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Technological Solutions and Organizational Failures

How dysfunctional information management hampers the possibility of a comprehensive and reliable crisis management through ICT systems

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Abstract

The evolving possibilities of using new types of technology in emergency settings have made both the UN agencies and International Non-Governmental Organizations (INGO) open their eyes for the potential benefits this can present for them in humanitarian emergencies. Especially information and communication technology (ICT) systems have been applied to ensure that the needs of the people at risk are being meet, through a reliable and efficient information management system across organizations. This explorative thesis will present, discuss and conclude the findings from our two fieldworks conducted in Lebanon in 2014/2015. The empirical material has been collected from relevant governmental and humanitarian actors at field and national level as well as beneficiaries. Our study focuses on *how ICT systems can contribute to reliable information management in the humanitarian response*. Descriptive and normative theoretical perspectives within information processing have been applied to be able to describe how information management across levels in a hierarchical system either should be reliable, or how the organizational errors may lead the information processing to fail. In addition a theoretical perspective on how technological systems are diffused and adopted in the hierarchical system is used; this will shape the theoretical framework and guide the findings when answering the research questions and problem. The key findings in this thesis suggests that the official ICT systems in Lebanon are innovated and implemented in ways that do not make these compatible with the needs of all users across levels within the organizations. This is especially the case for the users at field level, who have identified different technological needs than what has been developed at national level. Findings also illuminate that when the ICT systems are not covering the existing needs it creates challenges for cross-organizational information processing as users starts to develop their own internal ICT systems to cover their needs, creating a fragmented information picture over needs and gaps across organizations. Further, the findings indicate that a lack of standardized ways of both sharing information, as well as organizations operate with their own set of information, further hampers the possibility for reliable information management. Lacking a holistic approach when performing assessments, the implementation of further interventions may not be according to the actual needs. The lack of a common approach, when handling information therefore limits the possibility, of having reliable information management through ICT systems in the humanitarian response in Lebanon.

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What we have experienced and seen can never be unseen nor forgotten...

This thesis marks an end to our master's degree in Societal Safety at the University of Stavanger. This yearlong experience has given us some lifelong lessons that have changed our lives in so many ways. New insight, knowledge and appreciation for life has undoubtedly made the challenges we faced worth it. It is time to thank those individuals who have given us immensely support during this journey.

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Sandra Lura and Anine Margit Jensen,
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This thesis is dedicated to the 2, 5 million forgotten refugees in Lebanon,
may our words bring your voice out…

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Acronyms

COC	Code of Conduct
GIS	Geographical Information Systems
HC	Humanitarian Coordinator
HCT	Humanitarian Country Team
IA	Inter-Agency
IASC	Inter-Agency Standing Committee
ICT	Information Communication Technology
IDP	Internal Displaced Person
IFRC	International Federation of Red Cross and Red Crescent Societies
IM	Information Manager
IMWG	Information Management Working Group
INGO	International Non Governmental Organizations
IOM	International Organization for Migration
IP	Implementing Partners
IS	Islamic State
IT	Information Technology
ITS	Informal Tented Settlement
LCRP	Lebanon Crisis Response Plan
MoSA	Ministry of Social Affairs
NGO	Non Governmental Organizations
RC	Resident Coordinator
RRP	Regional Response Plan
SWG	Sector Working Groups
UN	United Nations
UNDP	United Nations Development Program
UNHCR	The United Nations High Commissioner of Refugees
UNICEF	United Nations Children Fund
UN-OCHA	The United Nations Office for the Coordination of Humanitarian Affairs
UNRWA	United Nations Relief and Works Agency for Palestine
WFP	World Food Program
WHO	World Health Organization

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1.0 Introduction

For the last decade there have been an increased development and usage of technology. Technology has not only changed the way organizations and institutions operate, but also the entire social existence of life (Mørk, 2014). The spread of mobile phones, the rise of Internet and digital social media are enabling people to connect with each other across previously impenetrable divides. As people in both rich and poor countries are getting connected through these types of technology at an accelerating pace, humanitarian aid agencies are racing to understand how this can change the way they operate (IFRC, 2013; UN-OCHA, 2012). In the last years the usage of technology has increased in humanitarian operations, and developing it further is seen as essential within this field as it gives opportunities to improve information, analysis, coordination and other vital functions within the humanitarian field (IFRC, 2013).

It is especially the development of information and communication technology (ICT) that has increased in recent years within humanitarian aid (IFRC, 2013). The term covers all devices used for communication, and all the different applications associated with the devices (Rouse, s.a). A number of ICT systems have already implemented within several humanitarian responses around the world (IFRC, 2013). ICT systems can detect the needs more rapidly than what previously was possible, predict the crises better, and ultimately increase the efficiency of response through pairing the resources to needs of communities at risk, leading to more accountability and transparency (IFRC, 2013; Ngang & Kuo, 2010; Saab, Tapia, Maitland, Maldonado, & Tchouakeu, 2013). In order for the ICT systems to detect the needs more rapidly and predict the crisis better than before, the information that is feed to the ICT system needs to be accurate. Accurate and timely access to information is crucial in a crisis (UN-OCHA, 2012), and the humanitarian assistance is driven by information in determining priorities and resource allocation (IFRC, 2013). Analyses of emergency responses in recent years have, regrettably, revealed poor information management, whereby the responders have been hamstrung by a severe lack of shared standards for information sharing (UN-OCHA, 2012). However, the newly arisen technologies for information sharing in humanitarian operations offer humanitarian organizations the chance to address these shortfalls, as well as the possibility to get closer to the people they are seeking to effectively assist (Ergun, Gui, Stamm, Keskinocak, & Swann, 2014; Sandvik, Gabrielsen, Kalsrud, & Kaumann, 2014; UN-OCHA, 2012). Nevertheless, the usage of ICT systems in humanitarian aid is a relatively new phenomenon, there currently are little or no systematic and standardized procedures for implementing them (IFRC, 2013).

Previous reports have, in particular, emphasized how the diffusion and adoption of humanitarian technology has allowed the crisis-affected population to state their needs in a new way (IFRC, 2013). The ways in which this affects the operational humanitarian organizations information management has, however, focused more on the tremendous advantages this gives in the efficient gathering of information. How the various organizations are going to manage to work together through these ICT systems has been given little or no attention. This is noteworthy, as several UN reports, and previous research has identified a lack of common standards for information management in humanitarian operations, which hampers the potential for efficient information processing in the response (Altay & Pal, 2014; Huesmann, 2006; Kruke & Olsen, 2005; UN-OCHA, 2012). Little attention has been given to how insufficient information management across organizations affects the optimization of these ICT systems in a crisis, though United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) did state in their 2012 report that humanitarian organizations were struggling to adjust to these new technological forms for crisis response management. In order to deliver aid according to the existing needs of the beneficiaries, the humanitarian response needs to be efficient, reliable and well-coordinated between organizations (Kruke & Olsen, 2005). Reliability can be seen as a mix of resilience and anticipation. Where a reliable humanitarian response will be able to predict and prevent potential dangers before the damage has occurred. If the damage is already done, however, the reliability in the response should have the capacity to cope with these dangers before they become manifest (Ibid). This means that for the ICT systems to fulfill its purpose it needs to enable the organizations to have reliable information management, where they can prevent and predict potential dangers, as well as cope with damages before it is manifested (Ibid).

1.1 Background for choice of topic

While humanitarian organizations are struggling to adjust to new technological systems (UN-OCHA, 2012), the number of humanitarian emergencies around the world is increasing. Never in this century has there been more people escaping from their homes to save their lives. Today, at least 51, 2 million people have the status internal displaced person (IDP) or a refugee (Skretteberg & Lindstad, 2014). Syria is the biggest humanitarian emergency in our decade and have sent 7,6 million people on internal displacement, as well as 3.8 million identified Syrian refugees across the borders of the neighboring countries (NRC, 2015).

Lebanon is the country that has received the most number of refugees compared to their population and geographical area. The situation in Lebanon today demands an international humanitarian response as it has 1,183,327 registered refugees (UNHCR, s.a-b)

Powered by technologies such as ICT systems, humanitarian actors can engage in disaster response at an unprecedented level, where if they manage to work together, they can provide aggregated and analyzed information that improve humanitarian relief for the increasing numbers of refugees and IDPs (HHI, 2011), as they can access more accurate, timely and reliable information, through adapting to new data sources (UN-OCHA, 2012). ICT systems was already used by humanitarian actors after the earthquake in Haiti in 2010 (Heinzelman & Waters, 2010). Yet this humanitarian response was considered a failure, due to the fragmented nature of the response, and the use of hierarchical models of information management (Altay & Labonte, 2014). There is a growing recognition of the critical role information management can play in formulating efficient humanitarian relief operations (Ibid). Previous research has however focus more on two-way communication with the affected population (Heinzelman & Waters, 2010; HHI, 2011; IFRC, 2013; UN-OCHA, 2012; Veil, Buehner, & Palenchar, 2011). This has contributed to valuable knowledge about how the ICT systems can be further developed, in ways that allows the affected population to disseminate information about their actual needs. However, there is until now no profound research that aims to answer how these ICT systems can be adjusted to the needs of the humanitarian organizations, and how this in combination with the humanitarian system obstruct or promote the possibility for the ICT systems to fulfill its intended purpose. Harvard Humanitarian Initiative (HHI) stated in their Disaster Relief 2.0 report (2011) that the rapid development of ICT tools made it increasingly difficult to handle information, due to poorly adapted tools training and strategies, therefore it is seen as important to examine how these tools are spread and implemented in a humanitarian response. In addition as the humanitarian system consist of different actors that have inconsistent approaches with regards to practices and beliefs, as well as their view on the role of international aid (HHI, 2011). Therefore it is important to explore how the establishment of ICT systems could create reliability in terms of information management in a humanitarian response, because it presents a profound possibility to grasp old problems with a new systematic and common way of sharing information. As Lebanon currently is facing a tremendous humanitarian crisis, and has implemented several ICT systems for information management, it was our possibility to examine the challenges and advantages presented throughout section 0.1 and 1.1 further.

1.2 Research problem and operational research questions

Using ICT systems in a crisis offers profound advantages in disseminating crucial information across humanitarian organizations (UN-OCHA, 2012). Communication technology does, however, become problematized by the differences in culture, lack of shared standards and the absence of operational protocol: thus rendering it difficult for diverse humanitarian organizations to work together (Ibid). Therefore, based on these assertions it is reasonable to investigate this further to see how the organizations and the ICT systems are able to contend with this. To investigate such issues the following research problem has been established:

How do ICT systems contribute to reliable information management in the humanitarian response in Lebanon?

In order for the ICT systems in a humanitarian response to contribute to reliable information management, the system needs to be diffused and fully adopted by all relevant users. To achieve its purpose of providing timely and accurate information, it needs to be structured and clear information processing between the humanitarian actors. A fully diffused and adopted ICT system that is based on structured and clear information, will then lead the assessments, planned activities, and implementation of interventions to be reliable and meet the actual needs. This is ultimately what information management in a humanitarian response seeks to accomplish. So that when re-assessing the affected population, there is a link between needs that have been meet and gaps that needs to be further addressed. Three operational research questions have been developed, to answer how ICT systems does contribute to reliable information management in the humanitarian response in Lebanon. The research questions are respectively:

1) How is the diffusion and adoption of ICT systems in Lebanon?
2) How is the information processing among humanitarian actors in Lebanon?
3) What is the relation between the assessments, the planned activities and the implementation of interventions in the humanitarian response in Lebanon?

1.3 Limitations

The limited capacity and scale of this thesis made it necessary to delimit what areas this research would examine. The theoretical framework presented in chapter 3 in this thesis has set boundaries for the area of focus, and therefore limits how the empirical findings are presented and discussed. The research has been conducted in Lebanon in 2014/2015, and especially UN agencies, INGOs headquarters in Beirut have been the main focus of informants. The research does however also consider the Ministry of Social Affairs, NGOs and to a degree also beneficiaries. This thesis seeks to understand and describe the humanitarian response mechanism, and is therefore limited to the response mechanism in Lebanon. The theoretical stance is framed by Rasmussen's (1997) *socio-technical systems.* This function as a superior framework to see how the information processing is horizontal and vertical through levels in Lebanon. The strategic level of humanitarian agencies globally will not be discussed in this study due to limited access and time. Moreover the thesis is limit to the diffusion, adoption and innovation processes in organizations by Rogers (2003) *diffusion of innovation*, meaning that the initiation phase of technology will not be considered. For information processing Turner's (1976) understanding of *incubation period* is applied, and not the trigger to the crisis or the crisis in itself, but rather how the way of operating may lead the humanitarian response towards a new crisis. The research was conducted in a "window of time", the planned modifications set for the response mechanism during 2015 are not the focus in this thesis. Changes in the humanitarian system and the official ICT systems are therefore not taken into account, as it was not possible to describe actions that were not implemented yet.

Certain terms are used frequently throughout this thesis; therefore it is necessary to clarify the meaning of them. *Information management* in this thesis is based upon UN-OCHA's definition: how humanitarian actors collect, analyze and share information in the response (UN-OCHA, s.a-a). *Humanitarian actors* are all actors working with the humanitarian response such as UN agencies, INGOs, NGOs. The Ministry of Social Affairs (MoSA) is also a part of the humanitarian response, but are not considered as a humanitarian actor in this thesis. *Implementing partners* is humanitarian organizations funded by the UN. The UN delegates assignments for these partners to implement. *Official ICT systems* are the technological systems innovated for inter-agency usage and are developed for the entire humanitarian response; these are ActivityInfo, RAIS and maps from the inter-agency (ref 5.1.1). *Internal ICT systems* are technological solutions innovated and developed for the

internal usage within one organization or level. This thesis will describe the humanitarian response through field, national and strategic level. The *field level* is used to describe the humanitarian actors that works in the field and daily interfere with the beneficiaries. The *national level* is the various United Nation agencies (UN), International Non-Governmental Organizations (INGOs) and Non-Governmental Organizations (NGOs) working at their respective headquarters. It will be specified and distinguished when it is necessary who the actors at national level are. These humanitarian actors manage and control, executor interventions that are implemented by the field level. The *strategic level* is the various UN agencies and INGOs at their respective headquarters globally, and they establish strategies for the national level. The *operational level* will be use as a collective term for humanitarian actors working both at their respective headquarters and at field level as they have a role in both field and national level.

1.4 Previous research

Even though previous research has not focused on the same topics as in this thesis, there has been extensive research performed within crisis communication, information sharing and the usage of technological solutions before, during and after crises. Previous research within communication has highlighted communication as an increasingly important function in emergency management (Coombs, 2015; Haddow, Bullock, & Coppola, 2011; Quarantelli, 1997; Seeger & Sellnow, 2013). The World Disaster Report (IFRC, 2013) focused on how information and communication technology can assist international and national actors, government, civil society organizations and communities more efficiently in preventing, mitigating, and preparing for crises. However several researches has stated that when implementing these into humanitarian responses there has been a distinct lack of common standardization and regulation internally within organizations, particularly in terms of data security when protecting the beneficiaries personal data (Karlsrud, Jumbert, & Sandvik, 2014). The usage of technology in crisis management was also seen as an efficient resource to gather data, but the technology should not replace the basic aid assistance (Mørk, 2014). In the IFRC World Disasters Report, findings stated that despite the benefits of using technology in humanitarian aid, the poorest population and local NGOs might not have access to these types of technology. Making the overall communication and power balance unequal in a crisis response (IFRC, 2013).

Previous research on technological systems is not only prominent in humanitarian aid, but also within governmental institutions. A recent published master thesis examined the usage of the social media platform Twitter within the Norwegian police. Their findings indicated that the police lacked guidelines and standards when informing the public trough Twitter (Ranum & Andersen, 2014). These findings were also revealed in a study on crisis communication through micro blogging in five Norwegian municipalities (Høgestøl, 2014). Similarly, Åsveen's (2014) study of Crowd Innovations found a lack of insufficient knowledge with regards to technical skills, training and equipment, and mistrust to crowd-generated data (Åsveen, 2014). These previous research topics indicate that there exist profound shortcomings with regards to standardization, guidelines and regulation when implementing and utilizing technological solutions before, during and after a crisis, and for crisis communication. As this is a relatively new phenomenon extensive research needs to be conducted on the topic.

1.5 Structure of the thesis

In addition to this introductory chapter, this thesis will consist of six main chapters. Chapter *two* presents the outer and inner contexts this thesis is embedded in. The 'outer' context describes the characteristics of Lebanon and its current situation, and the 'inner' context being the humanitarian system operating in Lebanon, with its structures, standards, guidelines and values that will present the degree of external validity - how it is possible to transfer the findings to another context. Chapter *three* presents the theoretical stance, and the three main theories: *The socio-technical system* (Rasmussen, 1997*)*, as a hieratic model shaping the humanitarian system, the *diffusion of innovation* (Rogers, 2003), aiming to describe how ICT systems spread and are adopted, and *failure of foresight* (Turner, 1976), to explain the difficulties of information processing in a socio-technical system. Chapter *four* will explain the research process and the methodological considerations encountered during the two fieldworks, and how the process of this research has been conducted. The external validity will also be explained here. Chapter *five* presents the main findings from the conducted fieldworks in Lebanon and is organized by relevance of themes, and, cumulatively, this shapes the foundation for further discussion. Finally, this will be discussed in chapter *six* through the theoretical lenses, which are structured based upon the research questions, with subchapters that answer the research questions sequentially. Chapter *seven* presents the conclusion of the main findings as well the aspects that are consider to require further research.

2.0 Context

This chapter elaborates the key elements of the context in which the thesis is grounded in regarding the empirical material collected before, during and after the two fieldworks. The methodological choices and considerations are further explained in chapter 4. As the subject of the thesis is to examine how ICT systems contribute to reliable information management in the humanitarian response in Lebanon, we studied this within its *real-life context* (Yin, 2014), there should, therefore, be a distinction between the 'outer' and 'inner' context (Kruke, 2010). The 'outer' context is understood as the *real-life setting*, meaning the historical, and present aspects limited to the context of Lebanon. The 'inner' context is here understood as the organizational structures, guidelines, standards, statuses and responsibilities that the humanitarian actors work within (Kruke, 2010). The 'inner' context presents the humanitarian operation mechanism in conjunction with other humanitarian operations in the world. The external validity is therefore presented through the factors of the 'inner' context, as these present the ability to transfer the finding to other contexts (Kruke, 2010).

2.1 The 'outer' context – complex emergency?

UN-OCHA defines complex emergencies as:

> A humanitarian crisis in a country, region or society where there is total or considerable breakdown of authority resulting from internal or external conflicts and which requires an international response that goes beyond the mandate or capacity of any single agency and/or the ongoing United Nations country program (IASC (1994) as cited in Kruke & Olsen, 2005:275).

The 'outer' context of Lebanon will now be presented, with the influx of refugees, political instability, and social tensions. This will finish with a conclusion and an explanation of whether these aspects can be in accordance with what UN-OCHA defines as a complex emergency.

2.1.1 Refugees in Lebanon

The four-year civil war in Syria has led to the most serious humanitarian crisis yet seen this century. Approximately 2.6 million displaced Syrians were registered by the United Nations High Commissioner of Refugees (UNHCR) in the surrounding countries by the end of April 2014 (Skretteberg & Lindstad, 2014). By 21st January 2015 the total number of registered refugees had increased to over 3.7 million. By the 7th May 2015, Lebanon had 1,183,327

registered Syrian refugees in the country (UNHCR, s.a-b). The total amount of refugees in Lebanon is, however, vague as there is presumed to be several hundred thousand unregistered Syrian refugees in the country who, for various reasons, have chosen not to register with UNHCR. As of May 6th 2015 the possibility to register new refugees in Lebanon was, anyway, prohibited by the Lebanese government, leaving the refugees that are not yet registered unable to get any form of assistance through the official UN response mechanism. In addition to Syrian refugees there are also around half a million Palestinian refugees dispersed across the country (Skretteberg & Lindstad, 2014). This is because the Lebanese government is not a member in the 1951 Convention relating to the status of refugees, nor they have not signed the 1976 Protocol, which means that displaced Syrians are not officially acknowledged as refugees (LCRP, 2015). The Lebanese government does not wish to increase the tension between different societal groups as the public holds diverse views towards the current civil war in Syria. Building new refugee camps has therefore not been possible as yet (Skretteberg & Lindstad, 2014). The humanitarian actors have, therefore, distributed tents to the refugees and they have set up informal tented settlements (ITS) themselves on rented land. The land where tents are set up is owned by landlords that take a minimum of 200 dollars a month per tent.

Figure 2.1 Photos of the ITS in Lebanon. Source: Jensen & Lura, 2015.

Currently there are 1900 ITSs known of by the humanitarian organizations. As no formal camps exist, the refugees are scattered over the entire country, making it extremely difficult to

know the precise locations. In addition to the ITS, large numbers of refugees from Syria have rented garages, terraces or rooms from the local populations. The living conditions are close to unbearable as access to clean water, proper shelter as well as the proper hygiene are constant challenges. The local population that have agreed to rent out rooms or garages get money from the UN organizations as compensation or have a two year agreement whereby the UN obligates them to fix problematic conditions in their household if they provide housing. There are also a huge number of refugees living rough on the streets and under bridges as well as in dumps, as they are not receiving any form of support through the UN system. The Palestinian camps have also become a shelter for a lot of Syrian refugees, as the rent cost for a room in these camps is comparatively cheap.

2.1.2 The pressure put on Lebanon as a country

The four years of the Syrian civil war has left Lebanon on the verge of total collapse as a functioning society (LCRP, 2015). This has caused an increase in social tensions as well as an impossible pressure on public services. This instability has also impacted heavily upon the economy and resulted in higher levels of unemployment (LCRP, 2015) as well as a growing political polarization between the different actors, affecting the country's overall stability (Skretteberg & Lindstad, 2014).

The massive influx of refugees coming from Syria to escape the war has put significant pressure on the Lebanese government, as they do not have the resources to cope. As one of the informant's states: *"Mainly we have more man-made hazards than natural hazards, this is the interesting thing in Lebanon" (Country coordinator, local NGO).* The Syrian spillover has resulted in that the international humanitarian community and the UN is now operating in Lebanon to assist the Lebanese government.

The situation in Lebanon is unique in many ways. Before the civil war started in 1975, the country, with its urban setting and richness of culture, was seen as the Paris of the Middle East. During the civil war the country was in recession but after the civil war ended in 1990 the country again became a popular holiday destination (Tveit, 2011). After the breakout war with Israel in 2006, and the recent spillover of the Syrian crisis, the country has yet again faced setbacks. Even though Lebanon is heading towards a total collapse, it should be mentioned that several informants thought that the fact that Lebanon has managed to remain intact through these four years demonstrates the country's strength. Several informants praised the Lebanese people for how they had welcomed the Syrians and taken great care of

them. Despite this, the situation has come to a point where the line of tolerance has been crossed. Informants from both a national level and field level reported an increased tension between refugees and the host community is developing and fear for the future if the crisis doesn't come to an end. The informants see the only solution for this is peace in Syria and the consequent return of the refugees. The international and local humanitarian actors described the current context as a complex and difficult crisis to manage. The challenges in Lebanon identified by informants are *political instability*, *geographical location*, *infrastructure* and *social tension*. These identified challenges are further elaborated below.

2.1.3 Political instability and geographical location

Figure 2.2. Map of Lebanon. (LonelyPlanet, s.a)

Lebanon has a very fragile political system, one which is based on the diversity of the present religions in the country. After the country became independent from France in 1943, a political covenant was established to regulate the division of power between the different ethnic groups in the country (Tveit, 2011). After Israel was established in 1948, several hundred thousand Palestinians relocated to Lebanon, and, due to the ongoing situation between Israelis and Palestinians, they have not been able to return. This has been a heavy burden for Lebanon to carry, as they never had the capacity to handle the influx of the

Palestinian refugees (Tveit, 2011). Additionally, it should be noted that one informant credited the government for managing to maintain the country's stability: "*The government and the politicians should be given credit for managing to maintain the country stable. If they succeed they can learn other countries how it is done, how they succeeded and how it's possible to grow*" (Head of office, UN agency). This means that even if Lebanon, as a country, is struggling, they have managed to stay intact as a nation. Currently, the government of Lebanon is reluctant to accept refugees as legal citizens, as they fear for the consequences this will have for the already unstable political situation. In 2014 the massive influx of refugees from Syria reached the political actor's frontier, leading them close the borders (LCRP, 2015). In addition to this the refugees are not allowed to work, or build homes, and, given the fact that there are almost 1.2 million registered Syrian refugees, as well as the alleged eight hundred thousand unregistered ones, it has become impossible for the government to address this systematically. The tents they put up are torn down again, but as the numbers of people are so high many areas go unnoticed. The humanitarian aid organizations are struggling to come to agreement with the political actors to find ways that do not leave the refugees going unassisted. However, the restriction still remains, and the creation of new refugee camps has not yet been approved.

On top of Syrian crisis, there is the issue of IS[1] and Al-Nusra[2] trying to infiltrate the borders. In August 2014, IS managed to take over a town, Arsal, close to the Syrian border (TheDailyStar, 2014). Numerous civilians as well as military personnel were kidnapped. At the beginning of 2015 the situation worsened and the Lebanese military as well as the political party, Hezbollah, are fighting daily along the border to prevent a full-scale war. The local population in Lebanon stated that they are thus preparing themselves for yet another war, but are hoping that local militant groups such as Hezbollah will be able to protect them. In addition there has been recent unrest between Israel and Hezbollah, creating further instability (Samaha, 2015). Lebanon and Israel have a painful history of constant distrust, and the vulnerable relationship has escalated to clashes several times before (Tveit, 2011), leaving the local population uncertain about the future.

[1] IS – Islamic State is a terror organization originating from Al Qaeda in 1999, and are sought to establish a Caliphate as an Islamic State. Operates in Lebanon, Iraq and Syria (Leerand, 2015)
[2] Al- Nusra is a terror organization that also branches from Al Qaeda that operates in Syria and Lebanon (Leerand, 2014).

2.1.4 Infrastructure

One professor, working within environment and infrastructure, said that due to political disunity the country had suffered from poor electrical and water services. While Beirut only suffers power cuts for six hours a day, the rest of the country can only be guaranteed three to six hours electricity a day, relying heavily on diesel aggregates to provide it. The water supply is also limited and polluted, resulting in lack of access to safe water for both the local population and the refugees. With the high influx of refugees the infrastructure has been overwhelmed, creating even more frequent electricity shutdowns. In addition to water and electricity issues, waste management is also overburdened and, when talking to the mayors in Lebanon, they identified waste management as their biggest concern at the moment, as there is no capacity to handle it. The fragile infrastructure has also increased the tension between the local population and the refugees.

