept a journal where I reflected on my engagements with participants as well as noting certain interactions and experiences that related to my methodological approach. Methods and data collection tools should be iteratively adapted based on these reflections.

9.6 An Adapted Framework for Refugee Community Resilience and Technology

Based on the aforementioned responses to the research questions posed within this thesis, I will now show how the research conducted extends the existing IFRC Framework for Community Resilience (FCR) (IFRC, 2014). I therefore present an adapted framework for refugee community resilience, tailored to guide future technology designers working within this space (figure 9.1).

9.6.1 A community

The FCR provides multiple dimensions through which we can define a community. The definitions account for risks and exposure to disasters, political and economic issues, culture,

resources and geographic locations. In this thesis I present research conducted with Syrian refugee women living in the same informal settlement. Although two participants did not reside in the settlement, they lived nearby, had previously lived there and currently spend most of their time there. The refugees I worked with are exposed to the same risks, political and economic issues and share the same culture and resources. However, my findings indicate that the way in which refugee participants defined their community was more nuanced than the aforementioned dimensions provided by the FCR. Findings from Chapters 4, 6 and 7 highlight that refugee participants place a strong emphasis on familial relations when defining their community, with some participants restricting their interactions to family members. However, other participants, particularly those in group 1, also defined their community based on the social relations that they developed while living in the settlement. Therefore, I extend the FCR by adding defining a community based on social and familial relations.

9.6.2 A resilient community

When extending the FCR framework to the context of refugee communities and the use of ubiquitous technologies, my findings identify characteristics of a resilient community that need adapting.

Social Cohesion

My findings and even the way in which refugee participants engaged with the research studies demonstrate that within the informal settlement, subcommunities form, which are related to how refugee participants define their community (as discussed above). With this knowledge I extend the existing FCR element of ‘social cohesion’ by adapting it to account for the formation of subcommunities. When we start considering subcommunities within the FCR, we are extending the FCR’s definition of resilience. Currently, the FCR defines resilience at the individual, household, community and local government levels. I introduce subcommunities as a level at which we should consider community resilience. In doing so I add a new complexity that we need to consider when working towards refugee community resilience. The findings highlight that when designing a technology to support collective purchasing, the technology must enable the formation of subcommunities, as trust and coordination within subcommunities play a key role in making collective purchasing feasible as a form of self-mobilisation working towards resilience.