2.1.5 Social tension and informal settlements

"In Lebanon everyone like each other, but everyone hate each other at the same time, this makes the situation schizophrenic" (Professor at local university). This quote is a good explanation of the current situation in Lebanon. During the Lebanese civil war many Lebanese stayed with Syrians in Syria (Tveit, 2011), and when the war started in Syria the Lebanese felt obligated to return the favor, but after four years the hospitality is starting to come to an end. The massive influx of Syrians has created social tensions and conflict between the local population and the refugees. The unemployment rate has increased drastically as the employers have started to hire refugees who will work for lower wages, creating tension as the local population start to lose their jobs, and are struggling to pay for their housing. At the same time, many refugees that have the same living conditions as the local population receive monthly contributions to pay their rent, which has increased the tension even further. A large part of the Lebanese population lives beneath the poverty line[3], and the areas where they live are also the areas where refugees have most frequently rented rooms. A mayor in a municipality in Lebanon expressed concerns for the future of the Lebanese people because of this: "*What I fear the most is the future. I fear that there is no future for the Lebanese people and no jobs"*. The informant is referring to the results of the high influx of the refugees.

[3] Two-thirds of the population in Lebanon are currently living below the national poverty line (UNHCR, 2015).

The increased tension have resulted in refugees changing their Syrian accent, and refusing to allow aid workers to visit their rented rooms, in fear of what the neighbors would do if they found out that they were Syrians. The situation is now to the point where it's seen as socially acceptable to attack Syrians. The humanitarian actors are working in co-operation with the government to reduce this tension, and the new response plan LCRP 2015-2016 (ref footnote in 2.2.2) seeks to focus both on development needs and humanitarian needs.

2.1.6 Complex emergency

The situation in Lebanon has been highly affected by the four year war in Syria, with its massive influx of refugees, poor infrastructure, and political instability leading to social tension. It now appears to be approaching a tipping-point where Lebanon is close to a substantial breakdown, and they are in need of an international humanitarian response that goes beyond the mandate and capacity of any single organization or the UN country program (IASC, 1994). The situation in Lebanon is not the result of an internal conflict, even if there is ongoing internal conflicts in the country. Nonetheless, it has increased social tensions between the Lebanese and Syrians, and assaults and attacks occur daily. The emergency in Lebanon is clearly as a result of the conflict in Syria, and the country would not be in need of a significant humanitarian response if it weren't for this. There is not a civil war in Lebanon, nor a cross border one, but the situation in Lebanon can be defined as a complex emergency due to all aspects presented in this subchapter.

2.2 The 'inner' context

While the 'outer' context of this research is limited to Lebanon, the 'inner' context will have some common features and structures recognizable in other emergency responses globally. The informants from the humanitarian organizations are the same organizations that are operating in other emergencies in the world, and all are obligated to work by the same codes and guidelines. Therefore the aspects presented throughout this subchapter contributes to illuminate the external validity of this thesis (Kruke, 2010).

2.2.1 Coordination of the humanitarian response in Lebanon

In 2014, MoSA and UNHCR were the overall leaders of the humanitarian response in Lebanon. Originally in humanitarian emergencies, it is UN-OCHA that has the responsibility

for bringing the humanitarian actors together to ensure a coherent response to the emergency (UN-OCHA, s.a-d). This is what differentiates the humanitarian structure in Lebanon from the common humanitarian structure, and may reduce the extent of external validity of the thesis. In the initial phase of the emergency in Lebanon, the crisis was classified as a purely refugee response, therefore the overall coordination mandate was given to UNHCR, as their area of expertise is to protect refugees and resolve refugee problems worldwide (UNHCR, 2013b). In humanitarian emergencies the coordination body of the response is usually UN-OCHA, as it is their mandate to coordinate effective and principled humanitarian action in partnership with national and international actors (UN-OCHA, s.a-d). In order to ensure a coherent response and avoid omissions UN-OCHA developed the Cluster approach to define and forge partnerships between the NGOs, INGOs, UN agencies, national and local authorities, and the civil society. Clusters are groups of humanitarian organizations, in each of the main sectors of humanitarian action, such as health, or education and consist of both UN and non-UN organizations (UN-OCHA, s.a-c). Since UNHCR is the overall coordination lead in Lebanon, the Cluster approach has not been implemented, but UNHCR has implemented Sector Working Groups (SWG) which is further elaborated in section 2.2.2. The main difference between the SWG and the Cluster approach is the accountability. The Cluster approach has global cluster leads in each division of aid; these are accountable for national and global clusters. When organizations participate in a cluster at national or field level, they are obligated to follow-up and respond to the identify issues agreed in the cluster meetings. In SWG in Lebanon there is no international lead accountable for the sector, and it is not mandatory for all actors in the sector to follow-up identified issues at national or field level. However, implementing partners that receive funding from the official response mechanism are obligated to follow-up. UNHCR has three roles in Lebanon. In addition to being the coordination body of the response, the agency also functions as a donor for other humanitarian organizations, as well as managing their own programs within the various sectors they lead. The main role of UN-OCHA in Lebanon is the humanitarian financial tracking system and the role of supporting the Humanitarian Coordinator and Resident Coordinator[4], which, in Lebanon, is delegated to one individual. UNHCR has a mandate for the protection of Syrian refugees and is assisting the coordination efforts with the government through co-leading the inter-agency coordination structure with MoSA, with the support of

[4] Humanitarian coordinator and resident coordinator in a humanitarian response has the responsibility to ensure effective coordination of humanitarian action in the field (UN-OCHA, s.a-b).

the Humanitarian Country Team[5] (HCT) The government of Lebanon has deployed regional coordinators to support the overall coordination in the eight different sectors of: Water, hygiene and sanitation (WASH), Shelter, Public Health, Social Cohesion[6], Protection, Non-food items[7], Food Security and Education. The following table shows the sectors and the leading agencies in these sectors in Lebanon (RRP, 2014).

Sector	Lead
Public Health	UNHCR and WHO
WASH	UNHCR and UNICEF
Shelter	UNHCR and MoSA
Social Cohesion	MoSA and UNDP
Protection	UNHCR and MoSA
Non Food Items	UNHCR
Food Security	WFP and MoSA
Education	UNHCR and UNICEF

Table 2.3 Sectors and leading agencies in Lebanon (RRP, 2014).

The responsibilities that the different actors have in a country is jointly agreed upon through contracts and international agreements, and this will form the basis of their mandate in the country (Kruke, 2010; RRP, 2014). However, the mandate of the organizations will differ based on context and operational situation (Adinolfi, Bassiouni, Williams, & Lauritzen, 2005).The response plan for Lebanon in 2014 was jointly developed between the government, UN agencies and NGO partners. 51 international and local NGOs participated in the response as implementing partners (RRP, 2014). The main INGOs in Lebanon are Norwegian Refugee Council, Danish Refugee Council, ACTED, International Red Cross, Save the Children, Care International, and REACH Initiative. The main UN agencies working in Lebanon are United Nations Children Fund (UNICEF), World Food Program (WFP), United Nations Development Program (UNDP), and World Health Organization (WHO).

The UN agencies, INGOs and NGOs all have different mandates that function as terms of reference for their operations and this depends on their area of expertise. In Lebanon there exist Syrian refugees and Palestinian refugees (ref 2.1.1) and the mandate to coordinate the two groups is divided between UNHCR, which has as mentioned the mandate for the Syrian

[5] Humanitarian county team is a decision-making and oversight forum in humanitarian emergencies. Lead by the humanitarian coordinator in the respective country (UN-OCHA, s.a-c)
[6] Social cohesion meaning "the capacity of a society to ensure the welfare of all its members, minimizing disparities and avoiding polarization" (COE, 2004).
[7] Non-food items often mean items such as medicines, blankets, clothing, ovens etc. (Henckaerts & Doswald-Beck, 2005).

refugees. The United Nations Relief and Works Agency assist the Palestinian refugees from Palestine (UNRWA). This agency has assisted the Palestinians in Lebanon since 1948 (UNRWA, s.a). UNDP focuses on the country's stabilization (RRP, 2014). The INGOs and NGOs focus is restricted to their expertise, and the funding they receive from UNHCR or donor specific contributions to their organization. Some INGOs and NGOs are mandate based related to water, children, shelter, food, stabilization etc., while others are need-based: meaning they cover the various needs. There are profound differences between mandates and standards which organizations follow internally. All of the informants stated that their dissimilar mandates and different internal standards might affect the coordination and co-operation structure, as they don't have one common standardized working method. In humanitarian responses there is no agency with overall authority, except the Lebanese government. This creates difficulties, as there is no forcing-mechanism to ensure that everyone co-operates and coordinates in standardized ways, yet they are obligated to work by international guidelines/standards. These principles are called the Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs (Hilhorst, 2005). The CoC was published in 1994 and brings together the principles of humanity, independence, neutrality and impartiality that humanitarian organizations should work by (Hilhorst, 2005).

Similarly, there is the Sphere Handbook (2011) with core standards that outline the processes and approaches necessary for an effective response. These standards focus on capacity, active participation of the beneficiaries, comprehensive analysis of the current state, effective coordination and appropriate and skilled aid workers as being essential for a humanitarian response. In Lebanon the humanitarian organizations are obligated to work under these guidelines, standards and principles, which increase the external validity of this thesis as these are superior for all humanitarian organizations working in an emergency response. Additionally, there are other common features that humanitarian actors are built upon: the organizational structure, the different status and responsibilities that the actors create internally and externally in organizations in order to coordinate the response (Kruke, 2010). The roles that the staff from the different organizations are divided into are designated a specific status, which vary from coordinators, information managers (IM), field officers, and country directors, and are assigned different degrees of responsibility and decision-making authority. In Lebanon the designated statuses are similar to statuses in other humanitarian emergencies, the difference here is as mentioned that the lead agency being UNHCR, and implementing SWG instead of the Cluster approach.

2.2.2 Sector working groups

SWG is based on many of the same premises as the Cluster approach, but a key difference is the sector lead, which is UNHCR in almost all sectors in Lebanon. There is one SWG within each of the operating sectors (see table 2.2), with the sectors divided into five operational areas: the North, South, Mount Lebanon, Beirut and Bekaa. The SWG is lead by the sector leads (see table 2.2). The working groups have meetings on both national and field levels. In addition to the SWG there are Inter-Agency meetings in operation within each sector. These meetings are held at both national and at field level within each operational area. All humanitarian organizations can attend all meetings, and the monthly schedule for the meetings is displayed on UNHCR's Inter-agency Information Sharing Portal (UNHCR, s.a-b).

Several informants at national level emphasized that if the Cluster approach had been implemented the lead in the different sectors would not be UNHCR, but other UN agencies with expertise in the designated area. The sectors would then be co-lead by INGOs or NGOs. In the response plan for 2014 it was stated that UNHRC would pursue improvements to coordinate arrangements in partnership with other agencies. The coordination of the response was going to be strengthened in decentralized areas by reinforcing the capacity of field SWG to lead the implementation and monitoring the response plan. This was going to increase the engagement of the NGOs and the affected population (RRP, 2014, p. 10). In addition to this, the SWG structure particularly emphasizes tight coordination within the division of aid across geographical areas.

2.2.3 Information management

In the response plan for 2014, the capacity of coordination staff would be strengthened, to ensure that partners receive timely and relevant information to inform their response, and to nurture the cooperation with INGOs and NGOs (RRP, 2014, p. 10).

The government of Lebanon and UNHCR has established an Inter-Agency (IA) mechanism to coordinate the response and the IA is supported by an Information Management working group (IMWG). The participation in IMWG is open for all information managers within humanitarian organizations performing interventions (RRP, 2014). These meetings are held once a month at national level in Lebanon. UNHCR chair the IMWG meetings and the IM staff that work within each sector are encouraged to attend. Each sector has one dedicated IM that is employed by UNHCR, UNICEF, or WFP. The role of this IM is to spread information

vertically and horizontally in the response within their sector, as well as working with ICT system awareness among the actors in their sector. The IMWG is a coordination group and they facilitate humanitarian activities through improving data collection, data standards and analysis as well as the dissemination of information. When specific tasks arise, the IMWG establishes a target-working group. The target groups and IMWG provide tools for better information management for the operational humanitarian actors both nationally and internationally (UNHCR, s.a-a). A humanitarian response needs to be based on coherent and contextualized assessments, monitoring and evaluation that aims to analyze the needs, vulnerabilities and capacities (TheSphereProject, 2011). In Lebanon the humanitarian response mechanism implemented prioritization and targeted aid assistance across all sectors, to protect and meet basic life-saving needs of the most vulnerable beneficiaries.

Figure 2.4 Photo of targeted assistance in Lebanon: source Jensen & Lura, 2015.

Targeted assistance was going to improve monitoring and enable the humanitarian organizations to adjust their programs to needs identified through mapping and reassessing areas where the highest population of vulnerable beneficiaries exist. This was initiated in order to allow the humanitarian partners to better geographically target their intervention (RRP, 2014). In the response plan for Lebanon in 2014 it was also stated:

> Regardless of the method of delivering assistance, the need to ensure effective monitoring and outreach is recognized, both to ensure effective use of resources, but also as a critical safeguard to ensure that vulnerable refugees are identified and reached. This will be done through household visits; information provided by host communities, local authorities and front-line services providers; information gathered during registration verification exercises; and, through the expansion of refugee volunteers (RRP, 2014, p. 9).

This was going to improve the coordination of the humanitarian response in accordance to the actual needs of the refugees, and improve the information sharing across organizations working in the response. The tools developed and used by the humanitarian actors in Lebanon are elaborated in the empirical findings see sub-chapter 5.1.1. The challenge now in Lebanon is that there has been a shift, and the crisis is no longer defined as a purely refugee crisis, but also a humanitarian and a development crisis, that needs to be managed not just by UNHCR, but also MoSA and UNDP. MoSA will therefore be the overall leader of the response [8] (ICVA, s.a; LCRP, 2015).

[8]As of January 2015 the Lebanon Crisis Resilience Plan 2015-2016 was launched. This plan defines the government of Lebanon's Crisis Cell as the highest national authority for all the international partners inside the Lebanese territory. The Ministry of Social Affairs is mandated by the Crisis Cell to oversee the government response to the crisis in collaboration with the RC/HC and in co-operation with the Crisis Cell and the lead UN agencies UNDP within stabilization and UNHCR for refugees. The activities within the new LCRP plan are coordinated through Sector Working Groups held by line ministries, with support by the UN, INGO and NGO partners. The plan is not fully implemented yet, but the actors are, as of February 2015, divided into their roles and planning the way forward into fully integrating the plan (LCRP, 2015).

3.0 Theoretical framework

This chapter presents the theoretical framework selected for this research: by which the information management in the humanitarian response in Lebanon, is analytically interpreted in order to address the research problem. This theory will be essential when discussing the findings of the research problem in this thesis, as it sets the framework for how the social world is envisage through the actors' interpretation. The research problem is: *How do ICT systems contribute to reliable information management in the humanitarian response in Lebanon?*

Part 3.1 presents the definition of *reliability.* This is further explained in part 3.2 through Jens Rasmussens' (1997) *Socio-technical system,* as a normative model describing how the system can be reliable in terms of creating a closed feedback loop of information flow between levels, through technological systems, human behavior and organizational structures. Part 3.3 presents the *diffusion of innovation* by Everett M. Rogers (2003), and explains how innovations spread to individuals and organizations, as well as discussing how organizations innovate and implement innovations. Part 3.4 presents the understanding of Barry Turner (1976) *Failure of foresight* as a descriptive theory, explaining how accidents occur through organizational failures when processing information. This chapter ends with a theoretical conclusion in part 3.5.

3.1 Reliability

In this thesis, reliability will be based on the reliability to improve management in complex emergencies. Earlier definitions claimed that reliability had the main focus for an "unusual capacity to produce collective outcomes of a certain minimum quality repeatedly" (Hannan and Freeman (1984) as cited in Kruke & Olsen, 2005 p. 283), but Kruke & Olsen (2005) stress the fact that this definition does not incorporate the constant and unexpected flow of events that can be found in complex emergencies. Kruke & Olsen (2011) therefore claim that the environment of complex emergencies is one calling for situational awareness, also called mindfulness. This is only possible with a reliable seeking strategy that, due to the rapidly changing environment, combines both resilience and anticipation (Kruke & Olsen, 2005). Anticipation is defined as "prediction and prevention of potential dangers before damage is done " (Wildavsky, 1991). This is possible in complex emergencies because their nature is

creeping and not unexpected. Even if it is not possible to prevent a complex emergency, it is possible to reduce the consequences or prevent the situation from developing into full-scale complex emergencies with all of these characteristics (Kruke & Olsen, 2005). Resilience is defined as the capacity to cope with unanticipated dangers after they have become manifest (Wildavsky, 1991), and studies have shown that this appears to be the coping strategy during complex emergencies (Kruke & Olsen, 2005). Based on the definitions of resilience and anticipation, and seeing this as the base of reliability in humanitarian operations, then reliability will be to predict and prevent potential dangers before the damage has occurred. If the damage is already done, however, the reliability in the response should have the capacity to cope with these dangers before they become manifest (Ibid).

3.2 The socio- technical system

Rasmussen (1997) has developed a system-oriented model for risk management in dynamic societies. The model is based on three shaping behavior mechanisms: *work system constraints, boundaries of acceptable performance*, and *the subjective criteria* guiding adoption to change (Olsen & Scharffscher, 2004; Rasmussen, 1997). The model for shaping the behavior mechanism is the *socio-technical system*, incorporating the technological change, organizational structures and human behavior (presented in figure 3.1) (Rasmussen, 1997). This model is originally developed for industrial organizations, but as Olsen and Scharffscher (2004) note, this is also highly relevant for explaining how humanitarian INGOs and NGOs are run, and how they co-operate with each other in a humanitarian response.

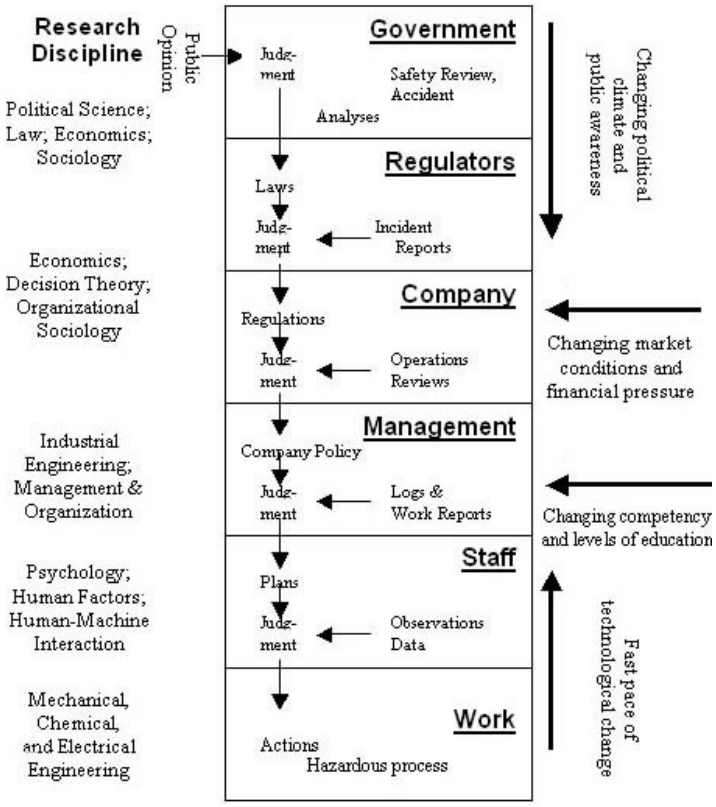

Figure 3.1: The socio-technical systems (Rasmussen, 1997)

The socio-technical systems incorporate several levels ranging from the legislators, managers, to work planners and system operators. The context of the socio-technical system is emphasized by the fast pace of technological change and a competitive environment (Rasmussen, 1997). *The socio-technical system* highlights vertical levels in the system as a working model with a *space of possibilities* (Olsen & Scharffscher, 2004). This *space of possibilities* is limited by the constraints in the work system, boundaries of acceptable performance set by actors on a higher level, and the controllers' subjective criteria that guide adoption at the action level. This is the concept that socio-technical systems are built upon (Rasmussen, 1997). The aim of the model is to reveal and define the different levels, and adjust to the processes presented by the *spaces of possibilities* (Olsen & Scharffscher, 2004*)*. To create a reliable system and reduce vulnerabilities there should be tightly coordinated analysis across levels in the system where there is a deep understanding of the working constraints, and what the boundaries for the work operation should be in a dynamic society (Rasmussen, 1997).

In order to reduce vulnerability it is important that the actors are competent enough in their acumen and practical skills, in addition to the formal knowledge, to understand the situation. This is in order that the decisions are based on information in the running context and,

because of this, avoid untimely decisions, and see the significance of weak signals and respond strongly to them with familiar action alternatives (Rasmussen, 1997; Weick, Sutcliffe, & Obstfeld, 1999). The competences are also extremely important when working in a fast-changing context. This is because it increases the possibilities of taking the appropriate risk-management decisions (Rasmussen, 1997); ones that are based in norms, strategies and assumptions that organizational members hold in common (Dixon, 1994). This also includes awareness on safety constraints throughout the system, as defined by the legislator or top level management, as well as the explicit priorities on safety implications (Rasmussen, 1997). When disseminating, integrating and interpreting information and deciding what to be communicated up, down and horizontally in the system, it is important to be both familiar and have knowledge of the relevant hazard sources (Kruke & Olsen, 2011; Rasmussen, 1997).

Human behavior in the system is shaped by the objectives and constraints, which must be respected by the actors in order for the work performance to be successful. The degree of freedom is affected by criteria such as workload, cost effectiveness, risk of failure and joy of exploration (Rasmussen, 1997). Actors may work freely in the spaces of possibilities, yet are bound by the explicit administrative, functional and safety constraints that identify the objectives, value structures and subjective preferences governing the behavior. It is therefore necessary to give the controllers the possibility to develop coping skills, to work within the constraints and boundaries (Ibid), and give them the ability of making sense of the situation (Weick, 2001).

The hazard is presented by the technical core at the bottom, though the entire system needs to be involved in the control of the hazardous sources. Therefore, there needs to be an active closed feedback loop that identifies control structures, the actors' objectives and performance criteria, and that their capability of control must be evaluated - as well as all information available to them being analyzed from the viewpoint of feedback control (Rasmussen, 1997). The controllers need to be informed about the proper action targets and these must correspond with their action opportunities (Ibid). There has been evidence stating that different understanding of the situational change exist from headquarters to field offices (Kruke & Olsen, 2011). The long chain from the headquarters to the field operators and back again will often result in grey zones where the different responsibilities to apportioned each actor result in misinterpretations and may hamper the information flow (Kruke, 2009).

The space of possibilities can create latent conditions for accidents because there is always a potential for creating misunderstandings, mix-ups or confusion about the expectations, and responsibilities when visions, strategies and operational tasks are transferred from one administrative level to another (Olsen & Scharffscher, 2004). This is in accordance with Turner's (1976) decoy phenomenon, where the action task to prevent only distracts attention from the true problem because of misperceptions (Rosness, Guttormsen, Steiro, Tinmannsvik, & Ivonne, 2002).

3.3 Diffusion of innovations

Diffusion of innovations is the process where an *innovation* is *communicated* over time among members of a *social system,* and how this potentially leads to *adoption* of the *innovation* either by individuals or an organizational unit (Rogers, 1995, p. 10). The diffusion process is the consequence of a long sequence of action (figure 3.2), yet in order for the innovation to get to the diffusion phase there is a full range of activities and decisions deriving from the decision to begin research, and going all the way to the consequences of the innovation (Rogers, 1995). The stages prior to the diffusion process will have a great influence on the diffusion and adoption process, and its potential success.

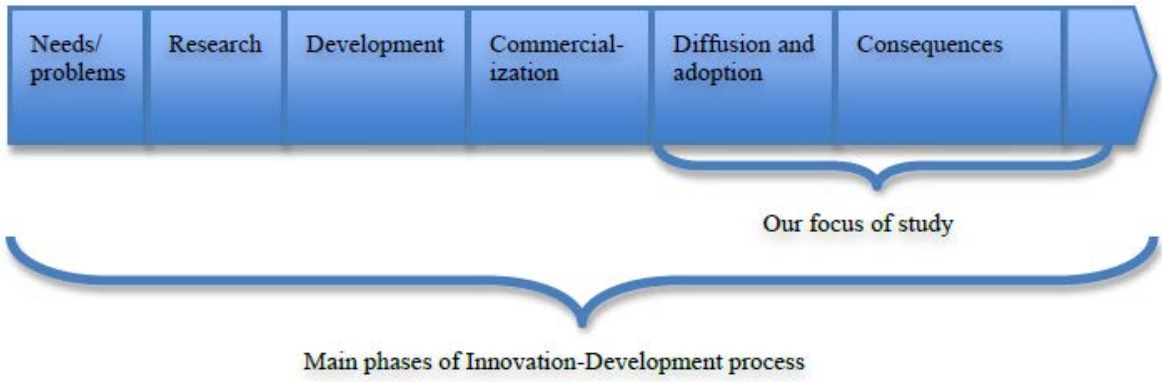

Figure 3.2 Main phases of the Innovation-Development process, based on Rogers (1995).

The figure above (3.2) shows the innovation-development process. Although this would imply a linear model, in reality this might not always be the case (Rogers, 1995). The diffusion, adoption and the consequence phases is the area of Rogers (1995) innovation-development process that will be used in this thesis.

The four main elements in the diffusion process are the *innovation, communication channels, time* and the *social system.* Together, these explain the process of how the innovation spreads and diffuses to organizations and individual users, as elaborated below

3.3.1 Main elements in diffusion process

Innovation

The first part of the diffusion process is the *innovation*, which is an idea, practice or object that is perceived as being new by an individual or the members in the social system. This does not mean that the innovation has to be new in the objective sense, but if the innovation is perceived as new to the individuals it is therefore an innovation. This newness is not based in knowledge about the innovation, but rather the attitude formed towards it (Rogers, 1995).

The terms innovation and technology are often considered synonymous, but technology is designed for instrumental action that aims to reduce the uncertainty in the cause-effect to achieve the desired result, as demonstrated by the model below (Rogers, 2003). The uncertainty implies a lack of predictability of the occurrence of events related to the alternatives and the relative probability of these alternatives (Ibid). Aase (1991) defines technology as *the process whereby actors (or teams) operate tools to solve certain tasks.* We have therefore included teams into the table, as his definition will be used in this thesis (as cited in Olsen & Lindøe, 2009 p. 744).

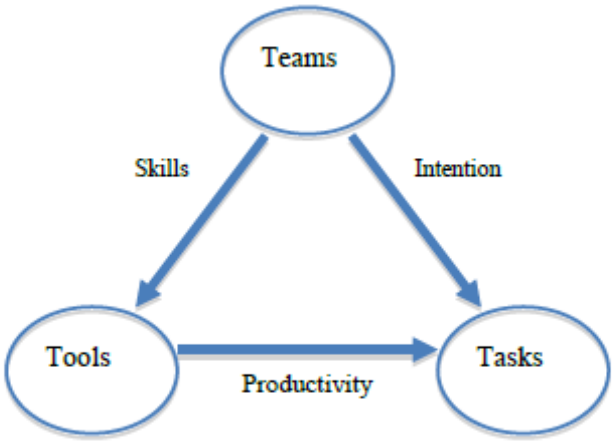

Figure 3.3 The interplay embedded in the technological systems (Olsen & Lindøe, 2009).

Figure 3.3 shows how the tools are dependent upon the task and the team in order to function. The team operating the tool must have the right skills and objective for the tool to successfully solve its task of action. Aase's definition of technology is the integration of physical artifacts and instrumental devices (Aase, 1991) together with the individuals or the organizational knowledge, and their purpose when handling the tool (Olsen & Lindøe, 2009). Rogers (2003) does not consider the individuals and organizational knowledge in his definition of technology, but rather sees it merely as a design that includes the software and the hardware, where the hardware is the physical artifact that you can see, and the software forms the information base for the technological tool.

The characteristics of the innovation can contribute to rate of adoption and the success of the diffusion process. These characteristics are not objective in terms, but subjectively - as how they are perceived by potential adopters (Rogers, 1995). *The relative advantage* explains the degree to which innovations are better than what they replace, and these are often expressed as economic advantages, social prestige or other types of benefits, depending on the situation. The innovation's *compatibility* is the degree to which the innovation is perceived as consistent with the existing values, experiences and needs of the potential adopters. This particularly concerns socio-cultural values and beliefs, but also the previous experiences, as it is the mental tool to assess the new innovation as it is being interpreted by what is known, along with the needs the client has from the innovation. However, the client does not always recognize these needs until they are aware of the consequences and benefits of the innovation. The innovation's *complexity* may explain the rate of adoption. This means whether the innovation is difficult to use and understand for the client. If the client perceives the degree of complexity as high, then the possibility of adoption is consequently lower. There is also the degree of *trialability*, meaning how the innovation is experimented with, and, lastly, the degree of *observability* - the visibility of the innovation's results (Ibid).

Communication

The *communication* is the second and the most important part of the diffusion process, and it is a two-way process that communicates new ideas. The communication process is how individuals gain knowledge about the innovation from other individuals, and, in this way, gain a common understanding (Rogers, 2003). Diffusion is a special type of communication, where the messages are about new ideas, and, because of this newness, there will always be a degree of uncertainty in the communication (Ibid). The communication of new ideas is through communication channels such as mass media, which have the possibility of reaching

many potential adopters. However, studies have shown that the most efficient way for diffusion is through interpersonal channels (Ibid), meaning that diffusion is a relatively social process.

Time

The third important element in the diffusion process is *time*, and time plays an important role in the process in three ways. The *first* one is the innovation-decision process, which is the time from the individual's first knowledge of the innovation to the adoption/rejection. The *second* one is the innovativeness, where a unit or individual adopts the innovation before the members in the system. The *third* is the rate of adoption, which is the length of the adoption time that is required for a certain percentage of the members to adopt (Rogers, 2003). Diffusion can be seen as a social change, and is the process that occurs in the structure and function in the social system. Social changes occur in diffusion, such as when new ideas are invented, diffused, adopted or rejected, leading to certain consequences (Ibid).

Social system

The last element in the diffusion process is the *social system*, which are the units working together to accomplish a common goal. These may be individuals, informal groups, organizations, and/or subsystems. When an innovation is adapted in to a social system it can be seen as a social change, and affects the structure and function of a social system. The norms and the role of the opinion leaders and change agents can be affected as well as type of innovation-decision and the consequences of the innovation. All of these aspects will constitute boundaries for the innovation to diffuse, and involves the relationship between the social system and the diffusion process occurring within it (Rogers, 2003).

3.3.2 Decentralized and centralized diffusion

The classic diffusion theory emphasizes that innovations originate from a limited source of experts, and that this source diffuses the innovation to the potential adopters, and that adopters are more or less passive accepters. However, this focus have been strongly criticized by Schön (1967) for not grasping the degree of complexity, where innovations originate from numerous sources and diffuse via horizontal networks and evolve themselves (Schön, 1967). Rogers (1995) has therefore further developed his understanding of decentralized diffusion, and how this flows from the operational level in the system, and spread, with modifications, horizontally as re-inventions to match innovation to the particular context (Rogers, 1995).

What separates decentralized diffusion from centralized is the role of the change agent. In decentralized diffusion the adopters can be change agents as long as the adopters are highly educated, and/or the innovation is not very complex and sophisticated. A change agent is an individual who has great influence on adopters' innovation-decision in the direction desirable for the agent (Rogers, 1995). In centralized diffusion there is more control on the top of the system and the change agent is either the national government or a technical expert. The other main difference is how the innovation fits the adopter's needs, and how it solves potential problems. Centralized diffusion is often described as a technological-push where the adopter of the innovation may feel they are not in need of the innovation. The decentralized diffusion has a wide share of power and control among members, and can be described as a technological-pull where the locally perceived needs and problems are considered, and in this way more likely to fit the users' needs and problems (Ibid).

There is an aspect of the diffusion theory that Rogers (2003) claims can affect the diffusion rate. This is authority innovation-decisions, where the members of the social systems have no influence, and the government, or someone with technical expertise, forces the decision. This is a faster rate of adoption in comparison to it being optional or a decision based on consensus among all units and individuals. The characteristics of the diffusion of innovation process are often described as an individual process, but this thesis relates to ICT systems in a humanitarian response. It is therefore necessary to go deeper into how organizations innovate, adopt and implement innovations, which is much more complex in comparison to individual diffusion (Rogers, 1995).

3.3.3 Organizational innovation and implementation

According to Rogers, an organization is (1995 p. 375) defined as a stable system of individuals who work together to achieve common goals through a hierarchy of ranks and a division of labor. The diffusion leads to a potential adoption of an innovation that subsequently leads to implementation, although this does not always directly follow the adoption. The innovation process in organizations consists of five stages:

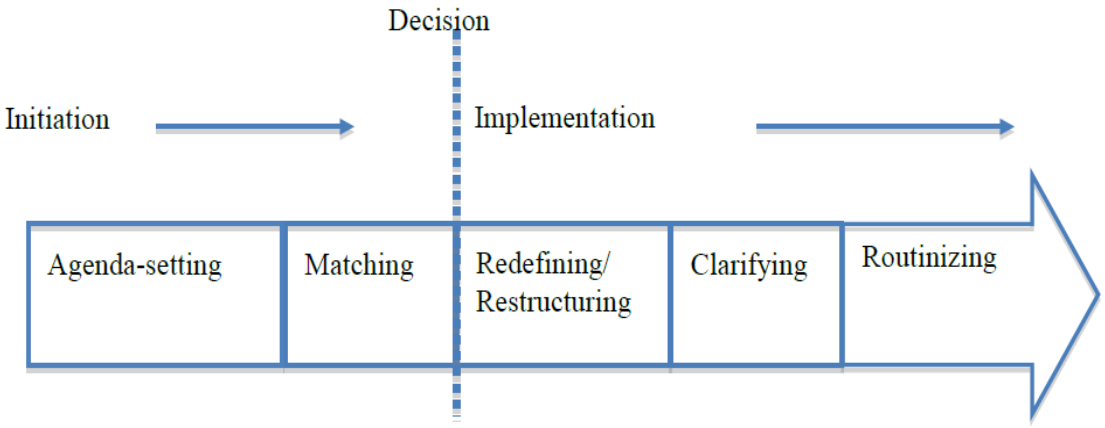

Figure 3.4,The five stages in the innovation process in an organization, based on Rogers (1995)

In the initiation phase *agenda-setting* is the first stage of the innovation process in an organization. In this phase a definition of the organizational problem that needs innovation is stated, and followed by identifying and prioritizing needs and problems. At the same time innovative solutions are sought in the organization's environment that have the possibility to solve and meet the organizational problem. The second stage in the initiation phase is *matching*, which seeks to fit the innovation to the defined problem. Information is gathered, and, together with conceptualizing and planning, this match leads to the decision of either adopting or rejecting the innovation. If the decision is to adopt the following phase is the implementation (Rogers, 1995).

The implementation phase consists of the last three stages. The first is *redefining/restructuring;* where the adopted innovation starts to lose its foreign character, and starts to be re-invented to fit the organizational context and structure (Rogers, 1995). The organizational structure also adapts itself to the innovation, as the technological systems are products of human interaction, and are, therefore, not objective (Orlikowski, 1992). However, if the innovation is designed within the organization, it is more familiar and compatible; this

is especially the case in regard to software components as intellectual tools. A barrier to this is the lack of expertise and knowledge in the technological system which may slow down the implementation process. When the implementation is related to technological systems, it may create uncertainty that could result in difficulties of implementation (Rogers, 1995). Gerwin (1988) highlights three main uncertainties with computer technologies: 1) technological uncertainty, the capacity of organizations to determine the reliability, capacity and precision of the technological systems, 2) financial uncertainty, which is the degree of return of investment, and 3) social uncertainty - whether conflict is likely to occur if implementing, especially if the innovation is radical (Gerwin, 1988).

Clarifying and r*outinizing* are the two last stages in the implementation phase. *Clarifying* is when the innovation's meaning is becoming clearer to the members, and the possibility to correct any unwanted side effects that occur when gaining understanding of the technological innovation. This is because the meaning of the innovation is a social process through human interaction. The very last stage is *routinizing* where the innovation is incorporated and has lost its separate identity, is no longer thought of as a new idea, and is absorbed in the organization. The innovation is now completely implemented in the organization (Rogers, 1995).

3.4 Failure of Foresight

Barry A. Turner (1976) has developed a descriptive theory of *Failure of foresight* to describe the opposite of normative reliability seeking models in organizations that focus on stable and failure free performance, this theory stresses how disasters can be accumulated by gross errors by organizational groupings with complex chains of events over years, as an outcome of interaction between the human and the socio-technical system. He states "common causal features are rigidities in institutional beliefs, distracting decoy phenomena, neglect of outside complaints, multiple information-handling, difficulties, exacerbation of the hazards by strangers, failure to comply with regulations, and tendency to minimize emergent danger" (Turner, 1976 p. 378).

Failure of foresight explains how organizations are developed to define collective goals and deploy available resources to take action in order to reach those goals. When organizations implement action tasks there will always be uncertainty if the present action will result in the desired goal (Thompson, 1967). However, these tasks are often loosely formulated and lacking unequivocal criteria for deciding when the goals have been attained (Turner, 1976).

The uncertainty is therefore often attempted to be reduced by resolving problems with rules of thumb, rituals, relying on habitual patterns or, more self-consciously, by setting goals and making plans to reach them (Turner, 1976) by the collective simplification of assumptions about the environment to "bounded rationality" (Simon, 1957). This can result in accumulation of latent conditions for accidents and bring about organizations going into an incubation period (Turner, 1976).

Before the incubation period, individuals cope with the world and hazards by following normative prescriptions as laws and codes of practices based on the initial culturally accepted beliefs. Accidents do not happen because of adequacy of the accepted norms and beliefs (Turner, 1976), but rather when unnoticed sets of events that are not understood or accepted in the accumulated beliefs of the world and its hazard, and the world starts to differ from the way we think of it. The events that accumulate differ from our reality, beliefs and norms, and therefore are not noticed or understood by its consequences and the organization finds itself in an incubation period (Ibid).

3.4.1 Incubation period

Organizational and inter-organizational factors are often the cause of accidents, as they fail to notice or understand the situation until it is too late, and little can be done to avoid the accident and turn the situation around (Turner, 1976). Turner (1976) particularly focuses on four main groupings of misunderstandings that lead the organization to the incubation, where the failure of foresight interferes -these are classified as *latent conditions*.

Events unnoticed or misunderstood because of difficulties in handling information in complex situations: patterns of misunderstanding, ambiguities and failure of communication can be factors that contribute to the disaster. When information fails to be sufficiently disseminated and collectively integrated and interpreted, it may lead to misleading information that results in information being unintentionally distorted (Turner, 1976).

Perfect communication is impossible to ensure, even in the simplest systems. Failures in communication often get compounded when there are no consequences to poor information handling (Turner, 1976). During the accumulation of events, the risk of failure in terms of communication increases with the size of the organization. Large and complex organizations will have an increased number of messages requiring processing in comparison to small

organizations (Ibid). If the task is to be handled by several organizations, then the failure of communication will increase even further, and the possibility of maintaining communication is further lowered. This is because each organization has their own distinctive subculture and framework of bounded rationality. This might result in assumptions that other units are handling the problem. Additionally, when the task is prolonged, complex, vague, hasty and large-scale, the information handling is even more problematical to maintain. This will change the responsibilities and administrative roles, and result in increased complexity when handling information, because it will generate more information requiring processing (Turner, 1976; Wohlstetter, 1957).

During large-scale and complex situations it is not possible to agree upon a single description of the situation. This is because everyone operates with one set of information, and constructs their own theories about what is happening, and how it should be dealt with. This obscures an already complex situation, because the information that is available is not supplementing what is needed to describe and take into full account. The reason for this is because the complexity makes relevant information a limited resource, and the cost of obtaining one set of information is added to the cost of another, which hampers the possibility of having full control of the situation. This is not the same as the lack of communication, but the reflexivity of the situation forces the actors to be extremely selective in terms of communication (Turner, 1976).

Events unnoticed or misunderstood because of erroneous information can here accumulate when the erroneous information are not expected or explained away as decoy phenomena, because they are not noticed or not fully understood. This results in distracting attention from the true problem (Turner, 1976).

Effective violations of precautions passing unnoticed because of cultural lag in existing precautions. This happens because existing precautions are discredited, as they are either out-of-date or inapplicable to the existing event. This may lead violations to pass unnoticed (Turner, 1976). This can create latent problems because of the mismatch between procedures, standards and regulation (Pidgeon & O'Leary, 2000; Turner & Pidgeon, 1997).

Events unnoticed or misunderstood because of a reluctance to assume the worst outcome. When existing danger signs are not perceived, given low priority, are treated as

ambiguous, or as a source of disagreement or even considered insignificant, this creates the possibility of exacerbating events and disasters (Turner, 1976).

In addition to the latent groupings above there are also the risks of poor design in managerial systems, lack of insufficient training and inconsistent supervision. There is also a risk of a low ability to analyze changes in the environment and the practical operation leading to latent conditions that may exacerbate organizational accidents (Reason, 1997).

3.5 Theoretical conclusion

The socio-technical system (Rasmussen, 1997), *diffusion of innovation* (Rogers, 2003) and *Failure of foresight* (Turner, 1976) are system-oriented, meaning that they, in various terms, explain how systems are built upon different vertical and horizontal levels in hierarchical systems.

The thesis adopts the socio-technical system (Rasmussen, 1997) as a framework to describe our interpretation of the humanitarian response and the actors within it. The thesis will also use the author's understanding of how the system can be reliable, in order to see how the ICT systems can contribute to more reliable information management and processing, and through this potentially precipitate a more reliable response. Within the socio-technical system, the diffusion of innovation (Rogers, 2003), will contribute to the understanding of how the actors adopt and diffuse the ICT systems as innovations, and how the adopters and agents innovate the ICT systems on different levels. How the ICT systems adopt and diffuse within the socio-technical system (Rasmussen, 1997), as well as how organizational factors can ensure a reliable closed feedback loop between the assessments, planned activities and implementation of interventions will not be elaborated through Turner's (1976) failure of foresight. Through Turner (1976) it will be elaborated how organizational failures may accumulate and create latent conditions within the framework of socio-technical system, and hamper the information management and processing among the humanitarian actors, that can subsequently affect the potential reliable closed feedback loop between the assessments, planned activities and the implementation of interventions.

4.0 Research design and methodology

> *Colloquially, a research design is a logic plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions (answers) about these questions. Between 'here' and 'there' may be found a number of major steps, including the collection and analysis of relevant data* (Yin, 2003, p. 20).

This chapter aims to explain how we got from 'here' to 'there' by elaborating the three main phases of the social research design: planning, executing and reporting, as well as explaining the methodological choices taken in each phase (Blaikie, 2010). The research for this thesis has been conducted through a qualitative in-depth approach, and was performed through two fieldworks. As the comprehension of the research topic selected in this thesis was unknown, we started the first fieldwork using an explorative approach. Blaikie (2010) defines the explorative approach as studying a topic that is unknown in order to produce ideas of what is going on, and how it may be further researched. This approach was utilized in our research to sharpen the focus of the research problem and establish a set of research questions based on the understanding collected through exploring, in order to perform a second data collection period. The following sections of this chapter therefore explain the methodological choices undertaken through the eyes of the authors' experience of being researchers in Lebanon. Section 4.1explains the research design, strategy and process. Section 4.2 elaborates the selection of data. In section 4.3 the collection of data through triangulation is described. Section 4.4 explains the ethical considerations undertaken in this research. Section 4.5 describes the challenges experienced during the data collection periods. Section 4.6 explain how the data was reduced and analyzed. The last section, 4.7 reflect on the reliability and validity of the data collected in this thesis.

4.1 Research design and strategy

The research design was chosen and guided by the research problem, which in this case was the usage of ICT systems in a humanitarian response. To research the topic of interest we needed a set of research questions. Research questions are therefore formed by *what*, *why* and *how* the topic will be studied (Blaikie, 2010). The purpose was to examine *what* new forms of technology existed within humanitarian aid in Lebanon, and *what* this signified for the actors using them. *Why* this area was chosen to examined was because using technology in humanitarian aid was relatively unexplored within the research field, and also because several

reports from the UN system stated that this area of interest needed further research. *How* we choose to study the phenomenon was in the context of Lebanon through two fieldworks studying the humanitarian actors within all levels, MoSA, as well as the beneficiaries of the response as a whole.

The first fieldwork of this research was, as mentioned in section 4.0, conducted using an explorative approach. Our primary purpose was therefore to examine an unknown phenomenon in order to create the possibility to move towards some more refined research questions and hone the research problem. When stating that it offers the opportunity more precise questions, this refers to what the questions can contribute to future researchers (Neuman, 2006). As we conducted two fieldworks, the result from the first was used to design the second, which was conducted in a more extensive and systematic way.
The research problem was therefore adjusted based on what was discovered during the first fieldwork, and examined more deeply during the second. The main feature of this thesis shaped itself to concern ICT systems, and how these systems can contribute to a reliable information management in the humanitarian response in Lebanon. To be able to produce a conclusion, a set of research questions was needed to provide a framework and set boundaries of what would be studied. This was done to narrow down the research problem, and to produce variables. The research questions are as followed:

1) How is the diffusion and adoption of the ICT systems in Lebanon?
2) How is the information processing among humanitarian actors in Lebanon?
3) What is the relation between the assessments, planned activities and implementation of interventions in the humanitarian response in Lebanon?

4.1.1 Abductive research strategy

After the first fieldwork we established research questions that made the choice of selecting an abductive research strategy to answer the questions explicit. We decided to apply an abductive research strategy in accordance with Danemark's (1997) understanding of the term. Danemark (1997) explains that the core of all abductive strategy starts with empirical incidents that is related to a set of rules or theories, leading to re-contextualization regarding the empirical incidents, which then results in new insight (Danemark, 1997).

The abductive research strategy was applied on the basis of three aspects that made conducting this strategy explicit. *First*, because limited knowledge about the ICT systems in the humanitarian responses exists, and we wanted to limit our own preconditions of background knowledge that could potentially shape the thesis through our subjective interpretations rather than the reality (Neuman, 2006). Therefore it was seen as necessary to apply a research strategy that emphasizes the humanitarian actors, MoSA and the refugees' meanings, motives and interpretation in order to limit our own personal interpretations (Blaikie, 2010). *Secondly*, the relationships between the different organizations are structured in a way that is not possible to directly observe, but only possible to interpret through theories, models and concepts that frame some new ideas between the different aspects (Danemark, 1997). The *third* motive for choosing this strategy was based on the fact that after we had conducted the first explorative fieldwork, we saw patterns of interest that led us to create preliminary research questions. These questions not only seek to answer *what* existed of ICT systems, but also *how* the social actors understand the function of these. In order to do so we had to describe the ICT innovation, the adoption and the changes that this presented for the actors, leaving the abductive research strategy as the natural choice (Blaikie, 2010). We decided to perform triangulation when collecting data through both the phase of exploration and abduction in order to limit our own interpretations in ways that could constrain the social actors own interpretations.

4.1.2 Research process

Table 4.1 presents a summary of the essential steps that were undertaken throughout the research process. The process is divided into periods before, during and after the fieldworks. Although the period before and after the fieldworks are roughly characterized, the fieldwork that consists the empirical data collected in Lebanon is discussed more thoroughly in the following passage.

Period	What	Why	Outcome
Period 1: Fall 2014	Literature studies	To gain knowledge within the research topic and to explore possible angles of the research problem.	Broader understanding within the research topic and a creation of a contemporary research problem and questions.
	Interview with Norwegian INGOs in Oslo.	To gather knowledge within the current usage of technology within humanitarian aid.	Further knowledge gathered about technological usage in crisis. Contact information to two possible informants in Lebanon.
	Develop contact with two informants in Lebanon.	Establish a network of informants in Lebanon, and try to get access to actors on both field and national level.	Schedule one appointment, and one open appointment that was going to be further planned once in Lebanon.
	Develop a theoretical framework and create an interview guide.	To establish a clear direction for our field study.	Preliminary establishment of a theoretical approach. The creation of an open interview guide that seeks to explore rather than define.
Period 2: October 24th 2015 -January 15th 2015	Fieldwork in Lebanon round one.	Produce findings related to the theoretical stance chosen, and explore the field for other unknown aspects that might be of interest.	15 interviews. Participant observations. Innumerable conversations with the local population.
	Analysis of collected data	Analyze data alongside collection further data to seek to understand the social actors and their interpretations.	Contradiction in the preliminarily research question was found and adjusted.
	Data reduction and analysis of data round one.	Reduce the complexity of the data by creation an overview of the explored field.	A new narrow research problem and questions was established
Period 3: Mid January -Mid February 2015	Further development of the theoretical overview and interview guide.	Initiate a clear direction for the next fieldwork.	The creation of a new and more narrative theoretical framework.
	Literature studies.	Gain a better understanding of the different actors roles.	Deeper knowledge gathered of the humanitarian structure.
	Preparation for the second round of fieldwork trough networking.	Contacting informants from round one, and new actors from field, sub and national level.	Scheduled several interviews for the second field trip.
Period 4: February 15th -March 6th 2015	Fieldwork in Lebanon round two.	Produce findings related to the findings from round one and the theoretical framework.	21 interviews Participant observations. Camp visits.
	Analysis of collected data	Analysis of data alongside collecting data to test the research problem.	Further confirmation of the research problem was collected.
Period 5: March 7th -June 15th 2015	Two interviews in Norway, and participate in a lecture about the Syrian Crisis.	Gain better knowledge of the inner and outer context of Lebanon.	A deeper understanding of both the historical and present context of the field.
	Data reduction and analysis of data round two	Reduce the complexity of the data by creating an overview, and analyze the correlations between the findings from round one and round two and the theoretical framework in order to produce conclusions.	Complete the thesis based on the knowledge gathered on the phenomena.

Table 4.1 Activities conducted in the research process.

Period 1

In the preliminarily stage of the thesis our main focus was upon the literature studies with the purpose of gaining deeper knowledge of how technology was being used within humanitarian aid. We went to Oslo to interview three INGOs and one technological crisis management organization, in order to gain insight from them on the relevance of the research topic. The INGOs found our focus on technology interesting and gave us two contacts that were working with the Syrian response in Lebanon. Following this, we read several UN reports about the Syrian crisis and discovered that the context of interest was using technology to manage the response. The subsequent period was used to narrow the research problem and questions down, based upon the information gathered in Oslo and our literature studies. We started contacting the informants in Lebanon, scheduled an interview, and booked the trip to Lebanon. Once access to the informants was established we developed a theoretical framework. We had some initial apprehension regarding our focus on theory, as it could lead us in the wrong direction. With this in mind the research is based on an explorative approach, and that the purpose of the thesis is to understand the social actors' everyday life, and not just our own understanding of the phenomenon (Blaikie, 2010). Therefore, we focused on considering a wide range of theoretical approaches before arrival in Lebanon. An open-ended interview guide was developed and the preparations for the fieldwork commenced. This included literature studies on Lebanon's history and present context as well as accommodation, security issues, vaccines and contacting potential new informants.

Period 2

The second period consisted of the actual fieldwork in Lebanon. We stayed for four weeks; the period included both collecting empirical data but also performing an ongoing analysis as newly arrived data was attained. The qualitative data was collected through interviews, official documents received during interviews, participant observations, and engaging in conversation with the local population.

Period 3

In this period the focus was tightened and narrowed down. To achieve this we had to reduce the data that was collected, and analyze the empirical material from the first fieldwork. This is explained in detail in section 4.6. We also developed a new, narrower theoretical framework suitable for a new focus of interest. This was done to delineate a clear direction for the next fieldwork.

Period 4

The second fieldwork lasted for three weeks and was based upon the analysis from the first. During this period data was collected through observing meetings, conducting interviews, reading official documents handed to us during interviews and having informal conversations with the local population. The period consisted of a constant ongoing analysis of newly collected data and a comparison of this to the findings from the first fieldwork - as well as working on the theoretical framework.

Period 5

After the second fieldwork in Lebanon the data was reduced in order to minimize the complexity of the total amount of data. We analyzed the data from the second trip and thereafter started to compare the findings from the two fieldworks. This is further explained in section 4.6.

4.2 Data collection

In qualitative research human experiences are studied through using multiple methods and sources of data (Punch, 2005). We used semi-structured interviews with open questions, observations (field notes), field conversations and document analysis. By observing the field from different angles using triangulation the aim was to improve accuracy through looking at the field from multiple perspectives (Neuman, 2006). The choice of data collection through triangulation was also heavily influenced by three reasons: limited time, money and access to the context. Given the research purpose and topic the methods chosen were seen as suitable for gathering the relevant data. In the following subchapters of 4.2 we will describe the challenges with time and access within two field studies. Thereafter we explain how the sampling and selection of informants was performed, before noting how key informants

turned out to be door openers for our thesis. Lastly we elaborate how the various methods of collecting data were performed.

4.2.1 Fieldwork: Access and time consuming

The fieldwork was conducted in Lebanon and was accomplished in two phases. The first fieldwork took place from October 24th to November 24th 2014, and the second from February 15th to March 6th 2015. During the first fieldwork we faced challenges in getting access to informants, while on the second field trips we struggled with getting enough time to meet all the relevant actors.