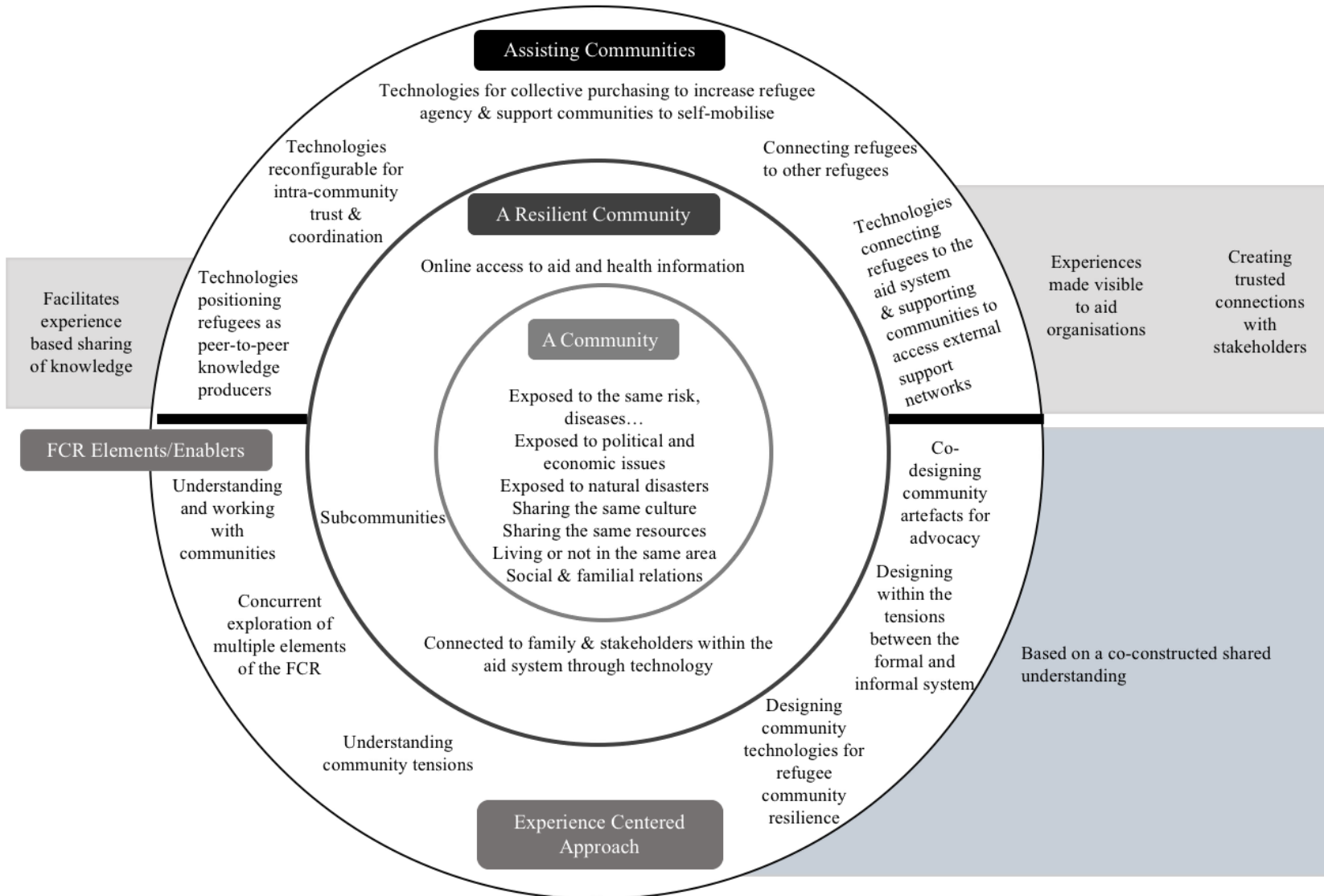


Figure 9.9 The adapted FCR for refugee community resilience and technology

However, moving forward we need to start examining how resilience among subcommunities translates to resilience of the community as a whole – and, furthermore, how we can promote equitable resilience among subcommunities within a community. Consequently, we need to consider how technologies, such as the one explored in this thesis for collective purchasing, would enable equitable access and interactions that would result in equitable community resilience.

Healthy and knowledgeable

The findings in this thesis, primarily [Chapter 4](#), show that smartphones are being used by refugee participants to access health information. Furthermore, in [Chapter 6](#), participants emphasised how peer-to-peer knowledge exchange during the period in which they were adapting to their new context helped them to better cope with food insecurity. Such findings highlight the intimate link between knowledge and health. Indeed, previous studies have shown that low health literacy among refugees contributes to poor health and wellbeing (Makan et al., 2019; Moffat et al., 2017). In [Chapter 5](#), we saw that smartphone applications are being developed to provide refugees with information, with only three of them designed to facilitate refugees connecting to other stakeholders regarding their health. Connecting refugees to healthcare providers using mobile technology was also shown to create spaces in which trusted relationships may develop. However, very few apps are being developed to support peer-to-peer knowledge exchange. Such knowledge exchange was indicated by participants to be invaluable ([Chapter 6](#)). Consequently, I believe that there is room for the FCR to explicitly define resilient communities as those that access and produce knowledge.

Connected to other refugees and services in a trusted manner

The call for refugees to also be knowledge producers creates a space for technologies to contribute to connecting refugees to one another. I extend the FCR definition of a resilient community as connected by stressing the need for it to be connected to other refugees. Such connections would not only contribute to a healthier community but also enable self-mobilisation. Indeed, technologies may play a role in connecting refugees in a manner that contributes to activism (Grimes et al., 2008; Parker, 2013), as well as the coming together of refugees to create collective aspirations (Mintchev et al., 2019). Furthermore, findings from [Chapters 4](#) and [6](#) show that currently, refugee participants have limited avenues through which they may connect to other stakeholders within the aid system. On several occasions, they mentioned their inability to provide aid organisations with feedback or query the aid they were

receiving. This disconnect from the aid system makes it difficult for refugees to engage with it in a manner that contributes to their community resilience. Through mimicking the possible connections that refugees may have with shop owners in [Chapter 7](#), we saw how creating a space in which refugees enter a negotiation process with other stakeholders in the aid system can work towards improving refugee community resilience as well as their food security. Further, the findings indicate that connections with other refugees and service providers, such as shop owners, should be trusted connections that refugees can rely on when engaging in collective purchasing. In my response to Research Question Two, I further expand on the role of community-designed technologies in supporting such trusted connections. In conclusion, I extend the FCR definition of a resilient community as connected by specifying that in the case of refugees, these connections should be made with other refugees and service providers within the aid system – and these connections should harbour trust.

9.6.3 Assisting communities

Supporting communities to self-mobilise by increasing agency

While previous HCI research has highlighted the role of technology in supporting refugee youth in identifying gaps and vulnerabilities experienced by their communities (Fisher & Yafi, 2018; Fisher et al., 2016), we have yet to see how technologies can support refugees in taking action to address these vulnerabilities. The FCR clearly states that when working towards community resilience, we should support community self-mobilisation. My findings indicate that participants felt that their ability to self-mobilise was inhibited by their low agency within the aid system and Lebanese society (Chapters [4](#) and [6](#)). Supporting individuals to be agents within their own environments contributes to building their capabilities over all socioeconomic development (Sen, 2001), and enables community resilience (Berkes & Ross, 2013). The study in [Chapter 7](#) showed the potential of a community-designed technology to contribute to refugee community resilience through allowing refugees to self-mobilise and increase their agency in their day-to-day interactions with the food aid system and members of their host community.