Access

Entering the field can be seen as an access ladder whereby you begin on the outside (Neuman, 2006). We began with a rough start, where access to any informants at all seemed impossible even after innumerable attempts to contact organizations through e-mails and phone calls when in Norway. We had, however, the initial two contacts that were willing to meet us in Lebanon. Therefore we decided to travel even though we were not sure if it was possible to conduct the research. As we did not have access to the field through any organizations, we traveled independently. The focus was on balancing the freedom of exploring the field and the integrity of the participants (Rossman & Rallis, 1998). This turned out to be both a positive and negative for us. We struggled with getting access to informants in the beginning, using almost one week just to schedule an interview when the pre-scheduled one was canceled. The positive side was that once we started to get access to informants, we had informants from all sectors in the response, giving us the possibility to really explore all aspects of the research topic. Having an articulated strategy and purpose was important for us because it would affect the participants in ways that could change the way they perceived us as researchers (Rossman & Rallis, 1998). As we were trying to gain access independently the strategy had to be informed in ways that allowed us to be perceived as someone of interest to the potential informants. We learned that technological innovation in humanitarian aid was a topic in which most actors on national level had an interest in. When trying to get independent access to actors we accordingly explained the importance of further research within the field, and that we were interested in their thoughts on the topic. Access to actors at field level was more difficult during the first fieldwork as they are often working in areas which were difficult to access without formal authorization (Repstad, 1993; Riis, 2005). However, once we had

access to informants at a national level, we also eventually got access to informants on the field level of the response through the informants on the national one.

Time

On the days we had scheduled interviews we often struggled with finding the location of the offices, as we always requested the interviews to be held in their natural setting (Blaikie, 2010). This also gave us the opportunity to explore their environment and gain a greater knowledge of their work situation. To localize the office buildings was often a struggle as the names were given to us in English but all street names were in Arabic. Because of this we had to plan every interview in terms of time, so that we were sure that we had a long enough period to localize the street or building. It did not help that all organizations were based in anonymous buildings due to security concerns. Therefore we often only had the chance to perform one interview a day, though some days we had to schedule several interviews which resulted in chaos and stress for us. On our busiest days we had four interviews.

We particularly struggled with the time during the second fieldwork. This was not predominantly due to office locations this time, but mostly because we had less time and more informants to meet than during the first fieldwork. Once we had performed the first fieldwork we had managed to establish sound connections with several informants. This was both positive and negative. It gave us the possibility to schedule new interviews with them in advance before coming back to Lebanon and also gave us the chance to increase the *member validation* (Neuman, 2006). By meeting them for a second time the informants could validate the adequacy of what they previously had stated to us (ref. 4.7). These connections also enabled us to access further informants, meaning that our calendars was already pre-booked to a certain extent before we entered Lebanon the second time. This was originally done in order to ensure that the situation of not having access to informants did not repeat itself during the second trip. We wanted to be better prepared, but ended up being overwhelmed and feeling like we did not have enough time to meet all parties of interest.

Another aspect that may have negatively impacted upon us was that with good relationships comes restraints, meaning that having access to informants freely could be hindered as we had several pre-booked interviews with new informants recommended by the previous ones. We tried to be aware of this, and not let it lead the research, but it was difficult as once in the field you become caught up in the context. It is difficult to know what might be data and what

might not (Neuman, 2006). This is because, as researchers using an explorative and abductive approach, we tried to let the informants guide the path, and focus on that data which can be collected in rare and most unexpected places. Therefore nothing can be left unseen or neglected, as this might turn out to be the most valuable data gathered (Ibid). This can best be exemplified with the meetings we had with refugees at the ITSs during the second fieldwork. At the time we did not fully comprehend the considerable significance of these meetings, but in retrospect after analyzing the data we saw that the refugees' statements had a huge impact upon the empirical findings.

4.2.2 Informants and sampling

The selection of informants was based on Neuman's (2006) understanding of *sequential sampling*, meaning that we tried to establish contact with as many informants we could, until the informants could not contribute any further information other than what was already revealed. When establishing relations with informants we experienced that the *snowball method* was highly efficient. The snowball method is where established informants interlink you to new informants based on recommendations and introductions (Neuman, 2006; Repstad, 1993). The sampling of data is seen as *purposive sampling*, because we, as researchers, deliberately had the purpose of study in mind (Neuman, 2006; Punch, 2005). The methods used for sampling in this thesis will not allow us to generalize the findings to a broad extent (Blaikie, 2010), but that is anyway not what we wish to accomplish. The intention is to make a judgment as to what extent our conclusion might represent other humanitarian responses in other parts of the world, and particularly in urban settings similar to that of Lebanon (ref. 4.7.2 external validity).

Sampling through predefined criteria's

The relevance that the informants had to the research topic was set out in some predefined criteria (Neuman, 2006). The population in the research is NGOs, INGOs, UN agencies and MoSA, as well as the beneficiaries and the local population. In total we had 78 informants[9] within these categories during the two fieldworks. The majority of the informants were reached during the fieldwork. The criteria and categories for the informants are elaborated in the following sections. In order to maintain the promise to ensure anonymity for the informants, the citing of the informants through the presentation of the empirical data and

[9] See list of informants Appendix B.

discussion (chapter 5 and 6) uses references based on their work genre for example IM, or fieldworker, as well as organizational genre (UN, INGO, NGO, MoSA or refugee). There exist two exceptions, with regards to using the organization name, the lead agency UNHCR and MoSA. This is further elaborated in ethical considerations see section 4.4.

Before we established any contacts in Lebanon we sent e-mails and tried to call the international actors. It took us a week until we scheduled the first interview. Luckily for us this informant was a head of office and had an extensive network in the humanitarian system. This informant recommended us to a great deal of relevant actors. Once we had the possibility of referring to previous informants when establishing new contacts, things started to become easier and we were able to schedule interviews. How we are interpreted as researchers not only depends on what we say or do, but also on who you know (Repstad, 1993). The second fieldwork was then based upon our own established relationships that we continued to nurture in the period between the fieldworks. This was done in order to maintain the relationships with the informants so that we could get further access to the field. During the second trip to Lebanon we also managed to interview the governmental actors through the use of the snowball method. This is further explained in door openers, see section 4.2.3.

During both fieldworks we used sequential and purposive sampling, along with the snowball method (Neuman, 2006). The main difference between the two fieldworks was the strategy. During the first fieldwork we explored the usage of ICT systems in the context in order to see how the topic could be further examined. In the second we aimed to describe, understand and reinterpret the changes that ICT systems presented in the context based on the findings from the first fieldwork. This led us to select informants more precisely during the second trip, as this time we wanted to confirm the actual findings, and talk to informants whose perspectives we lacked from during the first fieldwork (ref external validity 4.7.2). This was performed in order to try to find the missing pieces of the puzzle. During the first fieldwork we would meet everyone who was available, as exemplified with the interviews, that ranged from UN, INGOs, NGOs bot also a university professor, teachers in Palestinian refugee camps, and having dinners with local families, and meeting Hezbollah militiamen.

Informants from national level: the UN agencies and MoSA

As all ICT systems were developed and carried out from the managerial level, we saw it as essential to get access to informants from this level. In addition, the government, the actors

that developed and re-designed the ICT systems, and UN organizations within the humanitarian response at management level were of interest. The initial reason for selecting the UN organizations was because they were the link between the ICT systems and the humanitarian response, as well as the beneficiaries of the entire response.

Informants from national level and field level: INGOs, NGOs and MoSA

The second categories of informants were the INGOs and NGOs at the national headquarters and field level. MoSA had fieldworkers and is therefore also in this category of informants. The organizations and MoSA are working as partners in the response and were seen as the users of the ICT systems. It was therefore important to seek to understand what these actors thought about the existing ICT systems, and also compare their perspective to the leading UN and governmental actors. During the first fieldwork we interviewed several partners at national level, though we only managed to get in contact with fieldworkers working in Palestinian camps during the first trip. In the course of the second fieldwork, however, we managed to meet up with fieldworkers in the Syrian ITS. The government, as well as sector leaders, turned out to be central informants allowing us to gain deeper access to field workers in their natural settings during fieldwork two (Blaikie, 2010).

Informants from community level: beneficiaries and the affected population

The third category of informants was selected because we wanted their understanding of the response as beneficiaries. The local population had connections to further relevant informants working in INGOs and NGOs, as well as valuable information about the country's history, current state and context. The beneficiaries of the response are the individuals whose suffering will be exacerbated if the response mechanism is not proportionate to the challenges faced. Talking to the beneficiaries was initially only seen as something that could better the understanding of how the ICT systems worked in practice. Yet, when going deeper into the context we understood that these informants had turned out to be some of the most valuable, as the information that was collected from them did not correspond with what informants from UN and INGOs on national level were saying. We managed to gain access to two ITSs, where Syrian refugees were living, as well as two Palestinian refugee camps containing both Palestinian and Syrian refugees. One of these camps had restricted access, and we had no way of obtaining it. However, we surreptitiously entered anyway in with the help of a key informant. Each camp is located in different geographical areas of Lebanon. This gave us the possibility to examine if the humanitarian response mechanism was conducted differently in

each area. This increased the reliability of the data collected in regard to the challenges expressed by informants, as these turned out to be the same in each location (see section 4.7.1) The choice of collecting the data from these specific camp areas was done because these were the areas we were given access to through the snowball method, and because we knew that these were the areas where most beneficiaries of the response could be found.

4.2.3 Door openers

A door opener can be seen as a key informant that enables the researcher to establish a connection with the context in which the study is conducted in ways that enrich the research (Repstad, 1993). The snowball method has, however, a tendency to contribute to imbalances in the data that is being collected, due to the fact that informants often want to recommend other informants based on a similar understanding of the topic of interest (Ibid). Key informants can ameliorate this to a certain extent if the researcher finds key informants that offer access to actors with diverse understandings of the research topic. The informants that became door openers for us during the first fieldwork were not the individuals that we expected.

The professor

A professor at our university has been working extensively within humanitarian aid for several years. As there is high turnover of staff in the humanitarian sector, several of his previous colleagues were located in Lebanon. This resulted in easier access to further informants and a higher willingness to share their perspectives, as we perceived that it increased the credibility.

The taxi driver

We got in contact with a taxi driver that had several connections in Norway within the humanitarian aid and the Norwegian news channel. The driver showed a great interest in our area of focus and we observed that for him to be able to link us to informants within the humanitarian sector gave him a great sense of accomplishment. We established contact with several informants through his help during both field studies and he also were our guide during visits around the country, which would be otherwise unsafe for us to travel to. He had great knowledge about the situational picture in the country and also knew the best routes to avoid potential dangers.

The project leader

A professor from Norway that we also got to know through our taxi driver worked as a project leader in Palestinian camps in Lebanon. He had a great cultural knowledge about the country and gave us access to several local informants. He also introduced us to a Lebanese family where we had dinner and got to know the culture of Lebanon from a different perspective. The meeting with the project leader also gave us access to a camp where it was difficult to gain access to. We met this informant during both field studies and his friendship gave us both motivation and guidance during the data collection.

The florist

As we tried to be open and get to know the local population as much as possible, we tended to end up talking to both people sitting in the streets as well as neighbors taking their daily walks. Through this, we stumbled upon a semi-retired man that used his flower shop as a means of socialize with other individuals. He had limited English, but he seemed to enjoy our company and showed a profound interest in helping us with localizing central locations in Beirut, as well as with practical concerns. We perceived this interest as a genuine wish to show us that a willingness to help outsiders still existed in Lebanon. The country has struggled with tourism in the last few years due to the conception that the country is unstable. Perhaps because of this, the florist appeared to want to change our interpretation of the country, and, in many ways, he did.

The General

We also got in contact with another informant who seemed to want to change our perceived understanding of Lebanon. This informant was a retired general with an extensive knowledge about Lebanon's history and culture that started to talk to us during the first fieldwork. This man had made it his mission to contribute in our thesis in any way possible. He saw it as a chance to positively change some aspects of what the country was currently undergoing. The general not only gave us guidance and helpful advice, he also acted as an intermediary for us at the ministries office. When he heard that we were coming back to Lebanon, and were interested in talking to relevant actors within the government, he managed to schedule an interview for us, as he genuinely believed in what our thesis topic was attempting to do and, consequently, he served as the most essential door opener for us.

4.3 Triangulation

Our research problem was to discover, understand and describe the interpretations of the humanitarian actors understanding of the ICT systems in Lebanon. Blaikie (2010) states that the best way to do this is seeing the world from "inside" and become a member of the informants' world. A method of accomplishing this is *triangulation measures*, where you measure the phenomenon from different angles and viewpoints to get a deeper understanding and improve the accuracy of the collected data (Neuman, 2006). We used semi-structured interviews, field conversations, observations, participant observations as well as document studies to achieve this, and because some of the methods were not suited for all informant settings. When we met national actors from the government, UN, INGOs and NGOs a semi-structured interview was well suited, whereas when we met the refugees and the affected populations, field conversations were more convenient and appropriate, especially when it came to protecting the informant's integrity. We used triangulation in order to better validate the research as we could test findings from the different methods against each other (Fangen, 2004) using observations as well as interviews is a good example of this. By not only listening to what the humanitarian actors and refugees were saying, but also observing them in action in their everyday lives, it gave us a different understanding of their context.

4.3.1 Document studies

We used documents for different purposes during the research. The report from UN-OCHA (2012) *Humanitarism in the Network Age* is worthy of particular mention as it contributed to deeper background knowledge for this area of humanitarian aid. We also used evaluation reports that we found online during the second stay in Lebanon, the two most valuable here were *the real-time evaluation of UNHCR's response to the Syrian refugee emergency* (Crisp et al., 2013) and UNHC's (2013) response to this assessment. These reports help further guide the research problem, and contributed to a better analysis through secondary data, as it identified critical organizational factors that corroborated with the findings. Having both these reports also gave us the possibility to see if the issues we had found had already been identified two years prior to the research. Looking back, we are glad that we did not discovered these reports during the first visit to Lebanon, as they might have had more influence on the research methods and especially the interview guide with regards to how we interpreted the informants statements and how we structured the interview guide (also see reliability 4.7.1). We also used all published response plans for the Syrian crisis in Lebanon to

understand the response mechanism. The research is a "window in time" and, even though the 2015-2016 Lebanon Crisis Response Plan was published during the last visit, it was not implemented. We did, however, use this document in order to find connections with our own findings. During both field studies we also gained access to several documents from the various organizations we encountered - this was both a challenge and a benefit. We learned more about each of the organizations, but ended up expending an extortionate amount of time reading through all these documents.

4.3.2 Interviews

For both field studies we used a semi-structured interview guide[10] in order to ask open-ended questions within the research topic. The interview guide helped us stay focused on areas of interest, but did not restrict the informant's opportunities to speak freely. All interviews were conducted face-to-face and performed in the informant's natural settings. For most of the interviews we used a tape recorder, this enabled us to precisely transcribe the interviews according to what the informant had said. None of these interviews recorded names or personal information (ref ethical considerations 4.4). During the interviews where we could not use tape recorders we had to memorize the information as well as take extensive notes. This proved somewhat challenging, as we were not able to get the entire conversations written down verbatim. According to Repstad (1993) this hampers the analysis of the data because the way informants express themselves will be changed through the filtration of the researcher's notes when it's not literally recorded through transcription. There were several situations where we could not use the tape recorder, this was due to either the informants wish not be recorded, or to protect the informant's integrity, as well as their fear of being quoted regarding sensitive information. This was especially the case when talking to the refugees or governmental informants. During these interviews we did, however, spend an extensive amount of time with the informants, ranging from a couple of hours to a day. This offered us the chance to take notes all day, as well as the chance to ask the informant several times in order to strive for accuracy in the data that we collected. This said having a tape recorder enabled us, as researchers, to pay more attention to what the informant said without worrying about missing a word or sentence. It also gave us the chance to work in our own way in the interviews as how the informant perceives and interprets us will affect the amount of data offered (Neuman, 2006; Repstad, 1993).

[10] See Appendix A for interview guide.

We planned each interview in advance, reorganizing the interview guide in order to make it relevant to each category of informants. During all interviews we had a prior agreement on which one of us that would lead the questions and who would take notes of the non-verbal behavior of the informant, as well as notes about the settings. We also ended up conducting several group interviews, though, in some cases it hampered the actors in speaking freely and independently (Repstad, 1993) as one was taking the lead in the conversation. On the other hand, we did end up having group interviews where two lead actors of the response ended up saying the complete opposite to each other - giving us valuable information that we would not have been able to get in an individual interview. The group interviews were also a good setting to observe the dynamic within the group, as they tend to lead the conversation amongst each other, leaving us an opportunity to observe from the sidelines.

During field conversations with mayors and the refugees we used an interpreter, as they did not speak English. When using interpreter, there is there is a possibility that the interpreter's identity will affect the words of the informant, and therefore be a pivotal part of the final research product (Temple & Rosalind, 2002). This was a challenge for us as we received the information in the form it was interpreted, leaving it difficult to grasp the true meaning of what the informant had said, and this may have influenced the collected data (ref 4.7 reliability and validity). This was particularly true in one interview, when it was clear the informant's body language that did not match what the interpreter claimed the informant was saying.

4.3.3 Field conversations

During both fieldworks we had innumerable field conversations, which could be classified as what Neuman (2006) refers to as unstructured, nondirective in-depth interviews. Sharing information about ourselves, and showing genuine interest in the informants seemed to build trust with the informants during field conversations, consequently enabling us to establish more in-depth conversations with them. Most of these conversations were not planned in advance, as we often made spontaneous contact when the opportunity presented itself. We wrote a daily diary as well day-to-day reports on all informal conversations. We also took notes during several of these field conversations in as a mean of increasing the accuracy of the data. The type of informants ranged from refugees to the local population. Sometimes these conversations were just for a few minutes, but other times we communicated for hours. Even though not all of these informants gave us insight into the actual research question,

nonetheless enriched our cultural knowledge as we learned to integrate ourselves into their society through rituals, ways of being and understanding underlying meanings of the way of life in Lebanon.

4.3.4 Participant observations and observations

A key principle of fieldwork is *naturalism*, meaning that, to seek the real underlying meanings of the world, you need to become directly involved and become a part of the social world you study (Neuman, 2014). For us this became both the biggest struggle and greatest achievement of our research. Most of the participant observations were connected directly or indirectly to the affected population or the refugees. We visited several community centers, and participated in the distribution of mattresses to Syrian refugees. We also had the chance to visit two ITS for Syrian refugees as well as two Palestinian refugee camps. During an excursion held by a NGO we also participated in a Disaster Risk Reduction program in a Lebanese village when we were asked to directly assist.

Figure 4.2 Photo of the Disaster Risk Reduction Program. Source: Jensen & Lura, 2015.

As a researcher in an emergency you can suddenly find yourself in the position of being seen as a resource rather than a researcher. This could potentially have negatively affected the data collected as we stepped out from the role as a researcher and contributed to shaping the

informants' settings. To manage the role as a researcher is difficult in itself, because as a participant that observes the field, you need to gain respect and trust among the informants in order to gain access to the "inside" (Blaikie, 2010; Neuman, 2006). We gained access to information just by being curious, and asking questions, as we knew nothing about the field that we were in. So when the informants gave us the status of *novice* we tried to play the role the best we could, and did not see it as an option to say 'no' when asked to participate in the humanitarian response.

We also observed two national meetings, one inter-agency meeting, and one national sector meeting. However, we used the opportunity to establish new contacts after the meeting. There are several advantages of using both interviews and participant observations, as during the observations we are able to see human interactions from a distance and consequently tried to find a deeper meaning to the informants behavior (Neuman, 2006). The challenges faced during field observations and observations are further explained in section 4.5.1.

4.4 Ethical considerations

Ethics begins and ends with our role as researchers. Both before, during and after conducting the fieldwork the researcher should reflect on their actions, something highly-dependent on the degree of integrity that researchers have (Neuman, 2006). Before conducting our fieldwork we discussed some ethical considerations in regard to how we would protect the informants' anonymity. We strived to accomplish this both during and after the two fieldworks. One of the means of ensuring probity was to send out information letters by e-mail to get approval before entering the interview settings. These gave information about what we were studying, and ensured the informants that we would not ask them any personal questions and that it was anonymous.

Conversely, this is very difficult to achieve when performing participant observations and conducting unstructured field conversations with refugees and the local population. We did, however, inform these informants about the study onset and that we would protect their anonymity. The refugees did not express any concerns regarding the matter of becoming part of the research, though we did experience challenges with regards to what they expected in return. This was highly difficult, as we had no authority to help these unfortunate people, and

never expressed that we could do so either. For example, during visit to an ITS we interviewed several refugees. After the interview several of the female informants ran to their tents and found their refugee registration papers, expressed their deep distress and wanted us to take their papers and assist them. This was, of course, not possible, but left us feeling that we had failed to preserve the ethical considerations with regards to these informants. We also excluded all names and personal information from all interviews, both those we recorded and those in note form.

Another challenge we experienced was information received from governmental actors. In several instances we received information from actors that we feared would endanger their anonymity, as well as their professional working relationship with the government if the information were to come out. We therefore chose not to use this information even though it offered good empirical data that would strengthen the thesis. We also experienced extensive ethical challenges in regard to providing balance in the presentation of the empirical findings and not revealing the identities of the informants. Not using the organizational names is an obvious example of how we managed to preserve their anonymity. As mentioned in section 4.2.2 we did use the organization/ministry name of the lead agency UNHCR, and MoSA. These were the informants that we could use the organization/ ministry name of, as there was no possibility to trace the identity of these informants. After some considerations we decided to not use the organizational name for the NGOs and the INGOs, as there might be a chance to reveal their identity, through the work genre.

During the data reduction period we also experienced ethical challenges. As we had transcribed most of the interviews, we consciously attempted to not take sentences out of context when using it in the empirical material. However, we knew that, as researchers, we will, to a certain extent, interpret and understand the findings based upon what we seek to find (Neuman, 2006). This has, though unintentionally, not only hampered the quality of the collected material, but also the ethical aspects with regards to showing the informants respect through presenting their statements in the context that they were said. We have, however, tried to limit this by having two data collection periods where we had second interviews with most of the informants from the first fieldwork. This was done in order to reduce our own potential misunderstandings as well as to confirm that this was what the informants actually meant by their statements.

4.5 Experienced challenges

4.5.1 Emotional aspects

Sympathy is, compared by Fangen (2004) to the ability to grasp other individuals' roles, as sympathy implies that we suspend our personal desires to help and show compassion to other individuals by taking on their roles. As researchers in an emergency it is exceptionally difficult to manage the role as both a focused researcher with the topic of interest in mind, as well as attempting to inhabit the roles of the informants. This was especially difficult when it came to the local population and the refugees and during a visit at one of the ITS's, we failed to do this. We had to cancel a distribution that we were going to participate in because we could not handle the emotional upset we suffered after deep conversations with the refugees. We had several incidents where we struggled to withhold emotional feelings, and keep our focus in mind, as both the thesis and the world we came from seemed to mean nothing anymore. Josselson (2013) describes this as a consequence of trying to learn from your participants, as you will be inviting them to have an impact on, and challenge your way of thinking. Seeing people live with no dignity, hope or possibilities, inhibited and tested the values we were familiar with. Feeling deep shame, injustice, and anger seemed to shape our minds to an extent that made it difficult for us to eat, sleep and focus after these meetings. When crying children grab your legs in desperation, with a hope that you can offer them a better life, you are forced to look at yourself with new eyes. What you have experienced and seen can never be unseen nor forgotten, or as Josselson (2013, p. 112) states "... *In a good interview, you will be emotionally as well as cognitively engaged. There will be moments of such intense identification with the participants that you will feel you have lost yourself*".

4.5.2 Security issues

During the two trips to Lebanon we experienced several incidents and concerns regarding personal security. This led the data collection to a certain extent, as there were times when we had to cancel appointments or make new plans for conducting further data collection. The first fieldwork was originally intended to be predominately performed in Tripoli after some days in Beirut. This plan had to be changed hurriedly after militia suspected to be part of Nursa Front and IS attacked a central area of Tripoli. The tension and uncertainty followed throughout the stay in Lebanon, so we decided to stay in Beirut, but travel on day trips to Tripoli and other parts of Lebanon for specific interviews and field observations. The emotional anxiety that follows when you don't know if, what and when something might

happen was something we could not prepare ourselves for. We did, however, establish emergency plans, which included reporting back home on where and when we would be at certain locations. When we returned to Lebanon the second time, the security issues had increased. Not only had the tension between the local populations intensified but there also were constant clashes along Syrian border between the Lebanese army and militia believed to be part of IS and Nursa Front. This heavily complicated the security situation in the country. During both our stays the Lebanese army managed to gain back control over border villages but several incidents involving IS terror cells, and the discovery of undetonated bombs impacted the stability in the country. Due to the situational picture during the second trip we tried to avoid daily routines with regards to places and areas. When religious rituals or demonstrations were taking place we stayed in our room. However, if something were to happen we could not control it, and this was something we had to accept. We managed to deal with this most days, but during our trips to extremely high-risk areas on the border to Syria we were extremely anxious both before and during the actual trip. We had never imagined that we would intentionally put ourselves in a situation where life seemed so fragile, but we put ourselves in these situations because it was the only way to reach certain informants. Even if we knew that the choices there and then might have been irrational, all we could see was what we could gain with regard to data collection. We needed contact with field workers and refugees' living in these areas and this was the only way. In retrospect, it would have been better to travel with the security of an UN agency, but we never had the opportunity. Therefore, we had to establish connections ourselves and travel to these areas with our private taxi driver.

We were forced to cancel a planned one-day trip to Akkar in the last minute due to a violent episode between terror groups and the local population. This was also a high-risk area for kidnapping, on the advice of the informants; we decided to cancel the trip to Akkar and travel to Tripoli instead. This did affect the data collection as we were not able to collect data in an area we knew had been most affected by the crisis, but we did have the opportunity to visit an area outside Tripoli. Throughout both field studies we listened and talked to the local population in order to be updated on security concerns, as they were the ones with local knowledge.

4.6 Data reduction and analysis

Data production requires some manipulation to render it suitable for analysis, and this is done through data reduction techniques such as coding through categories, and these can be created prior to the data collection through the interview guide (Blaikie, 2010 p. 208). During the first fieldwork we therefore had an interview guide with questions that were based on general concepts from the theoretical framework. This enabled us to explore existed ones and then later hone the focus before further research in the second fieldwork. During the second fieldwork we used categories derived from the social actors and the new theoretical framework. This theoretical framework was established after we had narrowed the focus based on the understanding derived from the social actors during the first fieldwork. The questions in the interview guide during fieldwork two were based on the underpinning of the established theoretical framework. During both fieldworks there was a constant ongoing analysis in order to uncover interconnections between the theoretical stances and the preliminarily data collected. This helped us to have a thematic structure to try to answer the research questions formed, or change them if new data gave new insights or perspectives. Having this structure also made it possible to identify interconnections between the different theoretical categories. All interviews were based on a semi-structured guide, and, because we collected an extensive amount of data also including notes from field conversations, participant observations and observations, it was necessary to drastically reduce this amount after both fieldworks. We therefore transcribed all recorded interviews. Thereafter, we coded both the manually written and transcribed interviews as well as the notes. The answers were coded by categorizing them according to key concepts from the theory. We used the program NVivo to structure and reduce the data through these coded categories.

4.7 Reliability and validity

In this section we discuss how the data collection through the method of triangulation might have influenced the research, as well as elaborate how these aspects might have affected the reliability and validity of this research. Reliability is the dependability and consistency when stating your observations (Neuman, 2006). Reliability is how the stated measure can produce the same result by using the same method, put simply, reliability concerns repeatability. For a study to have validity it needs to be reliable (Neuman, 2006). Validity is, according to

Neuman (2006), seeking truthfulness, and, in qualitative research, giving a balanced, fair and honest account of the social life from the viewpoint of the social actors understanding.

4.7.1 Reliability

When considering the objective of reliability in the research we considered the consistency of the semi-structured interviews, participant observations, and field conversations - as well as the document studies that structured the data collection as a triangulation method. Reliability is ultimately a question of the ability to repeat the research and gain the same outcome based upon the same method of collection (Neuman, 2006). Using qualitative methods enables the researcher to measure the social world from different angles and form dissimilar points of views, which is not possible through quantitative research as it neglects the key aspects of diversity that exist in the social world (Ibid).

The thesis' biggest achievement in ensuring reliability is that we have conducted two separate fieldworks with a significant interval between them. As the first fieldwork was highly focused on discovering the understanding and the usage of technological systems by the actors in Lebanon, we had the possibility of developing a research problem that was based on what existed, and not what we as researchers assumed it to be, or a theoretical stance. During the second fieldwork we had the possibility of seeking a deeper understanding of what the thesis had the aim of describing. The findings from the first fieldwork corresponded with what we discovered the second fieldwork, even though this was narrower in scope and seen through the new theoretical lenses. The beneficiaries we interviewed during both fieldworks were located in different geographical areas, but expressed the same challenges. This increased the reliability of the collected data, as it shows that the same information can be collected across different areas, and with intervals of time between each collection period. Many of the informants were interviewed during both fieldworks, though some were later omitted as they were no longer relevant when the focus narrowed. During the second fieldwork we focused on interviewing the most relevant informants for a second time to confirm the findings, as well as interviewing new informants that we lacked the perspectives of during the first stay - such as the governmental actors and the beneficiaries. However during some of these interviews, an interpreter was used. When using an interpreter it is possible that the data collected may have been influenced by the identity of this interpreter (Temple & Rosalind, 2002). Yet, the data collected from these informants was in accordance with other statements found during the two data collections. It is therefore likely that the interpretation was similar

to what the informants actually said. Therefore, the accuracy of the data from both fieldworks increases the reliability of this thesis. When comparing the collected data with the official reports evaluating the humanitarian response mechanism in Lebanon, we found, as stated earlier (ref 4.3.1), the same tendencies, even though this report was conducted the year before and with a slightly different area of focus. This triangulation increases the reliability of the findings.

As this research process involved both authors, we always had the possibility of discussing the data throughout the process. When doing this we had the opportunity to reflect and compare our interpretations of data during the stay in Lebanon. This decreases the authors' possibility of interpreting the situation based on their individual understanding, and increases the ability to present the real understanding of the informants. It is, however, important to state that we as researchers will always be shaped by subjective interpretations to some extent. Therefore, it will be impossible to avoid the data being completely unaffected by our subjective understanding, culture and values. There was always the possibility that our role as researchers might affect the informants' willingness to share honest opinions, as well being skeptical to us as researchers. During the interviews we, however, felt that all of the informants willingly shared both their challenges and successes, and we felt that they were being honest and sincere when stating their understanding of their role in the humanitarian response in Lebanon. The informants were selected based on the criteria of knowledge and experience within the field of interest, and not on probability sampling. This means that the findings revealed in this thesis are not possible to generalize in a wider context. Despite this, some of the findings may be transferred to other context of humanitarian responses, which is further discussed in external validity. As the research problem stated an abductive research strategy, the theoretical stance adopted in this thesis will influence and structure the final conclusion - as we, as researchers, see the data collected and reduced through the theoretical lenses. Therefore, is impossible for qualitative research to attain perfect reliability. Throughout this chapter we have, however, discussed the challenges and methods honestly and sincerely.

4.7.2 Internal and external validity

Validity in regard to the research means to what degree the findings are truthful. As we have performed qualitative research, validity is only achieved through *authenticity*, meaning that

the presentation of the social life gives an honest, fair and balanced viewpoint that reflects the actors everyday lives (Neuman, 2006).

Internal validity

Internal validity is the degree to which your research design produce a conclusion that is presented in an error free manner internally (Neuman, 2006), and that the presented findings are recognizable to those informants (Ibid). Throughout this process we have continuously adjusted our theoretical framework, research problem and research questions in order to always be mindful of not presenting our own understanding. As we triangulated, with different methods and comparing data gathered through different methods, the internal validity increases as the same results are replicated. As we had two fieldworks, we had the possibility of testing the data collected during fieldwork one. This also gave us the chance to gain a deeper insight into the different actors understanding of how the ICT systems affected their everyday life. Therefore, we are sure that the data presented in this thesis is in accordance with how our informants will define this relationship. This can be stated as we have studied our field notes closely, transcribed all of our recorded interviews and compared them. This increases the internal validity of this thesis.

Nonetheless, it is important to note that our informants from the initial interviews during the first fieldwork might not find the findings as easily recognizable. As we continuously changed focus and become narrower in our approach, the questions we asked changed accordingly. The concept of communication and information sharing through technological solutions have, however, always provided the building blocks of this thesis, so the concept itself will be recognizable. Taking sentences from interviews out of their original context in order to produce an analysis is also an element that negatively affected the internal validity. This problem, however, was ameliorated somewhat by having several interviews in order to potential find correlations, and also contacting informants for clarification when we were unsure of the content's meaning. Not using a tape recorder during all interviews also reduced the internal validity, as the notes during these interviews did not incorporate the entire conversation. Nonetheless, we spent several hours, or even up to a day, with these informants. This gave us the possibility to repeat questions and confirm statements. Using an interpreter (ref 4.7.1) may affect the reliability, and thus also affect the informant's ability to recognize the data presented in this thesis, which then hampers the internal validity. However, the data material from these informants was in coherence with the data collected from other

informants, which was interviewed two times during the data collection periods, this reinforce the validity of the data.

External validity

External validity is the ability to generalize the findings in Lebanon across other similar settings (Neuman, 2006). The research setting was the humanitarian response in Lebanon. The informants were relevant experienced actors with either a professional relationship to the response or a beneficiary of it. The question therefore asked was: is it possible to transfer the findings and conclusions out of the context of Lebanon and generalize it to humanitarian responses operating in other contexts? As discussed in the inner context (2.2) we see that the humanitarian structure, strategies, norms and way of operating are common structures identifiable in other settings that deal with refugee crises or humanitarian operations. Many of the humanitarian actors transferred from one operation to another will still work in accordance with one common structure developed in the international humanitarian environment. During the fieldworks we were both informed of, and personally observed, that there is a significant degree of turnover of staff, particularly in the field where 6 monthly tours of duty are commonplace. We also met heads of offices and sector leads that were preparing to move to different operations.

The beneficiaries and governmental actors will be specific to the context of Lebanon, as they are local with their own set of beliefs, culture and values. However, the ways in which they live, in hopeless and devastating conditions, will often be seen in other emergency contexts, as well the overwhelmed national authorities. What will hamper the external validity is the degree of development of technological systems in these contexts. If there are operations working in more rural areas, where the infrastructure is not compatible with ICT system needs, it is rather difficult. However the official ICT systems ActivityInfo and RAIS (further elaborated in 5.1.1) , is used as official ICT systems in several humanitarian responses around the world, which then increases the external validity, as both organizational structures and the ICT systems can be found in similar emergency responses. The fact that UNHCR is the lead UN agency of the response in Lebanon differentiates from most humanitarian responses that not only are dealing with a refugee crisis, this may hamper the external validity as this in most cases is in the mandate of UN-OCHA. However, in the regional Syrian response, the lead agency is UNHCR in all of the affected countries, and several of these responses do also use the ICT systems ActivityInfo and RAIS which increases the external validity of this research.

5.0 Empirical findings

The implementation of ICT systems does not only rely on the diffusion, but also as described in chapter 2, upon the contextual framework in which it is embedded within. The framework is thus constrained by the actors in the socio-technical system (see also 3.2). The data in this chapter therefore seeks to explain the system and describe the process based on the actors understanding (Blaikie, 2010).

The findings have been structured into three sections. The first section, 5.1, explains the diffusion and adoption of ICT systems in Lebanon. The second section, 5.2, seeks to highlight the key challenges preventing reliable information processing among humanitarian actors. Section 5.3 outlines how the assessments are linked to planned activities and implementation of interventions. To guide the presentation of section 5.1, 5.2 and 5.3 descriptions from the report of IFRC (2013), the real-time evaluation report (Crisp et al., 2013) of the Syrian response, and UNHCR's reply to this (UNHCR, 2013a) have been included.

5.1 Diffusion and adoption of ICT systems in Lebanon

In order to describe the diffusion and adoption of ICT systems in Lebanon it is necessary to briefly elaborate the definition and the usage of ICT systems (see also 1.1). ICT systems are an umbrella term for information and communication technology, and include all devices and applications used for or associated with communication (Rouse, s.a). In recent years there has been an increased focus upon and use of information and communication technology in humanitarian aid. The ICT systems are used to detect needs more quickly, predicting the crisis and ultimately formulate an efficient and reliable response that matches the recourses to the needs of the community at risk, also leading to a more accountable and transparent response (IFRC, 2013). Digital data collections replace the traditional pen and paper assessments with digital devices, resulting in substantial gains in terms the speed and quality of data collected (Ibid). Large data analyses such as mapping subsequently gathers the information collected by digital devices and form reports based on the collected information (Ibid). In combination, they are intended to foster easier communication between the involved actors as well as an increased opportunity to create a real-time situational overview of the activities in the response and where the needs are (UN-OCHA, 2012). This has led to an expanding

diversification of the ICT systems within humanitarian aid, with the potential benefits becoming increasingly known by the involved actors.

5.1.1 ICT systems in Lebanon

In Lebanon the humanitarian actors have implemented ICT systems to detect needs more efficiently. The response mechanism uses ActivityInfo, RAIS (Refugee Assistance Information System) for data analysis and an inter-agency unit produces geographical maps to analyze the large data created. Information from this unit is published at the Inter-agency Information Sharing Portal. Below follows a description of these ICT systems.

ActivityInfo

ActivityInfo is an online platform implemented and managed by the UNHCR in Lebanon. The platform's purpose is to gather data on all activities provided to beneficiaries each month and is used by all partners receiving UN funding. The reporting tool was introduced in Lebanon in 2014, and is mandatory for all implementing partners. All actors working in the response have the opportunity to use the reporting tool if desired. The ActivityInfo reporting database was introduced as a more efficient alternative to multiple formats and offline monitoring tools. The evolution section of the Lebanon response plan 2015-2016 states that, in 2014, ActivityInfo allowed for more meaningful and efficient tracking of targets as well as being a new coordination mechanism that helped the partners to systemize the assessment process between the actors and also harmonized the data collection. The tool is based upon partners' reports on indicators and these are divided into sectors (ref 2.2). The indicators are prescribed every year and state all activities performed in each sector. At the end of each month all activities need to be registered in ActivityInfo, and following this UNHCR processes the received data to produce a formal published report on activities performed in the humanitarian response. This report is received after three months, and the tool is non-dynamic in its content for the implementing partners, though, for UN agencies leading sectors, the tool presents a spatial overview of the activities over the previous month.

RAIS

The UNHCR developed an online tool called RAIS that was introduced in 2014. The tool has gathered the basic information of refugees registered with UNHCR and is used to track service provision of aid and confirm and track identities of refugees during distributions. During distributions they scan the registration papers in RAIS to ensure that the person is eligible for the item provided. The actors can track the service assistance of aid by the pre-entered assessments fed into the tracking database of RAIS. The tool also helps avoid duplication of aid. In order to gain access to the tool, the partners need to sign a confidentiality agreement to ensure that the sensitive information is secure.

Inter-agency mapping

In order to create a comprehensive inter-agency coordination structure the inter-agency mapping unit was established by the UNHCR. The unit consists of five organizations that provide geographical mapped information through ICT tools to the humanitarian response in Lebanon. The actors within this unit have been given a mandate for one of the five operational areas and are responsible for assisting in the overall response in their area. Each organization has a team that gathers information through monthly assessments in their operational area. The data collected are presented on the online Inter-agency Information Sharing Portal together with other relevant data from the response; often as reports, maps or analyses that show vulnerabilities within the specific area of interest. The maps presented on the platform are non-dynamic and are used together with ActivityInfo and RAIS to provide an overview of gaps and vulnerabilities.

The connection between data collection and data analysis

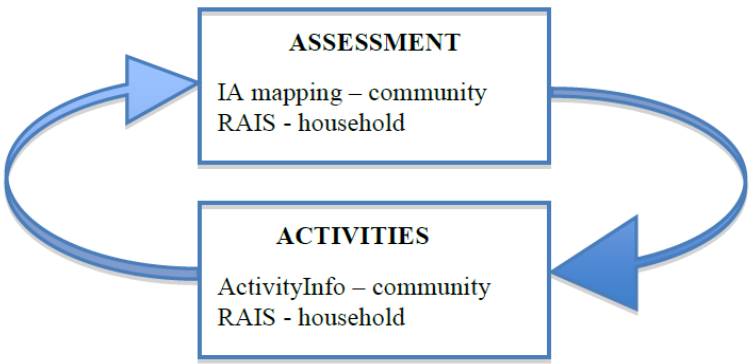

Figure 5.1. Relationship between assessments and activities when gathering information.

Figure 5.1 depicts the continuous process of gathering information through the official ICT systems. While ActivityInfo gives an overview over activities done at community level, RAIS, in contrast, presents a summary at the household level together with the inter-agency (IA mapping) unit that produces maps, reports, and analysis on the Inter-agency Information Sharing Portal. It is designed to create a strategic overview of the entire response. By subtracting the activities contacted and vulnerabilities identified through assessments the actors are intended to get a comprehensive overview of where the needs and gaps are.

5.1.2 Adoption and involvement of actors

Adoption

ActivityInfo, RAIS and the mapping performed by the inter-agency unit are all initiated by UNHCR, as they are the lead agency in the response. Prior to the adoption of these tools the actors had to contend with a fragmented situational picture - as most of the information shared among the actors was done manually through occasional phone calls, e-mails and meetings. Everyone reported their activities, though this was done through innumerable Excel sheets shared in meetings, creating complex information processing requirements. The adoption of ICT systems has created an efficient working environment for the organizations involved, as they don't need to spend hour's manually inputting written assessments into computers. This not only saves time, but also money and manpower. According to UNHCR:

> *Information sharing and all the other tools I have told you about is for coordination. The mapping, dissemination tool, the platform we share information on, and ActivityInfo. It doesn't need to be ActivityInfo, with the use of such systems we have proven here that everyone can use the same tool. There is no other place where all agencies use the same tool. We proved that is possible (IM, UNHCR).*

The informant is here explaining that all humanitarian actors use UNHCR's tools, claiming that this has never before been seen in a humanitarian response. The development team from the UN lead-agency expressed during interviews that the tools provided contribute to the strategic overview needed in the response. However, this does not completely accord with what several NGO/INGO informants expressed during interviews. They stated that, though they used the tool, it does not give them the strategic overview they are in need of because the framework that the tools are created within does not necessarily match the organizations' values and needs in terms of information processing. An IM from an UN agency exemplified

this: "*The users which have defined tools like ActivityInfo as a tool are very few users, the users are only the senior management of UNHCR and UNICEF. Because the tools fit their needs and nobody else's that is the main problem"*. This statement can be seen as ActivityInfo not being defined as a very useful tool by the implementing partners, but rather as a reporting mechanism that the humanitarian actors are obligated to report in. For the UN-agencies this statement shows that it is a functional tool. This may be because all the actors report their activities to them, leaving them with the complete overview of what is being done.

Involvement

During data collection it was observed that there was a lack of focus on the users from INGOs and NGOs when developing ICT systems. This was most noticeably revealed during interviews with UN actors and technological developers. Their focus was on how ICT systems could provide reliable and efficient data in the response, rather than how the systems are adjusted to the functional needs: precise and timely information on and across organizations working at field level. One informant expressed these thoughts of making ICT systems user-relevant:

> *…technology in its own sake is not going to help anybody. It is about making technology user relevant. So it is more what you use technology for, so to have one information management system to the response I think is possible, and the technology are probably already built for that. But then having the system to make sure that data is there, its feeding back, you know that the in and out flow data are relevant and useful. And that's about again, having the technology people work on it with the users and the providers to make sure that it's not, you know the geeks have made some great technology that nobody knows how to use. And then the operators think that the technology is not relevant for what they need. This is always the biggest challenge (Country director, INGO).*

The informant notes that it is useful that developers and operators are working closely with the actors in the field in order to ensure that the technology is appropriate for their needs and skills. Several INGOs and NGOs stated that this concern had resulted in them not using ActivityInfo. This was also observed during a national sector meeting, where the sector lead encouraged the organizations to start reporting again, as the sector was struggling with getting the actors to submit reports. Many ActivityInfo users are highly dissatisfied and the problem is rooted in not having access to the information gathered from ActivityInfo prior to the 3-monthly report UNHCR produces, as non-UN organizations do not have access to information about other organizations activities before the report is published. Several informants commented that this negatively affected the possibility of getting a comprehensive

understanding of what others are doing in the area in which they are working. A country director for an INGO said that the response in Lebanon is facing challenges with information processing:

> *I think to look at technological solutions is the wrong way to go about the problem, because you are talking about stuff that has to be accessible for hundreds of people with different background. You know the mistake that the coordination systems always do in terms of technology is have one size fits all. So to come up with this one system and every response have tried one, here its ActivityInfo, it's been developed for a year and a half, and it's going to sort all of our problems, of course it's not, it's never going to happen.*

This may mean that the ICT systems alone are not going to provide precise and timely information, as they need to be user relevant, which, according to this informant is impossible due to different organizational mandates, needs and values. ActivityInfo is indicator based, meaning that activities are reported through pre-decided references that describe the performed activity. One example is: number of *hygiene kits* delivered, where hygiene kits are the indicator. Our informants identified this indicator-based approach as a weakness due to the fact that these indicators do not incorporate the range of activities performed in this response, as the number of indicators are limited and the existing indicators are too confined. This may lead to activities reported on wrong indicators or not reported at all, resulting in inaccurate data. According to two IM informants in an INGO, the standardized indicators do not offer the possibility to compare data between organizations. This is because actors might report activities that are not consistent with the confined indicator, resulting in refugees receiving greater or lower levels of goods or aid than the indicator stated, or something entirely different as there is not an indicator describing this activity. These indicators do, however, change every year, so the actors have the possibility of affecting this through their sector, as each sector defines their own indicators. Another informants stated that the issue is not only related to ActivityInfo, but also the joint assessments set up by the inter-agency mapping unit: *"To date very little joint methodology is used. And I think well we have tried to improve that. There is sort of a joint assessment group (inter agency unit) there is an information management team, but we are still in a working progress*" *(Legal advisor, INGO).* However the contextual complexity shifts frequently, resulting in maps becoming outdated upon publishing, as they are not dynamic - as well as the fact that they are built upon little joint methodology.

RAIS is the only ICT system that tracks at a household level and is the only system that updates dynamically. Because the tool is dynamic, it requires an internet connection to

update. An informant from a UN agency explained that this could potentially be a challenge if the internet connection is severed. During the fieldwork the authors' participated in the distribution of mattresses. The refugees were invited to the distribution through a text message stating time and date for distribution. When it is their turn their registration paper with UNHCR gets scanned through RAIS, in order to validate their identification and to verify that they are eligible. After they receive the item this gets registered through RAIS in order to avoid duplication and that the refugee has received this item. If, however, the internet connection breaks down, RAIS will not function and the distribution would have to be canceled or delayed. One informant from an INGO further emphasized this by informing the authors' of previous experiences. One of these distributions was delayed for four hours. The RAIS system is also only functional for UNHCR registered refugees and performed by UN lead-agency implementing partners. This means that services to refugees not registered will not be tracked as well as non-Syrian refugees, as they are not included in the official response.

The implementing partners in the official response consist of both NGOs and INGOs. Every informant within these organizations admitted that the official ICT tools in Lebanon are not very user-friendly and demand a certain level of IT expertise. A developer within INGO expressed concerns regarding the level of expertise that the humanitarian aid workers in Lebanon possess, as they, in his opinion, did not even know how to use Excel. An IM in a UN agency corroborated this, saying:

> *We (developers) create all these amazing new tools in Beirut and then in the field there is someone trying to catch up with the tools we made four months ago. I don't know what to say about the quality of it, it is half pass. Something works really well. I think probably the best thing I can say is that actual professional relationship is that we have people in the field and that's probably the best way to facilitate information at the moment.*

This informant has an understanding that appears consistent with what previous informants have stated with regards to how ICT systems must be user-relevant in order to reach their potential. For now the informant thinks the best way to disseminate information is face-to-face in the field, as ICT systems, in the informant's opinion, do not facilitate this in accordance with what is needed.

When discussing the degree of involvement of the ICT systems with MoSA, they were rather dissatisfied, as they felt they were, up until now, not being involved by UN agencies. MoSA

needs more technical support as they are mostly familiar with working with pen and paper and do not have access to the ICT systems discussed above. The reasons for this are due to lack of technical expertise in the ministry and the lack of being involved by the UN agencies. However, they stress the fact that Lebanese government does not have the capacity to assist the huge number of refugees and are, therefore, dependent on support of the UN in order to manage the emergency, especially within the usage of ICT systems.

When interviewing the INGOs and the UN agencies, they also highlighted that the local NGOs and MoSA are less included in the official response, and, consequently, are less involved in the ICT systems in Lebanon. This was also the opinion among NGOs and MoSA, and the stated reason for this was often that of a language and resources barrier. The ICT systems and all other information shared are in English, and some NGOs as well as MoSA face the problem of staff not understanding English, and do not always have resources to engage with the international response. The authors' only met one NGO that participated actively in the response. The rest of the NGOs said that they only participated sporadically in meetings due to the fact that they do not trust the UN agencies, and felt they were corrupt. Therefore they did not feel any urgent need to involve themselves fully. Informants from NGOs, INGOs and two UN agencies stressed that the reports on activities performed were based on unreliable numbers, and did not reflect what is in the field. This was exemplified by a head of office in a UN agency, who commented that a report on winterization turned out to be inaccurate, as when the informant visited the field, the children who were supposed to have received winterization kits were still walking around in flip-flops. Even though the INGOs, NGOs and MoSA state that they are less involved, the UN lead-agency emphasizes that all actors who wish to have access to the ICT systems have the opportunity of using them. The authors also have observed that both the information on how these ICT systems function, as well as the possibility to sign up for future training sessions to learn to use them, are available on UNHCR Inter-agency Information Sharing Portal.

5.1.3 Adoption and involvement through organizational structures

In the sections above, the diffusion and implementation of the official ICT systems concerning digital data collection into data analysis platforms are described. The users' involvement in this process has also been highlighted. The ICT systems should ultimately be used to create a feedback loop of information between the humanitarian actors and the

individuals they are serving. However, there must also be a commitment and capacity to use this feedback to improve programming (IFRC, 2013). Throughout the interviews it was discovered that the correlation between the implementation and the users' involvement of this was highly affected by the existing organizational structure. One country director from an INGO expressed that ultimately it was not a matter of technology but how it is used. Conversely, how they use it is reliant on the humanitarian actors expertise and access to the technology, according to an IM in an INGO, this informant also stated that the creation of systematic and standardized procedures for implementation was necessary in order for the ICT systems to function fully. The empirical findings of information processing among humanitarian actors are documented below.

5.2 Information processing

In Lebanon the humanitarian organizations at national level implement and plan interventions developed at the strategic level. The field level performs the interventions, and collects new information through assessments. The implementing partners at national level thereafter register the collected information and activities in the ICT systems. These form the basis for further strategies that the strategic level sets the framework for. The empirical findings have shown that the external information processing is highly influenced by the organizational structures, as shown in the following section:

5.2.1. Information processing and organizational structure

Triple role

From the outset of the Syria crisis and until the beginning of 2015, the crisis in Lebanon was classified as a purely refugee crisis, and the mandate for leading the response was given to UNHCRs in co-operation with MoSA (ref. section 2.2). UNHCR's leadership role was extensively highlighted as an issue of concern in the real-time evaluation report (Crisp et al., 2013). The agency's triple role was considered problematic in that it could potentially lead to a conflict of interest, due to the fact that UNHCRs were donors, coordinators and implementers of their own programs. The report stressed that the stakeholders had a perception that UNHCR were often more preoccupied with managing its own operation than coordinating the overall refugee response (Crisp et al., 2013). This was, however, taken into

account before the response plan for 2014 was implemented. UNHCR also responded to the report December 2013, by publishing a report where these issues were discussed and further plans for addressing them were stated (UNHCR, 2013a). When talking to informants from UNHCR, they emphasized that they had intentionally distinguished their inter-agency coordination function from the operational function in Lebanon as they agreed the matter was problematic and could lead to a conflict of interest. The inter-agency unit was established in Lebanon the same year in a separate office with UNHCR's employees.

The real-time evaluation report (Crisp et al., 2013) also emphasized how UNHCRs could strengthen their coordination and reputation in the Syrian response. Among these recommendations a focus on information sharing and management within and among sectors was paid particular attention in the report, as the information management plays a crucial and central role in the relation to inter-agency coordination. Without this the response may fail to deliver an effective and collective reaction to the beneficiaries (Crisp et al., 2013). This was also addressed in UNHCR's response to the real-time evaluation report. The agency was going to invest and develop ICT systems and provide training for the actors in order to strengthen the information sharing and information management within coordination. This, together with the separation of their inter-agency and the operational roles would form part of the strategy to strengthen the information management and sharing among humanitarian actors.

However, a year later several of the implementing partners at national level still saw UNHCR's role as an issue of concern. The NGOs spoken to were not aware that this had been done. The UN agencies and the INGOs were, however, fully aware that UNHCR had separated their roles. One informant stressed: *"So you have a big conflict of interest which was sort of resolved at national level, by having different people affect the coordination and the implementation. But at the field level it was not." (Country director, INGO).* According to this informant the role of UNHCR was not clearly distinguished at field level, creating difficulties for the field workers to know the role UNHCR had in the field. This was further exemplified by the head of office of an UN agency: *"There are five field areas, which are based on UNHCR's offices … In those areas there is a field coordinator for each sector who is generally part time coordinating and part time program implementer for UNHCR"*. This meant that the field coordinator's role was both to control UNHCR's own programs and ensure coordination for the entire sectors. According to these two informants, UNHCR had

therefore not managed to separate their roles as both coordinator and implementer. Even though several of the informants still thought of UNHCR's role as problematic, all of them said that the agency, given the complex context, had managed the role the best they could.