Supporting communities to access external networks

The findings in this thesis show that there is a disconnect between refugee participants and the aid system. At several instances in [Chapter 6](#), refugee participants discussed how they had no means to actively engage with the aid system. Further to that, peer-to-peer knowledge exchange was identified by participants. In [Chapter 5](#) we saw how there are few smartphone applications that connect refugees directly to other actors. Technology may play a role in connecting refugees to other stakeholders. As shown in [Chapter 7](#), a technology for collective purchasing

would enable refugees to connect to shop owners who might not be in their immediate vicinity. Further to that, in [Chapter 6](#) participants highlighted the potential role for technologies to connect them to the aid system in a manner that enabled them to flag negative experiences in shops. Within HCI, several technologies have been developed to better facilitate refugees' connectivity to services and members of their host community. Brown and Grinter (2016) used an interactive voice response system to connect refugees to mentors in the US who aim to help them through the bureaucratic processes of resettlement. In Germany, Neuenhaus and Aly (2017) designed a geolocation-based mobile game that aims at connecting refugees and German youth. The findings in this thesis highlight the potential to extend such notions of connecting refugees to their new environment to encompass connecting them directly to the aid system from which they receive services.

9.6.4 Experience-Centred Design as a people-centred approach

The FCR states that when working towards community resilience, we should adopt a people-centred approach that engages with communities, works with and through formal and informal systems and advocates with communities. This thesis extends the FCR by presenting ECD as a people-centred approach that can be used within this framework. Indeed, given ECD's aim of gaining a holistic understanding of experiences as they result from participants' values and beliefs, I was able to concurrently explore the multiple elements of the FCR. In [Chapters 4](#) and [6](#), by adopting a research-for-ECD approach, I was able to gain an understanding of the refugee community I was working with, how they defined their resilience and how technologies currently contribute to their resilience. Furthermore, in [Chapter 7](#) I adopted a research-through-ECD approach that enabled participants and myself to explore how technologies might further assist a refugee community in building its resilience. Additionally, the dialogical and responsive elements of ECD make it inherently an approach that engages with the community. The approach also enabled me to understand the tensions within the community and work within the existing social structures of the settlement.

Adopting an ECD approach enabled me to engage with the multiple voices in the community (informal system) and stakeholders in the aid system (the formal system). In [Chapters 6](#) and [7](#), I was able to capture the tensions between the community practices employed by participants and the existing e-voucher system and shop owners. Such understandings, coupled with the dialogical approach, enabled me to reach a shared understanding with the participants, based on which we designed a solution that holistically addresses food insecurity through multiple elements of the FCR. Indeed, the conceptually designed platform for refugee collective

purchasing works towards supporting communities to connect to external networks in a trusted manner and increasing refugee agency to support them in self-mobilising. Additionally, the discussion in [Chapter 7](#) speaks to how technologies within this space should be reconfigurable based on understandings of subcommunities within the refugee settlement and the social and familial relations that form them.

Lastly, the co-design of artefacts has previously been used by ECD researchers to show participants that the researcher is being responsive to the data that participants are contributing (Wallace et al., 2013; Wright et al., 2008). The process of making the artefacts and the artefacts themselves allow the researcher to be empathetic through active listening and reflecting on the data from their own experiences. In [Chapter 6](#), participants indicated that they would like such an artefact to be a tool that they could use to communicate to visiting NGO employees who are assessing their food security. Therefore, we can view an ECD approach as a means of producing artefacts that support in advocacy as called for in the FCR.

In conclusion, working within the adapted framework presented in this chapter enables HCI researchers/designers to develop humanitarian technologies that contribute to refugee community resilience. The adapted framework provides guidance regarding the nuanced approach we need to engage with refugee communities, while contextualising it to refugee communities that experience socio-political marginalisation. By using such a framework, we may start to design technologies that directly contribute to the day-to-day community resilience of refugees within their host communities. Furthermore, the focus of the adapted framework on increasing refugee agency and connectivity creates a space in which technologies can shift the role of refugees within the aid system in a manner that builds capabilities for future community resilience.

9.7 Chapter Summary

In this chapter, I revisited the research questions presented in Chapter 1 and responded to them based on the findings presented in this thesis. I also presented an adapted framework for refugee community resilience and technology.

Chapter 10. Conclusion

10.1 Contributions

Given the multiple disciplines that my research draws on, I would like to conclude this thesis by highlighting the contributions made to the fields of Humanitarian Research and Practice, Digital Humanitarianism and Human-Computer Interaction (HCI).

10.1.1 Humanitarian research and practice

This thesis shows that in order to build refugee community resilience, we need to consider the limited agency of refugees, which hinders them from self-mobilising and working towards their resilience. This lack of agency manifests itself in the day-to-day interactions refugees have with stakeholders within the aid system and is perceived by refugees to hinder their ability to self-mobilise and be resilient. Therefore, humanitarian organisations need to consider how they can work within the restrictive social and political policies enforced by host states and communities to increase refugee agency. This thesis identifies that humanitarian technologies which allow refugees to connect to other stakeholders and each other in a trusted manner can increase agency, as they create spaces in which interactions such as negotiation may take place. Consequently, when designing technologies for refugee community resilience we need to consider that technologies are more than just a modality through which aid and/or information is delivered: they are mediators of interactions between refugees and the aid system. By placing refugee agency and connectivity to the aid system at the forefront of designing for community resilience, we would be countering the critiques of the concept of community resilience.

Furthermore, the thesis extends the Framework for Community Resilience (FCR) to consider the familial and social relations that influence the interactions within a community as well as the formation of subcommunities. With community resilience being a concept in which local action is called for, this understanding of communities is needed as the FCR is localised. Existing community dynamics within refugee settlements also entail that humanitarian technologies for community resilience need to be reconfigurable in a manner that allows subcommunities of action to form. Lastly, the thesis presents how Experience-Centred Design (ECD) may be applied as a people-centred approach within the FCR.

10.1.2 Digital humanitarianism

To my knowledge, this is the first piece of research that actively situates technologies into a wider humanitarian framework of community resilience. Duffield (2013, 2016) has discussed how technologies are a means through which humanitarian organisations may abandon communities to cope on their own, contributing to the onus of resilience being placed on the

shoulders of already marginalised communities. However, this discussion has been built on understandings of the role of more pervasive technologies, such as drones, that are being used in humanitarian contexts, as well as on technologies that link international humanitarian organisations to local ones. This thesis highlights that even the more ubiquitous humanitarian technologies that refugees engage with on a day-to-day basis, such as the e-voucher system, shift the responsibility for distributing aid away from humanitarian organisations to other stakeholders such as shopkeepers. These shifts create new spaces in which refugees have negative experiences that can be attributed to the power dynamic between them and shopkeepers, as well as to refugees' limited digital literacy. Further, despite claims that technology is a means through which refugees may be empowered, this thesis shows that existing smartphone applications designed to be used by refugees only act as sources of information, which in itself is empowering. However, current smartphone applications do little to facilitate refugees engaging with each other for peer-to-peer support and with other stakeholders in the aid system. Therefore, existing smartphone applications can be viewed to be mimicking traditional aid models where refugees are viewed only as recipients of aid rather than active agents working towards their resilience.

One of the main contributions this thesis makes is that it engages in the design of a humanitarian technology in a manner that counters the existing critiques of digital humanitarianism and community resilience. By designing for trusted connections and engagements between refugees and stakeholders and for increasing refugee agency and ability to self-mobilise, the technology would contribute to community resilience while countering the critiques of digital humanitarianism. Through facilitating trusted connections between refugees and other stakeholders, refugees may engage with the aid system in a manner that brings them closer to the aid actors. Those lines of engagement also form the lines of accountability through which concerns regarding shifts of responsibility may be addressed. Further to that, scholars have expressed concern regarding how technologies may replicate if not amplify existing power asymmetries that impact refugees (Sandvik et al., 2014; Jacobsen, 2015; Duffield, 2016). However, my research shows that we may design technologies that increase refugee agency through enabling refugees to negotiate with stakeholders in the aid system as communities or subcommunities. By doing so, humanitarian technologies will enable the shifting of the roles of refugees and the creation of new power dynamics that favour refugee communities. Through these shifts, digital humanitarianism would be able to counter restrictive policies imposed by host countries as they are experienced in the day-to-day interactions of refugees.

10.1.3 Human-Computer Interaction

Despite the growing amount of research in the area of HCI that focuses on designing technologies for refugees, there has been limited work applying the methods and knowledge of this field within wider humanitarian frameworks. This thesis contributes to the field by situating it within a framework for community resilience and the field of digital humanitarianism. Through leveraging ECD, a commonly used methodology in HCI, within the aforementioned humanitarian fields, we are able to see how HCI's approach to designing technologies with refugees enables the co-creation of technological designs that address the critiques of community resilience and digital humanitarianism. This highlights the value of HCI as a field of study and practice within humanitarian research. Additionally, I extend existing HCI research on food security and food sustainability to refugee contexts, demonstrating how technologies supporting alternative food networks may be tailored to support refugee community resilience. Furthermore, within the field of HCI, before the research presented in this thesis, designs for technologies to be used for refugees or for resilience had yet to adopt a community-based approach that also accounted for community dynamics as well as the socio-political factors that contribute to the lack of resilience of refugees. This research provides a platform through which HCI can contribute to community-driven humanitarian technologies that engage with the structures of humanitarian aid systems. Lastly, I contribute to a design research approach that can be adopted by other HCI researchers working with refugee communities.

10.2 Future Research

The research in this thesis is the first step towards leveraging HCI research and expertise to design humanitarian technologies for community resilience. However, throughout the conducting this work, several new research questions were raised as a result of the data generated as well as the process of situating the findings within the wider field of humanitarianism. In this section I raise conceptual and methodological questions that are concerned with the future application of the adapted FCR by humanitarian organisations and HCI researchers.

10.2.1 Conceptual

The IFRC's comment regarding implementing the FCR in humanitarian contexts highlights the difficulty of addressing the underlying social inequities that contribute to the vulnerability of refugee communities (IFRC, 2016). However, my findings highlight that in protracted refugee settings, technologies may play a role in building refugee agency, which in turn facilitates

refugee self-mobilisation and builds refugee community resilience within their day-to-day experiences. That being said, with the ongoing push from host countries such as Lebanon for the repatriation of Syrian refugees (Anchal, 2019), we need to consider how humanitarian interventions and technologies may best equip refugees to engage in post-conflict rebuilding. Therefore, future research should have a more longitudinal perspective to gain an understanding of how building day-to-day community resilience among refugees while they reside in their host country impacts community resilience when they return to their home country. Further, given the data generated through my research regarding the complex context in which refugee subcommunities form, future research must explore the notion of equitable community resilience and how technology may support that. This line of inquiry should further build on recent research that explores how technologies may play a role in building refugee social capital (Almohamed et al., 2017). Lastly, I conducted my research with refugee women; there is more to be explored regarding the gendered roles within communities that contribute to refugee community resilience. Fisher and Yafi (2018) have previously highlighted that male youth in Za'atari refugee camp play the role of information wayfarers who use mobile phones to connect to the intermittently available Internet and access information required by other members of their community. The authors also emphasise that this is a very gendered role; therefore, future endeavours that aim at designing technologies for refugee community resilience should expand and adapt frameworks such as the FCR to understand and reflect the gendered use of technology as well as the gendered roles of community members.