Information silo

Instead of the Cluster approach usually implemented by UN-OCHA (ref 2.2), UNHCR have implemented SWG within each sector. As the SWG are built up to work closely with their own sector within all of the five operational areas, the cross-sectorial co-operation within each geographical area has experienced challenges with structured information sharing. This is because all sectors in each geographical area are not explicitly held accountable as they would do if the Cluster approach had been implemented. Several informants on national level stressed this:

"People forget to share, or they don't share with everyone they should. So they might be sharing something with this sector, or in this field area and then others do not know what is happening" (Sector lead, UN agency)

"They call them sectors, but we still sit in the same office but are not communicating. Sometimes somebody is 20 feet away from you, but because we are not communicating we might be trying to do the exact same thing" (IM, UN agency)

"…the most challenging aspect is sharing information with other organizations about the humanitarian operation… across humanitarian sectors" (Country coordinator, INGO)

These informants highlight the common interpretation of the informants' understanding of the information processing in the humanitarian response in Lebanon. The informants convey that information sharing across organizations within a certain operational area is difficult and often shared in an unstructured manner. Many informants have said that the difficulties with sharing information are due to what they define as an 'information silo'. This means that information is shared in a limited extent to a certain group of people, and sporadically. Consequently, this creates difficulties in establishing a situational overview both in an operational area, within one sector, as well as at national level. However, several informants from INGOs did not share this opinion. They thought information sharing across organizations was good, and that organizations gladly shared their information with others.

The real-time evaluation report did, however, note that not having the Cluster approach was problematic, and that humanitarian workers had been accustomed to working within this type of coordination structure (Crisp et al., 2013).

One IM informant from a UN agency stated that information sharing was difficult due to the humanitarian foundation of working on a voluntary basis:

> *In terms of actual information sharing, like how we get it out there in a systematic way, well I think the biggest problem is that the whole sort of concept is like working together on a voluntary basis, where you sort of co-operation and agree to do this stuff together because there is no formalized structure.*

The informant's statement can also be interpreted in a different way. Because the organizations are not only working on a voluntary basis, but also under non-unified structures it means that, as the humanitarian organizations have differential organizational values and mandates, it will create dissimilar operational focus affecting the ways of sharing information across organizations. The insufficient organizational structures may reduce the possibility for coherent information processing, as the humanitarian actors don't have a standardized way of operating. A significant number of the informants stressed these factors, stating that this created difficulties with regard to having a standardized way of sharing information.

The information shared between national and field level is often exchanged without the use of ICT systems. Field workers stated that they don't have access or the necessary equipment to use the ICT systems for reporting. The activities performed at field level are therefore registered in Excel sheets sent to INGO and NGO staff at a national level. When talking to INGOs at national levels, all stated that they had someone assigned to register these Excel sheets into the ICT systems. The major INGOs stated that they had electronic devices that their field workers used, but these devices where not used to report activities but rather the assessments performed. Meetings are a potential arena for sharing information across organizations, as the humanitarian actors can meet face-to-face to coordinate. Informants stated that the intention in both the national and field level meetings was to create a situational overview for the involved humanitarian actors by sharing information across levels. However, not all the organizations take part in these meetings, with the NGOs, in particular, being frequently absent. The NGOs are also the actors who stated most frequently that they did not

use the official ICT systems. This may indicate that there is information from organizations not being shared through the ICT systems, and this information might also not be shared at meetings. The authors observed that during both a national sector and an inter-agency meeting, information was shared about security concerns, challenges within the sector and how to use the official ICT systems. During these meetings there were no discussions regarding the current interventions and needs. Although the informants did, nonetheless, state that this was often shared at field level within each sector.

Turnover in staff

One IM informant from an UN agency claimed that even if it was difficult to share information due to the voluntary practices and lack of formalized standards, there was good information flow within sectors. The biggest struggle was ensuring all humanitarian workers get this information. The informant said that the information was online at their Inter-agency Information Sharing Portal, but the field workers could still not find the information they wanted:

> *I put it all into the portal and the Dropbox and it's the sort of assumptions that once it is out there people know that and where they can go and get all the information, the problem though is that people in the field change every six months. So when new staff comes here they don't know that this stuff is out there, so they are all saying: we need a map of this, and they hire someone else to do it. Meanwhile the information is there right. So one of the biggest thing is trying to get a sort of awareness of all the work that we have here.*

The informant highlighted something several other informants have stated as an issue with regards to information sharing. Due to high turnover in staff the information posted on the Inter-agency Information Sharing Portal is not commonly known; often because the staff has not received information about where they can find this information. Another informant further exemplified this: *"There are always new people coming and leaving, so the turnover of staff is quite considerable. Therefore you have to explain the technological systems and make sure that everyone is aware of how everything is working" (Sector lead, UN agency).* The informants that have claimed that high turnover in staff is a problem also said that the IM's presence at the field level was of significant value, because they could personally provide this information to the field staff. This is in order that the field staff would know where to find information about where other humanitarian actors are operating, and what they are doing.

Information processing through ICT systems

The massive development of ICT systems in Lebanon was initially observed by the authors as a positive development that would strengthen information sharing amongst different agencies. However, this view changed rapidly as several informants stated that this was a major issue for them as it hindered their attempts to ensure a comprehensive situational picture. When informants from UN agencies were asked, they specifically labeled the ICT systems developed within INGOs as problematic. All INGOs interviewed in Lebanon except one had developed their own program to keep control of their own activity plans and distinguish where further gaps and need could be found. When asking these INGOs if this was a problem, none of the informants identified it in such terms, but stated that the ICT system they had was used extensively to help them process information internally. The authors then asked if this information was shared with other INGOs, NGOs and UN agencies, to which the informants said 'no'. However, several informants did say that they shared some of their reports on assessments they had conducted, when it was for the benefit of a joint program within their sector. All informants' from INGOs and NGOs said that they did share information, but this was not regarding plans, but rather on what had already been performed.

The planning part of the operation was a subject most informants specified as lacking within the official ICT systems. When asking these informants why this was important, they said it was because, in order to deliver aid efficiently and without duplication, they had to have an informative overview of where the other humanitarian actors would deliver. One informant from an UN agency described the consequences of not having the proper technological tools to provide an overview of the needs of information at all levels:

> *There are only few people doing tool development for other users, and those (tools) are generally to their credit. Some of the IM teams of UNHCR in particular that are in the field, and because they are in the field they are everyday badgered by everyone who walks in to their office and saying we need this and that information, and who is working where? And in their desperation they start developing tools for people locally, and this is what they have been doing. And so you have massive flow of these tools that are out there, and have been done by individuals that are trying to fix the local needs at the field level. So that's the situation there, what you don't have is a concern at the strategic level that there is a bunch of users that are not being considered and just being left to their own devices (IM, UN agency).*

The informant's statement could indicate that the needs at field level are not being considered, and that they are trying to devise a system for themselves through getting ICT systems

developed for their own internal use. The informant highlighted an interesting aspect: that there was no genuine interest regarding the massive innovations of ICT systems at strategic level. This could indicate that the strategic actors are either not aware of the intensive development of ICT systems, or that they do not see this as an issue for the external information processing. However, other informants did not mention a lack of concern at strategic level.

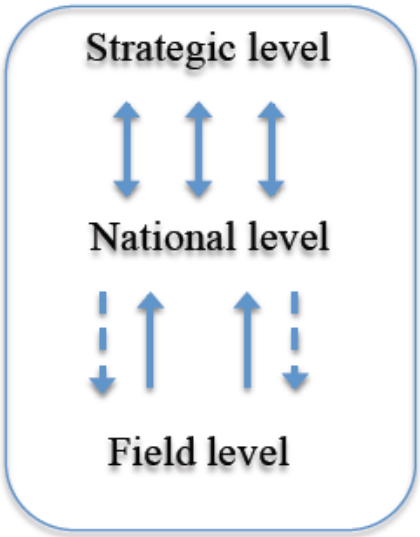

Figure 5.2 The information flow between strategic, national and field level.

Figure 5.2 depicts a summary of the various aspects of the information processing among the humanitarian actors on different levels. As the figure suggests, the strategic level does not interact much with the field level but rather forms strategies based on the information collected by the field level. The information shared from the national to the field level is negatively affected by the organizational structures, because, as stated, the triple role of UNHCR has created uncertainties in regard to UNHCR's role in the field. In addition to this, the various humanitarian organizations at national level have different mandates and values, thus creating difficulties in sharing externally standardized information as they have different working methods. The field level provides the national and strategic level with information about the refugees' needs, and reports upon activities performed. The field staff are also continuously changing, creating difficulties with training staff on where to find information, how to share it, and how the ICT systems are working. The field workers further stated that they were in need of more information about what other organizations were doing in their operational area. This was also highlighted as a problem by several INGOs at national level. This information in the official ICT systems was seen as lacking. Most informants at national

level thought of ICT systems as a solution to what they stated as old coordination problems. This suggested that they were convinced that these ICT systems could potentially be the solution to organizational challenges such as the lack of real-time information and fragmented information processing often found in humanitarian response.

5.3 Meeting needs through assessments

Assessments are the foundation for taking action in the humanitarian response. Interventions of activities are based on strategies formed by the strategic level. Assessments conducted at field level provide the national level with information about the needs that exist at field level in order that they can base the framework for further interventions on the data collected in the field. These assessments are either performed at community level or at house level by field workers working for INGOs and NGOs. The inter-agency unit also performs assessments seeking to identify vulnerabilities within each sector and operational area. The inter-agency unit provides the response mechanism with reports and maps shared through the Inter-agency Information Sharing Portal as well as in meetings.

The assessments measure the refugees life situation, and, together with the activities reported through ActivityInfo, seek to ensure a comprehensive picture of the existing needs and potential areas of focus. All humanitarian actors also conduct assessments for internal use.

The real-time evaluation report (Crisp et al., 2013) states that concerted contingency planning and preparedness efforts were needed in the regional Syrian Response. In order to strengthen the operational capacity joint planning with national and local governments, UN agencies, donors and NGOs should be further strengthened. However, in order to do so, the contingency planning of preparedness measures had to be based on an ongoing analysis that would require effective information sharing and management. In Lebanon targeting has been implemented as a way of identifying the refugees' vulnerabilities. Targeting means that the humanitarian actors select potential refugees based on pre-identified criteria of vulnerability such as number of family members or living conditions. The targeting of the most vulnerable is performed in the field through door-to-door assessments or similar approaches where the refugees live in ITS or in rented rooms. Some informants at national level stated that the assessments enabled them to see which refugees had the most vulnerable living conditions and ensure these received aid first. The implementation of targeting was initiated because the high influx of

refugees living in out-of camp areas, so targeting was established to reach the "hidden population" in these areas. Two IMs at an INGO pointed at that because the refugees were constantly moving, the situation was always changing and making it difficult to operate.

The real-time evaluation report (Crisp et al., 2013) further states that partners in the response were concerned about the process for this because the vulnerability criteria on which the targeting was to be based was not yet clear, and they were missing sufficient data in order to accurately target the refugees. The response mechanism in Lebanon is intended to gain a strategic overview of where the gaps and needs are, by measuring activities conducted against the vulnerability targeted through assessments. As the vulnerability criteria are not based on coherent standards, the informants from INGOs at national level stated that it complicated the opportunity to get real-time data. The informants from the INGOs explained that they therefore choose to address this themselves and conduct their own assessments for internal use in order to implement their own interventions based on real needs. These are often not shared between organizations working in the response. This was concluded further by information from a UN-agency that: "*people don't always share all of their assessments, but when they do we try to encourage them to share, because we benefit and we can learn from their views and get aware of what is going on"* (UN agency, sector lead). The informant expressed, however, that sharing information is positive for all organizations working in the response, as they can potentially learn from each other. In contrast, the quote can also be interpreted as information sharing being lacking. The authors have observed that organizations are in desperate need of information and are highly willing to share their information with others, although this is however regarding what they have *done*, but not about what they are *planning* to do.

It is not only the vulnerability criteria that lack standardization but also what the assistance packages should include. When the authors observed a national WASH sector meeting, the participating humanitarian actors stressed that other sectors were distributing hygiene kits that were not in accordance to the WASH sector standards, as it did not give an accurate picture of what the hygiene kits delivered included: that they consisted of fewer items then the WASH sector had pre-defined that the indicator for hygiene kits should include in ActivityInfo. The result was that refugees would be registered with a received item they did not in fact receive. When incomplete hygiene kits were reported as delivered at the official ICT systems, it could lead to incorrect presentation of data.

All our informants have expressed their concerns of the massive conduction of assessments at both community level and household level. As one informant working in legal assistance in an INGO expressed: "*It's a huge response and it's just so difficult here because the way it is structured with the sectors working groups"*. One informant also stated that the key difficulty is in terms of planning the next stage of operations:

> *But generally I think it is okay in terms of ongoing interventions at least it is clear there is ActivityInfo, which I'm sure you have seen. Which is very clear about what has been done. In terms of plans it is more difficult to get comprehensive information, and that is where we have to move outside of coordination structures often, because people will talk about what they are doing and what they have done through formal structures, but there is no reporting on plans (Country director, INGO).*

These statements are in accordance with what many informants have expressed as a concern: that, as it is a huge decentralized response structured with sector working groups, the official ICT systems do not give them comprehensive information, and that they need to go outside the official coordination structure to get real time information. This means that everyone in the field must try to ensure a situational picture of where the needs are, where to implement interventions and that these interventions don't result in gaps or duplication. The lack of comprehensive information about where to focus next through the official ICT systems was substantially explained by one informant:

> *The sectors were all telling us: how do we use ActivityInfo for planning? It doesn't, because it's not a planning tool, it's a reporting tool so it's for UNHCR for ultimately have ability to say this is what we are doing, this is what we did, but it doesn't help the partner figure out where should we go, how do we coordinate, so they all end up doing these little internal excel sheets or local places where they all put up things on map and say we are working here, you are working there, so they all end up with their local tools, they are all over the place, because every groups in certain areas tries to put some orders in what they are trying to do, but everybody is there for developing their own little mini information management tool kit, when we should be developing one for easier to develop something that everybody can take and use, then they can tailor it, and adapt it or whatever (IM, UN agency)*

A few informants stressed the fact that it should not be forgotten who the response is about and, as one informant explained to us:

> *Probably all of us as humanitarian actors are over intruding and doing too many mappings and too many services, that's where the coordination have been weak at times. Asking to many people the same question, people seeing all these white cars come and do assessments, but*

they don't see any result, so we have to be very careful that we manage that better and do not increase the expectations (Legal assistance, INGO).

Moreover, an informant from an INGO stated that the formal coordination structure in Lebanon has been weak in ensuring that the constant need of information at national level does not end up negatively affecting the refugees. When there is a constant flow of organizations conducting assessments it increases the refugees' expectations. On top of this, it might not give the humanitarian organizations what they need, which is day-to-day information from the field. When every organization is collecting information for their own internal purpose, they all end up with their own set of information, rather than one single and comprehensive picture. One informant also stated that the reason for not always gaining results from the extensive assessments conducted might be due to lack of resources to follow them through.

5.3.1 The beneficiaries' perspective of the assessments

The refugees living at ITS in Lebanon are scattered over 1900tented areas. During visits to the ITSs in Lebanon, there was an opportunity to hear the beneficiaries' perspective on the assessments performed by the response mechanism. In both areas the beneficiaries had a consistent perception that the INGOs and NGOs were constantly performing assessments that did not provide any results for them. Several refugee informants in the ITS also said that the questions asked were too general and did not give them the possibility to state their individual needs. The assessments were also not performed on all refugees, leaving several of the beneficiaries talked to feeling neglected and disrespected. All the informants in the camps stated that the assessments were predominately performed with the camp leaders only. When the two camp leaders were asked about this they expressed deep concern over being left with the enormous responsibility of stating the needs for all the refugees living in their area. One of the camp leaders said *"I don't like that they are doing assessments only with me. The people that live here have different needs and different subjects they need assistance for. If they only talk to me I can't provide them with the correct information*". The informant stated that having the responsibility to state all refugees' needs was impossible. Conversely, it can also be seen as quite difficult for the humanitarian workers to map out the needs for all the refugees living in an ITS. This is because there could be from hundred to several thousand refugees in just one ITS. Therefore, performing assessments on just a few individuals in the ITS might make it more manageable.

During a tour of one of the ITSs, the authors noted that they had a well-functioning school area for children of all ages. The camp leader expressed great gratitude for this, and commented that they did not need any more school equipment. When talking to several refugees in this ITS, it was discovered that even though the school was well equipped, many children could not attend due to illnesses from the lack of medicine or treatment. One child explained that he wanted to attend school, but his mother said that his tumor had spread and he did not receive any medicine or help and he had to be taken out of school. In the same ITS the beneficiaries showed their tents. None of the informants had mattresses or any blankets for winterization in their tents except for the camp leader. In a second ITS, located at a lower altitude in a different part of Lebanon, the beneficiaries did have winterization kits. We also participated in a distribution of mattresses in the second area. In the 2014 response plan for Lebanon it was speculated that there should be clearer assessments of vulnerability among the existing refugee population (RRP, 2014). When talking to UN agencies at their headquarters, several informants said that the purpose of targeted assistance was to identify the most vulnerable beneficiaries. One IM informant at UNHCR said that it was challenging to operate in Lebanon, and that when performing targeted assistance: *"you can never control who deserved to get this assistance and how fair it is and the most in need is the one that receives it"*. The same informant did however state that they did have a system that seeks to prevent these types of problems: *"…We have a sort of mechanism to ensure that these targeted people are genuine cases, they come to registration and have an interview and then we have a home visits."* The informant stressed the difficulties with assisting genuine cases; even though the response seeks to ensure dependability, it is not always possible to ensure that the target refugees are the most vulnerable. When asking the informant why this was not possible, they said that people would always try to take advantage of the system, resulting in people being registered as refugees, though in reality they might not be. The frequent flow of aid workers taking assessments has also resulted in one of the ITS visited now refusing to welcome humanitarian organizations into the camp. When asked why, they responded that until results are seen they will refuse to disclose any further information. One of the camp leaders said: *"I have said to them that they cannot come here anymore for assessments. Because they just do assessments, and we never not even once, have seen any results from this. We have so many needs and this camp receive nothing*". This informant stated that they closed the ITS for further assessments. This indicates that the refugees in this ITS have stated their needs to the humanitarian organizations many times, but without the necessary aid being provided. When

interviewing informants at field level from MoSA one of these informants also expressed concerns at the amount of assessments performed:

> *Every day in general there is a lot of INGOs coming taking assessments, but nothing ever happens. As we do see this as an issue, we are soon going to put a limit on this through MoSA. They can't just continue to do this. We need results and we will demand results. What do we get? And in what sector do we receive it? The limit is reached, and they will have to talk to us and give us promises on this.*

The informant at MoSA said that they would start to demand results from the assessments performed, as it was seen as an issue that needs were collected but not addressed.
Another informant from MoSA expressed that the response mechanism did in fact respond to gaps. However, the informant expressed that the response responded after incidents of concern had occurred:

> *They respond to the gaps, but not always. The first storm we had they did not. Seven people died. I had expected more because this storm even took trees, how can you expect that tents made of plastic will still be there? I can understand them but still no emergency plan was made so I had to make my own emergency plan with the government here and the religious leaders and some schools.*

This informant from MoSA expressed that the humanitarian response lacked the ability to be preemptive. Therefore the matter had to be dealt with by themselves in co-operation with the local population. The informants at the two community centers visited also pointed out the frustration over the massive undertaking of assessments. However, they also stated that they themselves perform assessments, but these are done on paper and sent to central governmental offices. When talking to a country director in an INGO, the authors were told that, as ActivityInfo did not include priorities or needs, it was not therefore possible to get a full picture of the effects of the interventions:

> *If you want to know what are the priorities or needs of a community and whether these have been addressed, you will never know this through ActivityInfo, but then again to have a technology that gives you that would need to have a consistent understanding of vulnerability across communities and you would need to have a consistent evaluation or assessment of priority needs across the communities, which then the issue again is not the technology it is about the framework for feeding the data into it.*

What the informant has outlined might be the reason for performing the huge amount of assessments within each organization, because the ICT systems themselves are not offering a complete picture of where the priorities or needs are in the field, and if they have been addressed.

6.0 Discussion

This chapter seeks to answer the research problem: *How do ICT systems contribute to reliable information management in the humanitarian response in Lebanon?* This is performed through the research questions and is based on the dialog between the empirical findings and the theoretical framework adopted in this thesis. As described in the methodology (chapter 4) this study is based on Danemark's (1997) understanding of an abductive research strategy. This means that the purpose of this chapter is to combine the world perceived by the humanitarian actors in Lebanon (chapter 5), with the theoretical framework (chapter 3).

To answer the research problem the discussion of the empirical findings are structured through the research questions (ref 1.1.) in order to reach the conclusion. Section 6.1 elaborates the diffusion and adoption of ICT systems in Lebanon. Section 6.2 discuss the information processing among humanitarian actors in Lebanon. Section 6.3 further deliberate the relation between the assessments, activities planned and the implementation of interventions in the humanitarian response in Lebanon.

6.1 Diffusion and adoption of ICT systems in Lebanon

As stated in the theoretical framework, *diffusion of innovations* is the process where an *innovation* is *communicated* over time among members of a *social system* and how this potentially leads to *adoption* of the *innovation*, either by individuals or an organizational unit (Rogers, 1995 p. 10)

6.1.1 Diffusion

The first element in the diffusion process is *innovation* (Rogers, 1995), and, in Lebanon, the innovations are the ICT systems ActivityInfo, RAIS, and the inter-agency mapping. These systems are ICT because their intention is to share and gather information. Rogers (2003) distinguishes between hardware and software artifacts. In Lebanon the ICT systems are not hardware, but software programs used on hardware that has already been innovated by others: computers, tablets and smartphones. The humanitarian ICT systems are designed to detect needs earlier, predict crises and ultimately engender an efficient and reliable response that matches the resources to the needs of the community at risk (IFRC, 2013).

According to Rogers (2003) the innovations are developed to reduce the uncertainty in achieving the desired result. Even though the technology is used to reduce the uncertainty, Aase (1991) highlights that these tools are nonetheless operated by humans, which means that the interplay between the task, team and tool will affect the integration of the innovation based on the organizational and individual knowledge and purpose when using these systems (Olsen & Lindøe, 2009).

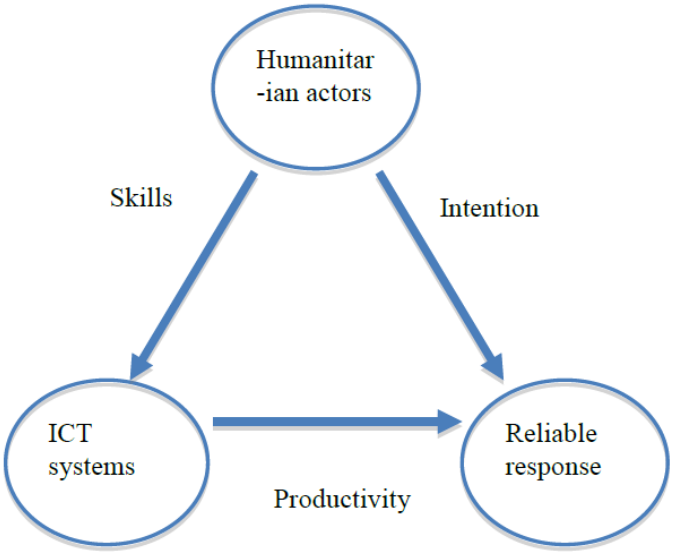

Figure 6.1. The interplay between the team, task and tool. Influenced by Olsen & Lindøe (2009).

In order to understand the diffusion and adoption of ICT systems in Lebanon a model was developed which is illustrated in figure 6.1. The figure depicts how the humanitarian actors influence the tool through their skills and intentions when using ICT systems to increase productivity. In order to observe how this interplay affects the possibility of a reliable humanitarian response, it is important to consider the diffusion and adoption of the ICT systems in Lebanon as well as the involvement of the users.

The adoption of innovations is therefore heavily dependent on its characteristics; how it is perceived by the actors. In the following section the characteristics of relative advantage and compatibility (Rogers, 2003) of the ICT systems in Lebanon are discussed.

It was commonly agreed upon by the informants that the ICT systems in Lebanon were better than the previous time-consuming working methods. However, compatibility is nonetheless

lacking with regard to the humanitarian actors' values and experienced needs. The empirical findings show that several implementing partners thought that the tools did not match the organizational needs in regard to information processing, even though UNHCR stressed that the existing programs were intended to create a strategic overview for all actors in the response.

According to Rogers (2003), the existing needs are adapted in regard to the potential adopters. In Lebanon, however, there is disagreement as to who these would be. Most INGOs and NGOs thought the system were not designed for them, but the national actors managing the humanitarian response. One IM from an UN agency stated that the original adopters are the senior management at national level: *"The users who have defined tools like ActivityInfo as a tool are very few users. The users are only the senior management of UNHCR and UNICEF. Because the tools only fit their needs and nobody else's and this are the main problem"*. According to this statement, the ICT systems are compatible with the UN agencies needs at national level. However, according to the UN agency at national level, the adopters are the implementing partners. This creates a barrier in terms of compatibility, as the innovations adopters are not clearly defined.

The innovation is also affected by socio-cultural values and beliefs, and the innovations are interpreted by the adopters based on their cultural knowledge (Rogers, 2003). The various organizations operating in Lebanon represent different cultural backgrounds, values and beliefs. Rogers (2003) states that the adopters also have to recognize their needs. This is often only identified when the adopters see the consequences of the innovation (Ibid). The implementing partners in Lebanon stated that they had trouble seeing the advantages of the ICT systems and that several were still waiting to see the benefits for them as an organization. The informants stated that they have used the ICT systems for a period of time, and that it has not resulted in any improvement regarding the information processing among them and other humanitarian actors.
How can the humanitarian actors recognize their needs when, according to an IM, they do not have the necessary knowledge of the technological possibilities? The IM stated sardonically that they have asked for more advanced Excel sheets instead of sophisticated ICT systems. The implementing partners at field level expressed that the ICT systems do not match their needs, though how can they state that the ICT systems do not match the needs when they are incapable of identifying them? But then again, are they really the intended users of these

systems? As mentioned above the implementing partners and the UN agencies have different opinions on which user the system is designed to serve.

With regards to *communication channels*, the most efficient way to disseminate innovation is through interpersonal channels (Rogers, 1995). This can be identified in Lebanon where the knowledge about the ICT systems is gained commonly through interpersonal communication in inter-agency meetings. This is despite the information about the ICT systems being available online on the Inter-agency Information Sharing Portal, and that the actors in the response who want to access the ICT systems having the possibility of doing so. NGOs and MoSA stated that as this information was in English, many of their staff were not able to understand the information shared. The interpersonal communication at inter-agency meetings was therefore the best way to receive information. However, the same informant stated that these meetings were themselves held in English. This language barrier hampers the possibility of diffusion and adoption of ICT systems; especially to NGOs and MoSA.