Lastly, this thesis focuses on food security as a case study as it is an element of the FCR, through which I explored how technology can be designed to improve refugee food security and build refugee community resilience. Food security is only one indicator suggested by the FCR. Further research is needed to explore how the findings relate to other elements of the FCR (e.g. would increased agency enable community resilience in response to other stressors such as poor water and sanitation?).

10.2.2 Methodological

One of the main contributions of this thesis is presenting ECD as a people-centred approach that can be adopted within the FCR. Engaging in ECD enabled me to fully understand the social interactions within the community as well as refugee participants' experiences of resilience and coping with food insecurity. Moreover, the dialogical and responsive approach called for in ECD enabled the creation of a shared understanding, between refugee participants and myself, of the research and our respective identities. That being said, it is important to note that I

conducted this research over a long period with one community that I visited for months at a time. Such time affordances are not readily available in more acute humanitarian crises or during the onset of protracted refugee contexts, where rapid assessment, intervention (technology) design and response are essential (Howard et al., 2012). Therefore, further research needs to be conducted with humanitarian organisations to (1) understand their design processes and (2) explore how ECD can be integrated into those processes. Furthermore, my research has mainly focused on integrating refugee community practices and their visions for future experiences into the design of technologies for community resilience. More design research is needed to explore the humanitarian practices that need to be accounted for and the possible tensions that may arise between humanitarians' values and practices and those of refugee communities.

10.3 Final Remarks

This thesis adapts an existing framework for community resilience to incorporate digital technology as a means of building refugee community resilience. With the turn towards the use of digital technologies within humanitarian response, this timely research highlights how we may start designing technologies that challenge existing models of aid and humanitarian technologies, which limit refugees' abilities to challenge the factors that limit their day-to-day community resilience. Using an ECD approach enabled participants and myself to envision new experiences in which humanitarian technologies could play a role in increasing refugee agency and allowing them to self-mobilise to work towards community resilience. In these new envisioned experiences, humanitarian technologies can be seen as mediators of interactions between refugees and the aid system and therefore as tools for empowering refugees in a manner that does not abandon them to cope with stressors on their own but rather connects them to the aid system. Through shifting refugees' roles from being passive beneficiaries of aid to active agents within the aid system, we can start challenging the current xenophobic political environment in which refugees live. Future displacement and refugee crises are forecasted to be related to climate change and not just military conflict; therefore, we need to start considering the future role of technologies in supporting refugee community resilience in even more protracted (if not permanent) settings.

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Appendices

Appendix A: Ethical Approval



Reem Talhouk
Institute of Health & Society

Faculty of Medical Sciences
Newcastle University
The Medical School
Framlington Place
Newcastle upon Tyne
NE2 4HH United Kingdom

FACULTY OF MEDICAL SCIENCES: ETHICS COMMITTEE

Dear Reem,

Title: Exploring the design considerations for technologies that aim at improving refugee livelihoods

Application No: 01232_1/10060/2018 Amendment

Start date to end date: 01/02/2017 to 28/02/2019

On behalf of the Faculty of Medical Sciences Ethics Committee, I am writing to confirm that the ethical aspects of your proposal have been considered and your study has been given ethical approval.

The approval is limited to this project: **01232_1/10060/2018**. If you wish for a further approval to extend this project, please submit a re-application to the FMS Ethics Committee and this will be considered.

During the course of your research project you may find it necessary to revise your protocol. Substantial changes in methodology, or changes that impact on the interface between the researcher and the participants must be considered by the FMS Ethics Committee, prior to implementation.*

At the close of your research project, please report any adverse events that have occurred and the actions that were taken to the FMS Ethics Committee.*

Best wishes,

Yours sincerely

A handwritten signature in black ink, appearing to read "K. Sutherland".

Kimberley Sutherland
On behalf of Faculty Ethics Committee

cc.
Professor Daniel Nettle, Chair of FMS Ethics Committee
Ms Lois Neal, Assistant Registrar (Research Strategy)

*Please refer to the latest guidance available on the internal Newcastle web-site.

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APPROVAL OF RESEARCH AMENDMENT

December 11, 2018

Dr. Hala Ghattas
American University of Beirut
01-350000 Ext. 4679
hg15@aub.edu.lb

Dear Dr. Ghattas,

On December 11, 2018, the IRB reviewed the following protocol:

Type of Review:	Modification, Expedited
Project Title:	Exploring the design considerations for technologies that aim at improving Syrian refugee food security- Phase one
Investigator:	Hala Ghattas
IRB ID:	FHS.HG.11
Funding Agency:	PhD Grant
Documents reviewed:	Received September 26, 2018: Amendment Letter, Consent form- Syrian refugees women (Arabic and English versions), Consent form- Shop Owners (Arabic and English versions), Interview Guide (Arabic and English versions), Scenario (Arabic and English versions).

The IRB reviewed and approved the proposed amendment to the protocol which entails:

- Conducting 15 sessions with the Syrian refugees woman,
- Interviewing local shop owners.

from **December 11, 2018** to **July 12, 2019** inclusive.

Before May 12, 2019 or within 30 days of study close, whichever is earlier, you are to submit a completed "FORM: Continuing Review Progress Report" to request continuing approval or study closure.

If continuing review approval is not granted before the expiration date of **July 13, 2019**, approval of this research expires on that date.

Please find attached the stamped approved documents:

- Consent form- Syrian refugees women Arabic and English versions (received September 26, 2019),
- Consent form- Shop Owners Arabic and English versions (received September 26, 2019),
- Interview Guide Arabic and English versions (received September 26, 2019),
- Scenario Arabic and English versions (received September 26, 2019).

Only these IRB approved consent forms and documents can be used for this research study.

Page 1 of 2

Thank you.

The American University of Beirut and its Institutional Review Board, under the Institution's Federal Wide Assurance with OHRP, comply with the Department of Health and Human Services (DHHS) Code of Federal Regulations for the Protection of Human Subjects ("The Common Rule") 45CFR46, subparts A, B, C, and D, with 21CFR56; and operate in a manner consistent with the Belmont report, FDA guidance, Good Clinical Practices under the ICH guidelines, and applicable national/local regulations.

Sincerely,



Michael Clinton, PhD
Co-Chairperson IRB Social & Behavioral Sciences

Cc:

Fuad Ziyadeh, MD, FACP, FRCP
Professor of Medicine and Biochemistry
Chairperson of the IRB

Ali K. Abu-Alfa, MD, FASN, FASH
Professor of Medicine
Director, Human Research Protection Program
Director for Research Affairs (AUBMC)

APPROVAL OF RESEARCH AMENDMENT

December 11, 2018

Dr. Hala Ghattas
American University of Beirut
01-350000 Ext. 4679
hg15@aub.edu.lb

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Sincerely,

Michael Clinton, PhD
Co-Chairperson IRB Social & Behavioral Sciences

Cc:

Fuad Ziyadeh, MD, FACP, FRCP
Professor of Medicine and Biochemistry
Chairperson of the IRB

Ali K. Abu-Aifa, MD, FASN, FASH
Professor of Medicine
Director, Human Research Protection Program
Director for Research Affairs (AUBMC)

Appendix B: Consent Scripts



Oral Consent to Participate in a study exploring the design considerations for technologies that aim at improving Syrian Refugee Food Security (Phase 1)

A research project carried out by the American University in Beirut and Newcastle University

Investigators: Dr. Hala Ghattas¹, Reem Talhouk^{1,2,3}, Dr. Madeline Balaam², Dr. Chaza Akik¹, Dr. Vera Araujo-Soares³, Dr. Balsam Ahmad³, Dr. Patrick Olivier²

1. Center for Research on Population and Health, American University of Beirut
2. Open Lab, Newcastle University
3. Institute of Health and Society, Newcastle University

Dear woman of the refugee community

We would like to take your consent for you to participate in a research project called “Exploring the Design Considerations for Technologies that Aim at Improving Food Security”. The purpose of the study is to discuss with the women in your community the food situation. This includes discussing how you go about meeting the food needs for you and your family. If you are willing to participate you will not receive any direct benefits but will be provide with snacks every time we have a discussion.

Here is what will happen:

- We will meet around 10 times for an hour each time
- We will tell stories about the food situation of your community
- We will discuss how technology can help improve the food situation of your community
- The discussions will take place over a month in the Informal Tented Settlement.
- We will be audio taping the discussions and taking images.
- Audio recordings will be deleted after they have been transcribed.
- Images will be deleted after the faces have been blurred.

What are the risks and benefits of this project?

- The discussion may upset you because we will be discussing how you go about meeting the food needs for you and your family.
- Snacks will be provided every time we have a discussion.
- This research will help design a technology that will help improve the food situation of refugee communities.

Please remember:

- Your participation in this study is completely voluntary.

- If you choose not to participate or if you choose to withdraw from the study at any point there will be no penalty or loss of benefits to which you are otherwise entitled; neither will this affect your relationship with AUB or Newcastle University.
- You will not receive any form of monetary compensation as payment for your participation. However, the research team will provide snacks during the discussions.
- All information collected will be solely used for the study and for no other purpose. All the information will be kept confidential. Unless required by law, only the principal investigators and the ethics committee will have direct access to your records. We are committed to maintaining your privacy.

	If you are interested in participating in project, here are the things we are asking you to agree to. Please check the box if you agree:	
1.	You have heard and understood the information about the project, as provided in the Information Sheet dated _____.	
2.	You have been given the opportunity to ask questions about the project and your participation.	
3.	You voluntarily agree to participate in the project.	
4.	You understand you can withdraw at any time without giving reasons and that you will not be penalized for withdrawing nor will you be questioned on why you have withdrawn.	
5.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymisation of data, etc.) to you.	
6.	Do you consent to us audio recording the discussions?	
7.	Do you consent to being in still photos with your face blurred?	
8.	When I summarise the results of this study, I may wish to quote from the discussions without attributing the quotes to any individuals. Do you consent to being quoted anonymously?	
9.	If applicable, separate terms of consent for interviews, audio, video or other forms of data collection have been explained and provided to you.	