The *time* within the diffusion process plays a major role regarding adoption or rejection of the innovation (Rogers, 2003). As mentioned above interpersonal communication is a way of gaining knowledge about the innovation. The IMs in Lebanon hold an important position in spreading information because not everyone attends the meetings, and when they do, the information is in English. One IM said that he used an extensive amount of time to communicate information about the ICT systems existing in Lebanon, because of the high turnover of staff was problematical when seeking to get the actors to adopt the systems. According to Rogers (2003) the natural process of diffusion is where the length of adoption starts with one unit's adoption and thereafter spreads to the other actors. As there is a high turnover in staff in Lebanon there will always be humanitarian actors arriving that do not have knowledge about the ICT systems. This makes it difficult for everyone to be cognizant of, and adopt the, ICT systems fully even though it has already been communicated through interpersonal channels or adopted by several users.

When new ideas are invented, diffused and adopted or rejected into social systems it can create social change. This might affect the structure and function, as the social systems and their involved actors need to work together to accomplish a common goal (Rogers, 2003). The social system in Lebanon is that of all the humanitarian actors are working to save lives. However, the differentiated organizational norms that the organizations inhabit restrict the

possibility of reaching the goal consistently, because each organization works to their own mandate, and, based on their own internal values and beliefs, create different paths to reach the goal.

The four elements in the diffusion process are *innovation*, *communication channels*, *time* and *social system.* The diffusion of ICT systems is also highly affected by whether the process is decentralized or centralized (Rogers, 1995). The diffusion of the official ICT systems ActivityInfo, RAIS, and the inter-agency mapping are spread through a centralized diffusion process. This is because the official ICT systems are developed by UNHCR who push adoption of these ICT systems downwards to the implementing partners. According to Rogers (1995), centralized diffusion can cause problems because these innovations are often not compatible with the adopters' needs. When UNHCR developed these ICT systems in Lebanon it was not in accordance with every actor's needs and therefore may have created a mismatch. Rogers (1995) claims that the decentralized diffusion stems from the operational level and spreads horizontally, and, in this way, is more likely to incorporate the locally perceived needs and problem. As the Official ICT systems are diffused centrally in Lebanon it's more likely that the ICT systems match the needs for the UN agencies at national level rather than implementing partners working at operational level. The result is that they start to re-invent their own system to meet their needs as a technological pull.

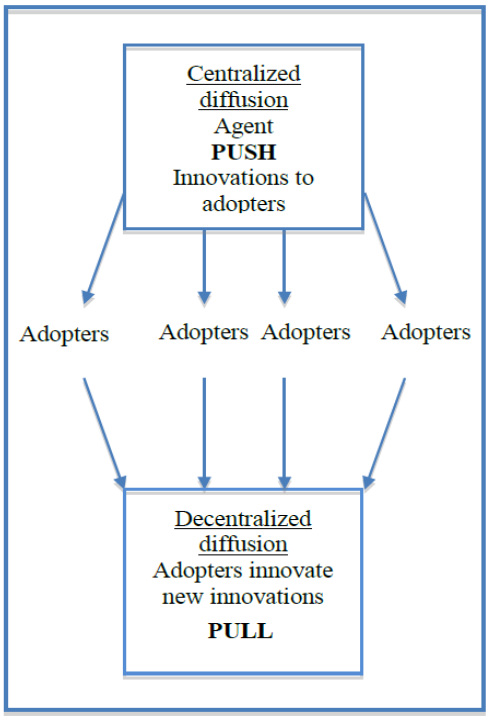

Figure 6.2. Decentralized and centralized diffusion.

Figure 6.2 shows the difference between centralized and decentralized diffusion (Rogers, 1995). In Lebanon there is a hybrid: centralized diffusion where UNHCR push and spread their ICT systems, yet as these do not match all humanitarian actors' needs, it results in decentralized diffusion. Informants from INGOs have explained that they had developed and diffused their own ICT systems at operational level. This is, according to Rogers (1995), understood as a technological pull, where adopters re-invent the innovation to the particular context. In order to understand why the humanitarian actors re-invent and develop their own ICT systems it's necessary to further explore how the centralized diffusion fails in terms of adoption.

6.1.2 Adoption

Rogers (2003) claims that the diffusion rate can be affected by authority innovation-decision. As the official ICT systems are mandatory for the implementing partners in the official response, they do not have the freedom of choosing whether to adopt or reject these ICT systems.

When actors adopt an innovation there follows an implementation phase consisting of three stages: *redefining/reconstruction, clarifying* and *routinizing* (Rogers, 1995).

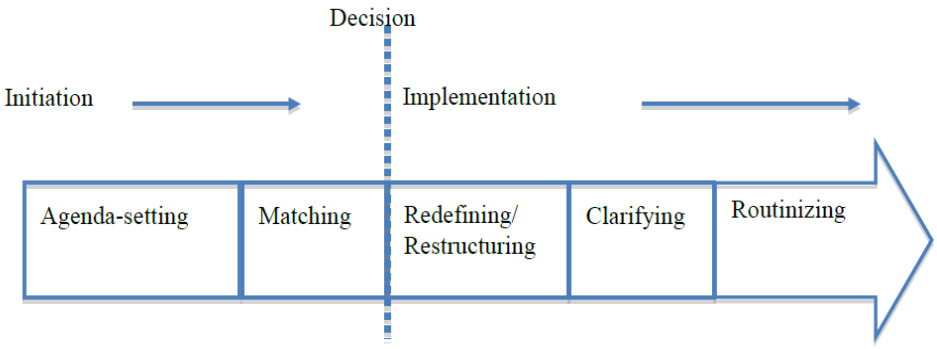

Figure 6.3. Five stages in the innovation process in an organization, based on Rogers (1995)

This model depicts the five stages of the innovation process in an organization. In the implementation phase the adopted innovation gets redefined/restructured when the innovation is re-invented to fit the organizational context and structure (Rogers, 1995). In order to

routinize the innovation, Orlikowski (1992), claims that, as the technological systems are a product of human interaction, the organizational structure modifies itself to the innovation. The ICT systems in Lebanon have existed since 2014, with IM at UNHCR stating: *"… with the use of such systems we have proven here that everyone can use the same tool. There is no other place where all agencies use the same tool. We proved that is possible*." The informant indicates that the system is routinized and should therefore be fully absorbed by the various humanitarian organizations. Nonetheless, several informants stated that, as they are not obligated to use the official ICT system, they did not utilize it. This was because it did not match the contextual need. All implementing partners are obligated to use these ICT systems and stated that they did. However, several of these did not see the benefit. When the ICT systems are not redefined, it not is possible to clarify and routinize, and Rogers (1995) states that these stages of the implementation of the innovation need to successful in order for the innovation to be completely implemented in the organizations.

Rogers (1995) asserts that a lack of expertise and knowledge in the technological system could hinder the implementation phase of the innovation process. MoSA stressed during the interviews that they lacked comprehensive knowledge and expertise with regards to using these ICT systems. How can MoSA affect the re-invention process when they don't have the expertise to state what they need regarding the technology? In order for this to function for the humanitarian actors as well as for MoSA they must be able to design the innovation based on what is perceived as most familiar and compatible for their organization. UN actors at national level and technological developers stated that their focus was on how ICT systems could provide reliable data in the response rather than how the systems adjusted to the needs at operational level. One informant expressed that it was the technological developers' responsibility, in cooperation with the providers of the ICT systems, to deliver tools that were compatible with the users' needs:

> *…technology in its own sake is not going to help anybody. It is about making technology user relevant. So it is more what you use technology for, so to we have one information management system to the response I think is possible, and the technology are probably already built for that. But then having the system to make sure that data is there, its feeding back, you know that the in and out flow data are relevant and useful. And that's about again, having the technology people work on it with the users and the providers to make sure that it's not, you know the geeks have made some great technology that nobody knows how to use. And then the operators think that the technology is not relevant for what they need. This is always the biggest challenge (Country director, INGO).*

This informant states that the technology needs to be compatible with the existing knowledge of the users in order that the developers do not create a tool that nobody knows how to use. This means that not only do the ICT systems need to be compatible in regard to the actors' needs, but also to the user's degree of technological knowledge and expertise. This uncertainty of compatibility has thus created difficulties in implementing the ICT systems to their fullest potential as an intellectual tool. This can therefore describe why actors that have access to, but are not obligated to use the systems choose not to use them, as the systems are not compatible with their organization. In order to be compatible, Rogers (1995) states that the agenda-setting and matching process in the initiation phase of the innovation needs to be adapted to the defined problem, then match the technological innovation to the problem. The original problem the actors seek to solve is to help the people in need, but the organizations have various working methods and mandates, as well as differencing demands to the ICT systems. This includes what the systems should contain with regards to planning, dynamic updates, reporting functions, as well as inter-agency information processing.

The uncertainty does not only rely on the compatibility, but also on the degree to which the organizations determine the ICT systems as reliable. All NGO informants said that they did not trust the UN system in Lebanon. However, the INGOs and the UN agencies did not corroborate this in any way, though it was a common apprehension that the precision of data published in the official reports was lacking. This was often due to overly-confined indicators to report activities on, the massive amount of unstructured assessments performed without standardization, and a lack of a common understanding of how to feed the data into the official ICT systems. The common perception of these reports not being accurate was stated by all NGOs and INGOs, as well as two UN-agencies. Gerwin (1998) observes that how organizations determine reliability, capacity and precision of the technological system will define the degree of uncertainty when implementing the innovation. Gerwin's (1998) perspective can be seen in correlation with the official ICT systems in Lebanon, which collect and verify information, yet the humanitarian actors do not have a coherent understanding of the reliability and precision of the collected data. Gerwin (1998) also highlights the social uncertainty with the conflicts of interest when implementing innovations. In Lebanon the social and technological uncertainty have led most of the humanitarian organizations to innovate their own ICT systems. This was performed in order for them to get the strategic and correct overview - at least of their own activities. Informants claim that this has resulted in

conflict of interest among the actors, where some actors pull to obtain the position of their ICT system, and other actors try to establish their own innovations.

Most of the informants expressed that the official ICT system failed to deliver the information promptly, having to wait three months to get the overall information of what other implementing partners were doing and had done. Information about this was, however, shared in sector meetings as well as inter-agency meetings, though informants expressed that this was not explicitly shared across sectors. This information is nonetheless in the hands of UNHCR as they receive the collected data from the official ICT systems. This means that the implementation process again leads back to the innovation stage of agenda-setting and matching (Rogers, 1995), as the innovations themselves seek to match the problems and needs that the lead agency has. To have one system that matches the needs, values, mandates and expectations of the various actors, as one informant expressed during an interview, not possible. Specifically, this was because the innovation is a social process through human interaction, and the actors therefore need to have the same interpreted understanding of what the innovation seeks to solve in order for it to fulfill its potential (Rogers, 1995).

6.2 Information processing

Rasmussen (1997) explores how the socio-technical system can be reliable through the three shaping mechanisms: technological change, organizational structure and human behavior. The system is shaped by *technological change* and this guides the subjective criteria. It is also shaped by the *human behavior* that operates through boundaries of acceptable behavior, and *organizational structures* that shape ideas of work constraints (Rasmussen, 1997). In contrast to Rasmussen's (1997) position, Turner (1976) states that an organization cannot be free of failure because the interaction between the human and the socio-technical system creates organizational errors. According to Olsen and Scharffscher (1991) the humanitarian organizations can be described as what Rasmussen (1997) calls a *socio-technical system*. Below follows a discussion of how information processing between the humanitarian actors is affected by the technological change and the organizational structure, as well as through human behavior.

6.2.1 Technological change

According to Rasmussen (1997) the fast pace of technological change at an operational level will affect the reliability in the socio-technical system. This is because, in Rasmussen's (1997) opinion, the operational level adapts faster to technological change than management level. In Lebanon the empirical findings suggest the opposite, where the humanitarian UN actors at national level push the ICT systems downwards to the operational level faster than the actors are able to adapt. However, the operational actors have innovated their own ICT systems, as the technology presented by management level does not contribute to an overview of the current activities and plans. Several INGOs stated that having their own internal ICT systems was, due to the reflexive context, beneficial for their organization in order to have control over the information flow internally. The actors in Lebanon work under high pressure and to respond strongly to the huge level of existing needs - they need real-time information. Turner (1976) states that difficulties of information handling can contribute to latent conditions. However, Rasmussen (1997) states that coherent knowledge of the situation at all levels in the organization ensures reliable information processing. In Lebanon the actors seem to be unsure as regards to who to inform, about what and when. Several informants also highlighted that there is no existing standardized way of sharing information, and the information that was shared was often rather sporadic and too late. One informant stated:

> *In terms of actual information sharing, like how we get it out there in a systematic way, well I think the biggest problem is that the whole sort of concept is like working together on a voluntary basis, where you sort of co-operate and agree to do this stuff together because there is no formalized structure (IM, UN-agency).*

According to this informant the lack of standardization was seen as a result of humanitarian organizational structures. As it is voluntary there is no formal authority or organizational structure to guide the way of operating. Turner (1976) states that loosely formulated and a lack of unequivocal criteria for deciding when the goal is attained may result in organizational failure. In Lebanon the lack of standardization may hinder the possibility of reliable external information sharing, because there is uncertainty on how to attain the goal in standardized ways. Therefore, the voluntary practices and lack of unequivocal and standardized criteria may result in unequal access to information.

Rogers (2003) states that, in order for a technology to be fully operational, it needs to be *diffused*, meaning that all actors involved need to adopt and implement the innovation. The subjective criteria will, according to Rasmussen (1997), guide the adoption. However, this

also relies on the social aspects of how you commonly understand and interpret the purpose of the task that the innovation is originally supposed to solve (Rogers, 2003). This might therefore be the reason for the humanitarian actors uncertainly about how to share information, as they don't have a common understanding of what the ICT systems are supposed to solve. This uncertainty can be ameliorated by what Rasmussen (1997) describes as competence in know-how, practical skills and formal knowledge in order to process information: the actors' understanding or their own work constraints and role in the socio-technical system can reduce the uncertainty further (Rasmussen, 1997).

6.2.2 Human behavior and organizational structure

This section will elaborate the information processing among humanitarian actors in Lebanon. The competence in know-how, practical skills and formal knowledge are important factors when disseminating, integrating and interpreting information vertical and horizontally in the socio-technical system. This is important to ensure a reliable information processing (Kruke & Olsen, 2011; Rasmussen, 1997).

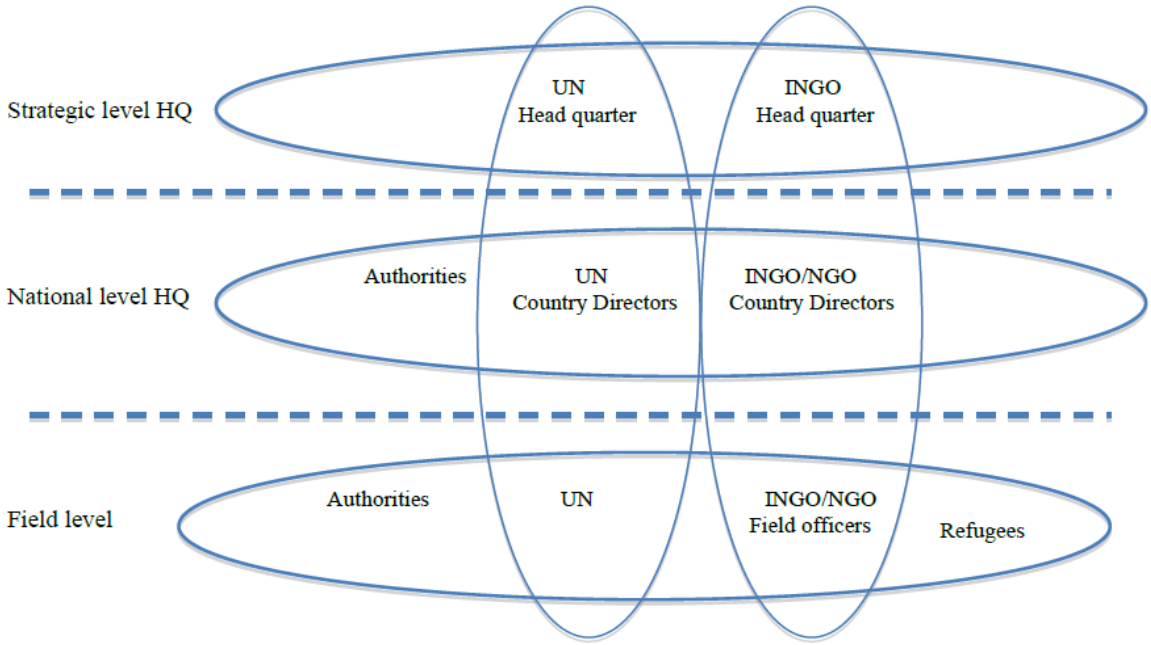

Figure 6.3. Information processing between levels in the humanitarian response (Kruke & Olsen, 2011).

Figure 6.3 represents information processing among the humanitarian actors in Lebanon, both vertically and horizontally. The horizontal interaction could, according to Kruke & Olsen (2011 p. 252), be seen as inter-organizational information flow within the coordination structure. The vertical interaction, in contrast, can be described as internal information dissemination, with Dixon (1994) considering that these are based on organizational collective meaning structures. As figure 6.3 depicts, the field level in Lebanon provides the national level with information gathered through assessments conducted on refugees. This information is then sent to the strategic level which produce reports that get sent back to national level. This information is, as previously mentioned, often too late, as the report is received three months after completion (ref 6.1.2). Many informants at both national and field level stated that that the difficulties in sharing information are due to what they define as information silos, because the SWG limits cross-sectorial information sharing across levels. This means that the information is shared in a limited extent to a certain group of people and sporadically creates difficulties in establishing a situational overview - both in an operational area within one sector, as well as at national level. However, several informants from the INGOs did not share this opinion, and thought that organizations gladly shared their information.

The informants remarked that the information's upward flow from the field level is often reported without the use of ICT systems. Turner (1976) asserts that, when the information is transferred through interpersonal communication, it can create misunderstandings. The national level therefore has to interpret the information from field level when plotting the information into the ICT systems. The authors have observed that information flow from field level to national level exists, but the information flow downwards is rather ineffectual. Several informants pointed this out, and one IM from an UN-agency notes that IMs in the field struggle:

> *...because they are in the field, they are badgered every day by everyone coming in to their office and saying: we need this and that information, and who is working where? And in their desperation they start to develop tools for people locally… These tools have been developed by individuals that are trying to fix the local needs at field level… What you don't have is a concern at the strategic level that there is bunch of users that are not being considered, but just being left to their own devices.*

The informant's claim may be seen as the result of lack of information flow downwards from strategic to field level. This may create desperation for information at the field, because the strategic level have not developed any tools to cover what the field workers are in need of.

The reliable processing of information in Lebanon may become hampered through challenges at all levels. The empirical findings suggest that the triple role of UNHCR at national level, incompatible organizational mandates and focus at national level and the high turnover in staff at field level negatively affects reliable information processing. Additionally, as the design of ICT systems does not match the needs at all levels, and with no standardization way of sharing information, the processing gets further hampered. In the following sections these challenges will be further elaborated.

Triple role

As the response in Lebanon was regarded as a purely refugee crisis at the beginning of the Syrian war, the mandate of managing the response was given to UNHCR and not UN-OCHA. This was strongly highlighted as being problematic in the real-time evaluation report (Crisp et al., 2013). The report stated that the triple role of UNHCR as coordination body, implementer as well as funder was a problem as humanitarian actors stated that UNHCR were more focused on handling their own operation than managing the entire humanitarian response. The following year they separated the coordination body from the implementing role (UNHCR, 2013a) and established ICT systems to information sharing among the humanitarian organizations at all levels (RRP, 2014; UNHCR, 2013a). Rasmussen (1997) highlights the importance of having tightly coordinated analysis across organizational levels in order to create a reliable system that seeks to reduce vulnerabilities. Even though the ICT systems were implemented to strengthen the operational capacity of joint planning among actors (UNHCR, 2013a), a year on several of the informants stated that the triple role was still an issue. One informant expressed: "*So you have a big conflict of interest which was sort of resolved at national level, by having different people affect the coordination and the implementation. But at the field level it was not" (Country director, INGO).* According to this informant the role of UNHCR were not clearly distinguished at field level, possibly proving an obstacle to what Kruke & Olsen (2011) calls dissemination, integration and interpretation of information. This, in turn, may obstruct the tightly coupled analysis that Rasmussen (1997) stresses is important for reliable information processing, because they do not have an integrated common approach when working in the field as they did not manage to separate the two conflicting roles.

Incompatible mandates and focus

A rapidly changing environment needs actors who have a certain situational awareness (Kruke & Olsen, 2011). The working constraints means their roles will therefore affect the boundaries of acceptable performance and what should be shared in information (Rasmussen, 1997). However, according to Turner (1976) the cultural lag can create a mismatch between the procedures, standards and regulations (Pidgeon & O'Leary, 2000; Turner & Pidgeon, 1997). In Lebanon the organizations consist of incompatible mandates, focus and values, and, as they are working in a reflexive environment, the possibility to ensure what Rasmussen (1997) calls acceptable performance might be difficult. This is because there is a mismatch between the standards and procedures because of the incompatible organizational working methods.

The ICT systems strive to create a common situational awareness. As the organizations have different working methods they may interpret the information differently and not have a coherent understanding of what should be shared. The official ICT systems in Lebanon might therefore fail to accomplish reliable external information processing, because, according to Rogers (2003), the adopters need to have a common goal and work together as a social system. Moreover, they do not have what Kruke & Olsen (2011) calls a common situational awareness. According to one of our informants, it is impossible to have one size fits all:

> *I think to look at technological solutions is the wrong way to go about the problem, because you are talking about stuff that has to be accessible for hundreds of people with different background. You know the mistake that the coordination system always do in terms of technology is have one size fits all. So to come up with this one system and every response have tried one...and it's going to sort all of our problems, of course it's not, it's never going to happen. (Country Director, INGO)*

As the informant explains, having various organizations with different backgrounds working together through one system is difficult because, as Turner (1976) states, the risk of failure in terms of information processing increases when the task is handled by several organizations and their bounded rationalities through their subculture and framework.

Turnover in staff

Rasmussen (1997) stresses that the actors at the core need to be involved in the control of the information processing to avoid hazards. The bounded rationalities (Turner, 1976) frame what Rasmussen (1997) calls work constraints. The field workers in Lebanon are the individuals

interacting with refugees on a daily basis. While some informants from INGOs and NGOs stated that the field workers did not get enough information about needs and further plans from the headquarters at national level, other informants from the UN agencies stated that it did exist, but due to high turnover in staff, the field workers did not know where to find it. This was highlighted by an IM in a UN agency:

> *..the problem though is that people in the field change every six months, so when new staff comes here they don't know that this information is out there, so they are all saying: We need a map of this, and they hire someone else to do it. Meanwhile the information is there right. So one of the biggest thing is trying to get a sort of awareness of all the work that we have here.*

This statement can be understood as, because the operational organizations' staff changes often, they are not aware of where to find information, and what to share and with whom. When there is a high turnover in staff the competence and skills with regards to the usage of the ICT systems is differential. Therefore, the individual staff are heavily reliant on the IMs present in the field in order to stay updated on external information. Rasmussen (1997) emphasizes that it is important to have competence in know-how and practical skills in order to reduce vulnerability. This can be increased through situational knowledge, and this is needed to base decisions upon information in the running context, and respond strongly to weak signals with familiar action alternatives (Rasmussen, 1997; Weick et al., 1999). Due to high turnover in staff and weak information processing from the national to the field level, the overall situational knowledge in the field may be dysfunctional. Because information flows downward in the response, it is essential in order for the individuals to fully understand what their role in the humanitarian response is. If they do not, it can lead to what Turner (1976) classifies as incubation, because there might be a disconnection between the reality and the individual assumptions.

In order to prevent this disconnection there needs to be a holistic feedback loop of information across all levels (Rasmussen, 1997). The reliability of the feedback loop is dependent on the actors' objectives and performance criteria (Ibid). In Lebanon the process between assessments and implemented interventions needs to be in accordance with the actual needs in the field. In order to achieve this, there has to be a standardized way of disseminating, integrating and interpreting information that should be shared through ICT systems.

6.3 Assessments, plans and implementation

Rasmussen (1997) stresses that the entire system needs to be involved when aiming to control hazardous sources. A holistic feedback loop needs to be applied where the control structure, the actors' objectives, and their capability of control needs to be evaluated, and all information needs to be analyzed from a feedback control point of view. For the humanitarian response in Lebanon to be reliable through what Rasmussen (1997) defines as a reliable feedback loop, the assessments performed must result in activities and implementation that addresses the needs identified through assessments, and results in the needs being covered. Figure 6.4 depicts how this process should work in order to be reliable in accordance with Rasmussen (1997).

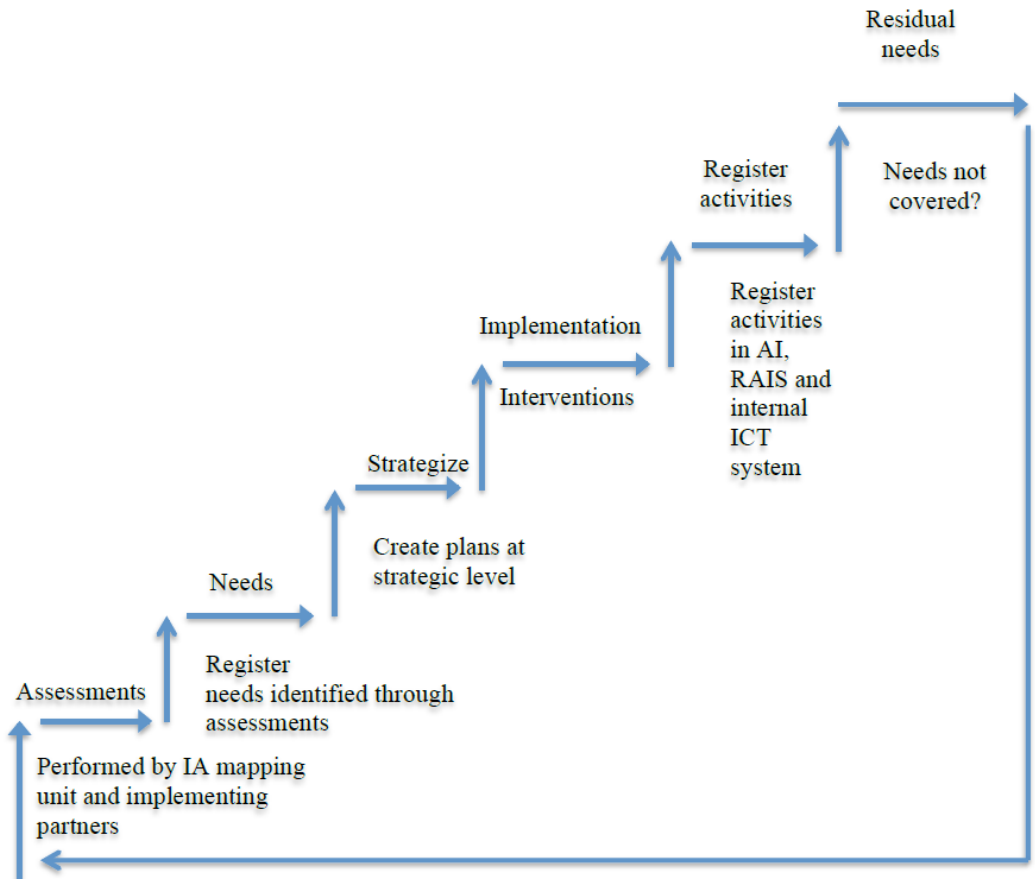

Figure 6.4. Representation of the continuously normative process between assessments, activities and implementation.