10.	The use of the data in research, publications, sharing and archiving has been explained to you.	
11.	Do you, along with the researcher and the presence of this witness, agree to verbally provide consent to this informed consent form dated _____?	

If you have any questions, you are free to ask them now. If you have questions, concerns or complaints about this research study later, you may contact me, Reem Talhouk, at r.r.talhouk2@ncl.ac.uk or 0096179302471 or my supervisor Dr. Hala Ghattas, in AUB, at +961-1-350000, ext: 4679 and/or at hg15@aub.edu.lb. If you are not satisfied with how this study is being conducted, or if you have any concerns, complaints, or general questions about research or your rights as a participant, please contact the AUB Social & Behavioral Sciences Institutional review Board (SBSIRB) at AUB: +961-1-35000 ext: 5445, fax: ext 5444 or irb@aub.edu.lb

Name of person obtaining consent

Signature of person obtaining consent

Date

Oral Consent to Participate in a study exploring the design considerations for technologies that aim at improving Syrian Refugee Food Security (Phase 1)

A research project carried out by the American University in Beirut and Newcastle University

Investigators: Dr. Hala Ghattas¹, Reem Talhouk^{1,2,3}, Dr. Madeline Balaam², Dr. Chaza Akik¹, Dr. Vera Araujo-Soares³, Dr. Balsam Ahmad³, Dr. Patrick Olivier²

1. Center for Research on Population and Health, American University of Beirut

2. Open Lab, Newcastle University

3. Institute of Health and Society, Newcastle University

We would like to take your consent for you to participate in a research project called “Exploring the Design Considerations for Technologies that Aim at Improving Food Security”. The purpose of the study is to discuss with 10 shop owners in the area how a technology that enables refugee communities to collectively buy in bulk should function in order to improve refugee food security. If you are willing to participate you will not receive any direct benefits but will be provided with snacks every time we have a discussion.

Here is what will happen:

- We will have a 60 minute interview
- We will be audio taping the interview.
- Audio recordings will be deleted after they have been transcribed.

What are the risks and benefits of this project?

- The discussion may upset you because we will be discussing details about your business.
- This research will help design a technology that will help improve the food situation of refugee communities.

Please remember:

- Your participation in this study is completely voluntary.
- If you choose not to participate or if you choose to withdraw from the study at any point there will be no penalty or loss of benefits to which you are otherwise entitled; neither will this affect your relationship with AUB or Newcastle University.
- You will not receive any form of monetary compensation as payment for your participation.
- All information collected will be solely used for the study and for no other purpose. All the information will be kept confidential. Unless required by law, only the principal investigators

and the ethics committee will have direct access to your records. The records will be monitored and may be audited by the Institutional review board while assuring confidentiality. We are committed to maintaining your privacy.

	If you are interested in participating in project, here are the things we are asking you to agree to. Please check the box if you agree:	
12.	You have heard and understood the information about the project, as provided in the Information Sheet dated _____.	
13.	You have been given the opportunity to ask questions about the project and your participation.	
14.	You voluntarily agree to participate in the project.	
15.	You understand you can withdraw at any time without giving reasons and that you will not be penalized for withdrawing nor will you be questioned on why you have withdrawn.	
16.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymisation of data, etc.) to you.	
17.	Do you consent to us audio recording the interview?	
18.	When I summarise the results of this study, I may wish to quote from the discussions without attributing the quotes to any individuals. Do you consent to being quoted anonymously?	
19.	If applicable, separate terms of consent for interviews and audio recording or other forms of data collection have been explained and provided to you.	
20.	The use of the data in research, publications, sharing and archiving has been explained to you.	

21.	Do you, along with the researcher, agree to verbally provide consent to this informed consent form dated _____?	
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If you have any questions, you are free to ask them now. If you have questions, concerns or complaints about this research study later, you may contact me, Reem Talhouk, at r.r.talhouk2@ncl.ac.uk or 0096179302471 or my supervisor Dr. Hala Ghattas, in AUB, at +961-1-350000, ext: 4679 and/or at hg15@aub.edu.lb. If you are not satisfied with how this study is being conducted, or if you have any concerns, complaints, or general questions about research or your rights as a participant, please contact the AUB Social & Behavioral Sciences Institutional review Board (SBSIRB) at AUB: +961-1-35000 ext: 5445, fax: ext 5444 or irb@aub.edu.lb

Name of person obtaining consent	Signature of person obtaining consent	Date

Appendix C: Shop Owner Interview Guide

Exploring the design considerations for technologies that aim at improving Syrian

Refugee Food Security (Phase 1)

Shop Owner Interview

-How long have you had this shop?

-Before or after the Syrian refugee crisis began?

-Is this a family business?

-Who are your main customers?

-Local Lebanese community?

-Syrian refugee community?

-How do you try to attract customers?

-Advertisements in front of or in shop?

-Social media?

-SMS?

-Do you accept food vouchers from refugees?

-Were you approached by the World Food Program, the United Nations or any other NGO to be part of a program for Syrian refugees?

- Do you know based on what they are selecting shops to be a part of these programs?

-If you are part of the voucher system, please describe to us how the system works.

-How has having Syrian refugees here affected your business?

-more customers?

-more competition?

-Price regulation?

-expanding the business?

-employing workers?

-Do you let people buy items on credit?

-have you before?

-Do you accept this from all your customers, Lebanese and Syrians?

-Do you accept it for only select customers?

- Do you place a limit?
- Is there a time frame?
 - How do you claim the money back?
 - Do you accept being paid back in instalments?
- How do you agree with the customer on the terms of buying items on credit?
 - Does that differ if they are Lebanese or Syrian?
 - When did you start making these agreements?

- Do you bring in items based on the request of communities?

- Do you offer grocery delivery services?
 - Why?
 - How does the system work?
 - Have you had any bad experiences when delivering groceries (e.g. People not paying)?

- Do you sometimes negotiate prices with your customers?

- Do you sometimes do discounts or offers?

- If we are to design a way that people can buy from your shop in large quantities, would that be feasible for you?
 - advantages?
 - disadvantages?
 - barriers?
 - facilitators?
 - would you negotiate prices if people are buying in large quantities?
 - would you consider delivering it to them if it is large quantities?
 - Give examples of vegetables and fruits

- Do you use the Dalili app?

Appendix D: Example Vignette

Aziza is a Syrian refugee living in a Lebanese town in Bekaa. She has been living here for 5 years and lives with her husband and three children. She lives in a building where some of her extended family live. She gets along with her extended family.

One of the main things that Aziza struggles with is providing food for her family. When money is tight Aziza needs to make tough choices about the food choices she has to make. She has food vouchers that she can use in only one shop in town.

- (1) Please describe how you think Aziza feels about the situation?
- (2) How does she feel about using the food vouchers?
- (3) Describe how her experience would be in that shop?

Aziza feels that it is a bit unfair that she can only use the vouchers in only this shop.

- (1) Why would Aziza feel that it is unfair that she can only use the vouchers only in this shop?
- (2) Do you think Aziza may have any other options?
- (3) Do you think that Aziza can complain about the current system?

Aziza decides that she wants to make the system more fair, she wants to get more food from her voucher by using it in a shop that she knows is cheaper. So she decides to talk to her neighbours and friends about which shops they would recommend to be integrated in to the voucher system.

- (1) Would Aziza's family and neighbors support her?
- (2) Based on what would they recommend a shops?
- (3) How will Aziza tell the World Food Program or the UNHCR about the shops that she thinks should be included in the voucher system?

Aziza is visited by surveyors asking her about food security and she tells them that she has ideas of how she can make the voucher system more fair.

- (1) Please describe how Aziza will explain to the surveyor her idea
- (2) How do you think the surveyor will react?

Aziza has managed to get a meeting with an official that works at the UN on food security and proposes her idea of suggesting to them which shops her and her family and friends

would like to use their vouchers in. The official listens to her and asks her based on what did you choose these vendors.

- (1) Please describe how Aziza would answer that question
- (2) Please describe what information would Aziza need to have gathered in order to answer that question

The official likes Aziza's idea and asks her and her friends to rate shops and shop owners based on the criteria she just mentioned.

- (1) How would they agree to the rating?
- (2) Would the rating be only numerical or do they want to add descriptions?
- (3) Will the rating change over time?
- (4) How would Aziza and her friends and family share the ratings with the official?

Appendix E: Anonymised World Food Programme Interview Response

Tuesday, October 1, 2019 at 4:09:55 PM British Summer Time

Subject: RE: Study on innovation and food security
Date: Tuesday, June 26, 2018 at 2:41:18 PM British Summer Time
From: [REDACTED]
To: Reem Talhouk (PGR)

Dear Reem,

Thank you very much for your interest, and good to hear from you.

Due to the large number of daily academic requests we receive, I'm afraid we're no longer able to grant individual interviews.

Please have a look at our website (<http://innovation.wfp.org>) for more info on the innovation projects we support (<http://innovation.wfp.org/projects>). If you are keen to know about the work of the Innovation Accelerator, you are welcome to sign up for our newsletter and follow us on social media.

Best wishes,

[REDACTED]

Appendix F: Dialogue Cards





كوسا



البطاطس المقلية



الطعام المشوي



شوربة الخضار



فتة



كعكة



مجدرة



منافش



كعكة



رز و دجاج



همبرجر



رقائق البطاطس



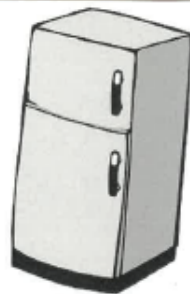
الكهرباء



الماء

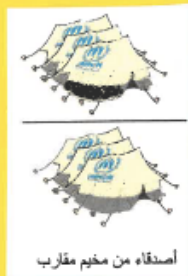


الغاز



الثلاجة





Appendix G: Individual Shopping List Sheet (English)

Name: _____

		A	B	C			
Item Number	What are the items that you want to buy this month? Please list the items below including the brand name and/or type.	How much would you pay for this in Lebanese Liras?	What are the quantities that you want to buy for each item?	What is the total cost for this item? (A x B)	Would you pay or this using cash of voucher?	Would you Swap this item?	If yes, please list the brands and/or types of items you are willing to swap it with?
1					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
3					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
6					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
7					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
9					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10					<input type="checkbox"/> Cash <input type="checkbox"/> Voucher	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Budget (L.L)	
Cash:	
Voucher:	
Total:	

Total Shopping Cost (L.L)	
Total (Sum of C)	