As this figure shows, the process should be normative, where the inter-agency mapping and implementing partners perform the assessments to identify the needs. Based on this they could create plans and strategies that, through the implementation of interventions, cover these needs. When registering the activities in ActivityInfo at community level and in RAIS at household level these activities should be based on the needs identified during assessments. When the activities match the needs they can see where the needs are not covered. If the humanitarian actors operate in accordance with this they will help create a comprehensive situational picture and reliable information processing. As the situation in Lebanon is reflexive, this process should be continuous. In the following sections we will discuss whether the process between assessments, activities and implementation in Lebanon are in accordance with Rasmussen's (1997) definition of a reliable and holistic feedback loop.

6.3.1 Assessments

Assessments are performed in the humanitarian response in order to gain what Kruke & Olsen (2011) calls situational awareness and to identify the needs. Situational awareness can be what Hannan & Freeman (1984) refers to as "unusual capacity to produce collective outcomes of a certain minimum quality repeatedly" (as cited in p. 283 Kruke & Olsen, 2005).

Assessments in Lebanon are performed at both household and community level by field workers, for identifying vulnerabilities, needs or gaps. Informants stated that in Lebanon, targeting has been implemented as a way of identifying the refugees' vulnerability efficiently. Because of the high influx of refugees targeting enables the humanitarian actors to have an overview of the most vulnerable. Targeting means that the actors select potential refugees based on pre-identified criteria of vulnerability. Through targeting the refugees through door-to-door assessments the aid workers state that they were able to see which refugees were undergoing vulnerable living conditions and ensure that the most vulnerable received aid first. This indicates that the humanitarian actors have, to an extent, adapted to the reflexive environment by implementing targeting as a way of handling the complex operational context.

However the real-time evaluation report (Crisp et al., 2013) stressed that the vulnerability criteria lacked standardization, as the criteria on which the targeting is supposed to be based is not clear. This may result in latent conditions resembling what Turner & Pidgeon (1997) and

Pidgeon & O´Leary (1997) call a mismatch between the procedures, standards and regulation when defining the vulnerability criteria. RAIS is a national ICT system that seeks to standardize targeting among the actors by enabling them to upload targeted assessments performed at household level. The system also offers the chance to see what has been distributed to the refugees by others. However, not all involved actors use this system, and most actors have their own internal ICT systems that they upload their assessments to. This problematizes defining the criteria of vulnerability, as each organization operates based upon their own standards and procedures; creating a further fragmented assessment process, which also leads to mismatching the procedures, regulations and standards that Turner & Pidgeon (1997) and Pidgeon & O´Leary (1997) believe lead to latent conditions.

When tasks are managed across several organizations, the possibility of maintaining communication between levels may be difficult, because each organization has their own distinctive subculture and framework of bounded rationality (Turner, 1976). In Lebanon the subculture and framework of bounded rationality is related to the various organizations' mandates, focus and values. These factors will affect how they work together, as they all are working with different methods and standardizations. Several informants expressed that the criteria regarding what the various assistance packages included was not clear. During a national sector meeting the actors stressed that other sectors were distributing hygiene kits that were not in accordance to the predefined WASH criteria. This meant that refugees receives incorrect levels of aid and goods or duplication through reporting-failure in ActivityInfo. According to Turner (1976) this is the consequence of handling great amounts of information in a complex situation. Weick, Sutcliff and Obstfeld (1999) state that high reliable performance relies on the organization's capacity to detect weak signals and respond strongly to them. Therefore, even if the humanitarian actors fail to have the same standards as to what the criteria consists of, and lack standardized vulnerability criteria for targeting, they will still be able to provide assistance even if it is not in a coherent manner.

The inter-agency unit creates a map of vulnerabilities for the entire humanitarian response. Therefore, even if the individual organizations target different criteria the unit produces coherent maps of vulnerabilities that all actors have access to on the Inter-agency Information Sharing Portal. These maps are also handed out during meetings, though, as mentioned, NGOs and MoSA are often absent, and the high turnover in staff means there are always individuals that are not told where to find the maps, or even that they exist.

Another challenge mentioned in several interviews was the fact that these maps are non-dynamic: that they were already outdated once published due to the dynamic environment. One informant further highlighted this by referring to the refugees constantly moving around within the borders of Lebanon - making it exceptionally difficult to gain an overview of where the refugees are located. Turner (1976) and Wohlstetter (1962) state that, when the task is prolonged and complex, the information handling is difficult, and generates yet more information that needs to be handled. Rasmussen (1997) states that actors need to have coherent competence and acumen when utilizing information. Therefore, the humanitarian actors in Lebanon need to have competence in how to perform assessments and where to find the results of these, as well as having knowledge about what the assistance packages they provide should include. The actors in Lebanon find this problematical, yet in order to take appropriate actions that leads to the implementation of activities, they need to base this on the information gathered through assessments, as the assessments provide the foundation for further strategies and aid priorities.

6.3.2 Activities and implementation based on assessments

Implementing partners' registered activities is done at community level in ActivityInfo. Activities on household level are registered in RAIS. The inter-agency mapping unit produces maps, reports and analysis. These three ICT systems are intended to map out existing needs as well as disseminate information about needs and pinpoint implementing partners to cover these. If this process is functioning properly it can create what Rasmussen (1997) calls reliable feedback loop and, in Lebanon, this is the feedback loop between the humanitarian actors and the individuals they are helping. There must also be a commitment and capacity to use this feedback to improve programming (IFRC, 2013). During emergencies there is a constant and unexpected flow of events that creates difficulties for individual organizations to cope (Kruke & Olsen, 2011), and it is therefore extremely important that the organizations co-operate and have a common approach when working in the response (Kruke & Olsen, 2011). Through the two field studies in Lebanon, it was discovered that the co-operation among humanitarian actors is highly affected by differential organizational structures, and not the ICT system itself. This means that they struggle to establish a common approach when implementing interventions and registering activities.

Turner (1976) states that the possibility of maintaining communication is lowered when a task is to be handled by several organizations, because of the bounded rationality. In Lebanon the task is handled by several organizations, and their different mandates, values, and norms form their working method. Through the field studies it has been observed and informed that the boundaries that the organizations work within may hamper co-operation, because the various organizations report in different ways. As the verified report from UNHCR is published quarterly, and ActivityInfo only shows their own activities, the field levels use Excel sheets to cross-check and avoid duplication of aid on an everyday basis. These Excel sheets state what has been delivered, though when looking at these sheets most of the organizations have reported information differently. Some identified delivery based on gender and the amount in dollars, whereas others reported numbers of refugees assisted, and what type of delivery they had received. How can the humanitarian actors at field level compare data, when they use dissimilar methods of reporting? Turner (1976) states that, when the information available is not supplementing what is needed to describe and handle the situation, it will create latent conditions. The informants in Lebanon stated that the most commonly shared information regarded what actors had *done* and not what they *planned.* As the information is about the past, it will not supplement the real-time information humanitarian actors are in need of. One informant stated the issue of not having comprehensive information about plans:

> *…in terms of ongoing interventions, at least it is clear in ActivityInfo, Which is very clear about what has been done. In terms of plans it is more difficult to get comprehensive information, and that is where we have to move outside of coordination structures often, because people will talk about what they are doing and what they have done through formal structures, but there is no reporting on plans"(Country director, INGO).*

This informant stated that the information about what has been done is clear, but as there is no structure for sharing plans, they need to go outside the formal coordination structure. An IM from an UN agency further highlighted this;

> *"…how do we use ActivityInfo for planning? It doesn't, because it's not a planning tool, it's a reporting tool so it's for UNHCR for ultimately have ability to say this is what we are doing, this is what we did, but it doesn't help the partner figure out where should we go, how do we coordinate".*

What the two informants are stating is that because ActivityInfo lacks the possibility to see what other organizations are planning and the interventions currently being performed, they

have to move outside of the formal coordination structure to seek information about this. This is in accordance with what several informants at field level expressed: that information sharing was conducted through random phone calls, sharing Excel sheets, and talking in meetings where possible. When the actors are partly unaware of where other organizations are working and what they are doing, this might be detrimental to what Rasmussen (1997) describes as a reliable feedback loop and instead turn the situation to what Turner (1976) calls latent conditions. During large-scale complex situations it is not possible to agree upon one single description of the situation, because everyone operates with differing sets of information and construct their own theories about the current situation and what needs to be done, thus further complicating the already complex situation (Turner, 1976). This is certainly the case in Lebanon where the actors conduct a massive amount of assessments in attempting to gain a situational overview and to create assistance consistent with the actual needs. Therefore, the question to ask is, why doesn't the massive amount of assessment create a reliable feedback loop whereby the activities performed meet the needs identified in the assessments, and thus reduce omissions? The empirical findings suggest that, as they operate with their own set of information and constructs their own theories, the complexity does not get reduced, but rather creates a chaotic relationship between the assessments done, planned activities and implementation.

Rogers (2003) says that innovations are designed for instrumental actions and aim to reduce the uncertainty in order to achieve the desired result. In Lebanon the ICT systems seek to reduce the uncertainty by having a reliable linked process between needs covered and activities performed. Turner (1976), however, states that when an organization's understanding of the world starts to differ from reality, they may find themselves in an incubation period, accumulating latent conditions. This might therefore be a reason for the ICT systems failing as an innovation, because the organizational frame that the ICT systems are innovated within differs from reality. The organizations may therefore find themselves in an incubation period without even noticing. As the ICT systems fail to match the needs in terms of information, many organizations go out in the field and perform their own assessments as a way of seeking control. One informant expressed the negative aspects of this:

> *…that's where the coordination have been weak at times. Asking too many people the same question, people seeing all these white cars come and do assessments, but they don't see any result, so we have to be very careful that we manage that better and do not increase the expectations" (Legal assistance, INGO).*

In relation to the informant's statement that organizations are conducting too many assessments. Kruke & Olsen (2011) assert that when working in a chaotic environment it is difficult to create situational awareness. As there is no standardized way of performing assessments in Lebanon the possibility to create situational awareness is impeded. Turner (1976) claims that when there is no standardized or structured process between dissemination and collective interpretation of information it results in information being unintentionally distorted. When the actors control their own operations through their own ICT systems, it obstructs what Rasmussen (1997) considers to be a reliable and holistic feedback loop of information. Complexity makes relevant information a scarce resource and the cost of obtaining one set of information is added to the cost of another, thus limiting the possibility of having full control of the situation (Turner, 1976). This is clearly the case in Lebanon where the humanitarian actors are more preoccupied with collecting their own information than doing so collectively.

6.3.3 The beneficiaries

Turner (1976) states that when existing danger signs are not perceived, given low priority or as a source of disagreement, or even considered insignificant, the possibility for accumulation of events that lead to a disaster may happen. The implementation of activities was, as the empirical findings show, not always performed on the basis of actual needs in the field. The refugees expressed deep concerns over the massive amount of assessments performed when never seeing any results. They also stated that they felt disrespected and neglected, as the aid workers would not assess all refugees in their informal settlements - generally the camp leader had to speak for the entire camp. Given that the refugees had different needs, the camp leaders were not therefore able to state all of these. Additionally, the assessments performed are based on each aid organization's standardized set of questions, and this did not enable the refugees to state their own needs freely. The humanitarian actors failed to realize that collecting extensive amount of information for their own purpose only decrease the possibility of having common strategies.

One of the ITSs visibly demonstrated that the response mechanism had failed to identify the actual needs of the refugees. Instead of being providing school equipment, the refugees should have received more urgent packages such as winterization kits, medicine and treatments for illnesses. This indicates that the understanding of what is needed by the

humanitarian organizations differs from the reality, or, at least, that the way of operating the assessments, activities and implementation of interventions did not function as intended. All informants except the NGOs and MoSA emphasize this, stating that the ICT systems they had internally or externally were supposed to enable them to target the most vulnerable. The winterization kits were intended to be given to the most vulnerable living in high altitude. In practice however, when visiting one ITS in a low altitudes, and one in high altitude, the opposite was true. While the mattresses in the low altitude areas were given out due to winter coming to an end, the ITS in the high altitude had received nothing even if they still had snow surrounding them. According to Rogers (1995) this can result in not being able to match the ICT systems to the defined problem, and, in such a manner, create what Turner (1976) calls latent conditions leading to an incubation period.

One of the IM informants at UNHCR said that it was challenging to operate in Lebanon and that when doing targeted assistance: *"you can never control who deserved to get this assistance and how fair it is and the most in need is the one that receives it"*. The same informant did however stress that they did have a system intended to prevent these types of problems: *"...We have a sort of mechanism to ensure that these targeted people are genuine cases, they come to registration and have an interview and then we have a home visits"*. The informant stresses the difficulties with assisting genuine cases, and, even though the response seeks to ensure a reliable mechanism to secure that the target refugees are the most vulnerable, it is not always possible. The massive amount of assessments performed by various organizations have resulted in one ITS now refusing humanitarian actors to enter and conduct assessments. The camp leaders said the following: *"I have said to them that they cannot come here anymore for assessments. Because they just do assessments, and we never not even once, have seen any results from this. We have so many needs and this camp receive nothing*". This informant stated that their needs have still not been covered, even though innumerable assessments had been performed. MoSA also stated that they would start to demand results in specific sectors for every organizations intending to go into the field to perform assessments. One of the informants from MoSA also said that the response usually reacted after an incident occurred, but that this was too late as lives were already lost due to the lack of emergency preparedness. Responding after a crisis has occurred suggests that the actors are not able to anticipate and predict dangers before the damage is done (Wildavsky, 1991). This may be due to the fact that the actors lack competence in working in a fast-paced

environment (Rasmussen, 1997) because of their limited ability to recognize and analyze changes in the surroundings (Reason, 1997). In Lebanon, the possibility to improve information management in the response and reduce hazards in the refugees living environment is thus not a matter of the technology, but how the actors from all levels use it. This will affect the relationship between the assessments, the planned activities and the implementation of interventions, and how this could potentially be a continuously holistic feedback loop of information. In contrast, how they use it relies on the users' expertise and access to the technology, as well as the creation of systematic and standardized procedures for implementation.

7.0 Conclusion

This thesis' purpose is to answer the following research problem: *How do ICT systems contribute to reliable information management in the humanitarian response in Lebanon?* To answer the research problem two field studies have been conducted using explorative and abductive approaches in the social actors' *natural settings*, in order to present the *social actors' understanding* of the humanitarian response. The empirical findings are seen in connection to the theoretical stance adopted in this thesis. The chapter presents the most pertinent aspects found in the discussion of each research question, and, cumulatively, answers the research problem in order to produce a conclusion. The end of this chapter will present the suggestions for further research.

How is the diffusion and adoption of ICT systems in Lebanon?

This research has shown that even if the ICT systems are designed with the purpose of ensuring a reliable information management in the response, they have failed to do so in Lebanon. The official ICT systems are not compatible with the needs identified by the users on an operational level, which hampers the adoption and implementation of the centralized diffusion. The centralized diffusion is seen as a central part in the obstruction of the diffusion as the ICT systems were pushed downward in the system by the UN at national level, thus not enabling the adopters at operational level to modify its content to match their needs. This had resulted in massive development of innovations horizontally in the response on an operational level in order to have ICT systems compatible to their perceived needs and problems. As the official ICT systems were not diffused through decentralization, the re-invention of their own system has created a technological pull that negatively affected the success of the official ICT systems implementation and adoption in the organizations.

How is the information processing among humanitarian actors in Lebanon?

The purpose of the official ICT systems is to enhance the reliability in the information processing among all actors working in the response, however the systems are not compatible with the needs at the operational level. This is compounded by the lack of constant and structured information flow across levels and organizations. Moreover, there is a lack of standardized procedures for sharing information, with the ICT systems failing, to a certain

extent to fulfill their original purpose. The humanitarian organizations do not have a standardized and coherent way of sharing information, creating difficulties for the staff to know their role and with whom to share, what, and when. This is due to differential organizational bounded rationalities that form and obstruct the ability to ensure reliable external information processing. As the systems are produced by the social actors and their interpretations of the problems, in that each individual organization bases their interpretation on their own set of information collected for their organization, collective information processing fails. Therefore, the humanitarian actors in Lebanon fail to accomplish a holistic feedback loop between organizations horizontally and vertically through ICT systems in the humanitarian response.

What is the relation between the assessments, the planned activities, and the implementation of interventions in the humanitarian response in Lebanon?

Poor and fragmented external information processing among organizations, and official ICT systems that are not compatible with the users' needs with regard to information have contributed to the conduction of numerous assessments. MoSA and the refugees are now denying organizations the opportunity to perform further assessments if they do not see any tangible results. As the implemented interventions are not always in accordance with the needs of the refugees, there is a disconnection between the assessment done and the planned activities. Because the feedback loop of information is not tightly coupled across levels and organizations, the humanitarian actors are not able to get a comprehensive situational overview of where the needs and gaps are, as there is exists no uniformed and standardized method of sharing information in terms of assessments and planned activities. This is further problematized when the organizations do not have a coherent understanding of what the assistance packages and reporting indicators should include, which may lead to duplication and gaps of aid and unreliable data in the official ICT systems. In addition, when all actors are trying to create an internal situational overview through their own ICT systems, the possibility of creating holistic feedback loop of reliable information vertically and horizontally among actors fails.

Main conclusion

The overall conclusion to the research problem is that the ICT systems only partially contribute to reliable information management in the humanitarian response. First of all the systems are not implemented in ways that involve all actors and their stated needs. This hampers the possibility for reliable information processing, as there is no standardization for how to share information, and to whom and when. Secondly, the complex context has created an extensive need for more information, as well as the need for a clear, timely situational picture. As all actors operate with their own set of information, and construct their own theories, the complexity does not get reduced, but rather creates a chaotic relationship between the assessments done, planned activities and the implementation of interventions. Regardless, this is due to disparate organizational practices that influence the information management over ICT systems negatively. Ultimately ICT systems cannot solve the fragmented organizational structures that exists in the humanitarian system, as they are not able to jointly anticipate the unexpected flow of all events, and therefore the capacity to cope with these events after they have become manifested may be challenging in the reflexive environment. This further hampers the possibility for the official ICT systems to ensure reliable information management in the humanitarian response in Lebanon.

Further research

The findings of this thesis suggest that using ICT systems to create reliability in a humanitarian response has numerous challenges. This is not limited to the adoption (compatible to the needs of the users) and implementation of the ICT systems (training, access to equipment), but also the organizational structure and the lack of standardized ways of operating the ICT systems.

The user-developer relationship should be further examined. If the ICT systems are developed in accordance with what the users need, it is more likely that the majority of the organizations will adopt and implement the ICT systems fully. This will enhance the possibility of having one system across all organizations. The initiation phase should be explored in order to prevent technological solutions being developed that aren't in accordance to the actual technological needs.

Additionally, further research on how the organizations could potentially strive for a common and standardized way of operating should be prioritized. The findings in this thesis suggest that ICT systems will not provide the humanitarian actors with what is needed until they can agree upon a common and standardized way of operation. If humanitarian actors at the strategic level can develop a set of common operational standards, the ICT systems have an increased possibility of fulfilling its purpose.

The beneficiaries of the humanitarian response should be able to identify their own needs. Therefore, further research about how ICT systems could be adapted in ways that enable the beneficiaries to do this should be conducted. During the data collection period, several informants stressed the effects ICT systems had on human interaction. It is therefore significant to examine how the aid delivered through technology is replacing human contact: how this influences the beneficiaries with respect to the need for empathy and human sympathy when living in unsecure living conditions.

As the humanitarian response in Lebanon is working through SWG, further research should be conducted in a context where the Cluster approach is implemented and practiced, in order to see if the information management through ICT systems have an increased possibility of providing reliability through the Cluster structure. Especially in a humanitarian emergency where ActivityInfo and RAIS is implemented as official ICT systems.

References

Aase, T. H. (1991). Conditions for Sustainable Technology Transfer. . *In: Noras (Ed.). Technology Transfer to Developing Countries, Oslo.*

Adinolfi, C., Bassiouni, D. S., Williams, H. R., & Lauritzen, H. F. (2005). Humanitarian Response Review

Altay, N., & Labonte, M. (2014). Challenges in humanitarian information management and exchange: evidence from Haiti. *Disasters., 38*(1), 50-72.

Altay, N., & Pal, R. (2014). Information Diffusion among Agents: Implications for Humanitarian Operations. *Production and Operations Managment, 23*(6), 1015-1027.

Blaikie, N. (2010). *Designing Social Resarch* (2nd ed.). Cambridge Polity Press.

COE. (2004). A new strategy for social cohesion: Council of Europe. European Commitee for Social Cohesion.

Coombs, W. T. (2015). *Ongoing crisis communication: planning, managing, and responding*. Los Angeles: Sage.

Crisp, J., Garras, G., McAvoy, J., Schenkenberg, E., Spiegel, P., & Voon, F. (2013). From slow boil to breaking point: A real-time evaluation of UNHCR's respnse to the Syrian refugee emergency. . In UNHCR (Ed.). Geneva: Policy Development and Evaluation Service

Danemark, B. (1997). *Generalisering, vetenskapeliga slutledningar och modeller för förklarande samhällsvetenskap*. Lund: Studentlitteratur.

Dixon, N. M. (1994). *The Organizational Learning Cycle - How we can Learn Collectively*. London: McGraw-Hill.

Ergun, Ö., Gui, L., Stamm, J. L. S., Keskinocak, P., & Swann, J. (2014). Improving Humanitarian Operations through Technology-Enabled Collaboration. *Production and Operations Managment, 23*(6), 1002-1014.

Fangen, K. (2004). *Deltagende observasjon*. Bergen: Fagbokforlaget.

Gerwin, D. (1988). A Theory of Innovation Process for Computer-Aided Manufacturing Technology. . *IEEE Transaction in Engineering Management, 35*(2), 90-100.

Haddow, G. D., Bullock, J. A., & Coppola, D. P. (2011). *Introduction to Emergency Managment* (4th ed.). USA: Elsevier.

Hannan, M. T., & Freeman, J. (1984). Strucutural inertia and organizational change. *American Sociological Review, 49*, 149-164.

Heinzelman, J., & Waters, C. (2010). Crowdsourcing Crisis Information in Disaster Affected Haiti. United States: United States Institute of Peace.

Henckaerts, J. M., & Doswald-Beck, L. (2005). *Customary International Humanitarian Law.* (Vol. 1). New York: Cambridge University Press.

HHI. (2011). Disaster Relief 2.0: The Future of Information Sharing in Humanitarian Emergencies. Washington D.C and Berkshire UK: Harvard Humanitarian Initiative, UN Foundation & Vodafone Foundation Technology Partnership, 2011.

Hilhorst, D. (2005). Dead letter or living document? Ten years of the Code of Conduct for disaster relief. *Disasters, 29* (4), 351-369.

Huesmann, S. (2006). Information sharing across multiple humanitarian organizatons - a web-based information exchange platform for project reporting. *Information Technology and Management, 7*(4), 277-291.

Høgestøl, K. E. (2014). *Sosiale medier - et verktøy i kommunal krisehåndtering? .* (MSc), University of Stavanger, Stavanger.

IASC. (1994). *IASC Working Paper on Definition of Complex Emergencies*. New York: IASC.

ICVA. (s.a). Humanitarian Coordination. Retrieved 18/03, 2015, from https://icvanetwork.org/humanitarian-coordination

IFRC. (2013). World Disaster Report. Focus on technology and the future of humanitarian action. Lyon, Paris: International Federation of Red Cross and Red Crescent Societies.

Josselson, R. (2013). *Interviewing for qualitative inquiry: a relational approach*. New York: Guilford Press.

Karlsrud, J., Jumbert, M. G., & Sandvik, K. B. (2014). Ny humanitær teknologi - en kritisk forskningsagenda. *Internasjonal politikk, 02*, 224-233.

Kruke, B. I. (2009). Distrust in emergency management: the impact and reduced information-exchange. *Journal of Emergency Management, 7*(2), 19-37.

Kruke, B. I. (2010). *Complicated Coordination in a Complex Emergency.* (PhD), University of Stavanger, Stavanger.

Kruke, B. I., & Olsen, O. E. (2005). Reliability-seeking in complex emergencies. *Int. J. Emergency Managment, 2*(4).

Kruke, B. I., & Olsen, O. E. (2011). Knowledge creation and reliable decision-making in complex emergencies *Disasters Overseas Development Institute, 36(2)*, 212-232.

LCRP. (2015). *Lebanon Crisis Response Plan 2015-16*. Retrieved from http://webcache.googleusercontent.com/search?q=cache:QzpFYeh-ej4J:data.unhcr.org/syrianrefugees/download.php%3Fid%3D7722+&cd=2&hl=no&ct=clnk&gl=no.

Leerand, D. (2014). Jabhat al-Nusra: Store norske leksikon.

Leerand, D. (2015). Den Islamske stat. Store norske leksikon.

LonelyPlanet. (s.a). Map of Lebanon. from http://www.lonelyplanet.com/maps/middle-east/lebanon/

Mørk, N. (2014). Sosiale medier og humanitært arbeid: En god løsning på feil problem. *Internasjonal politikk, 72*(2).

Neuman, W. L. (2006). *Social Research Methods: Qualitative and Quantitative Approaches* (6th ed.). Boston: Pearson International Edition

Neuman, W. L. (2014). *Understanding Research* (1st Ed.). London Pearson New International Edition

Ngang, B. J., & Kuo, B. C. (2010). *The use of Information and Communication Technology in natural disaster managment.* (Msc), Jönköping University Jönköping.

NRC. (2015). NRCs programmes in Syria Retrieved 09.06, 2015, from http://www.nrc.no/?aid=9147821#.VXQ3z2TtmkoUNHCR

Olsen, O. E., & Lindøe, P. H. (2009). Risk on the ramble: The international transfer of risk and vulnerability. *Safety Science, 47*, 743-755.

Olsen, O. E., & Scharffscher, K. S. (2004). Rape in Refugee Camps as Organizational Failures. *International Journal of Human Rights, 8*(4), 377-397.

Orlikowski, W. J. (1992). The Duality of Technology: Rethinking the Concept of Technology in Organizations. *Organizational Science, 3*(3), 398-428.

Pidgeon, N. F., & O'Leary, M. (2000). Man -made disasters: why technology and organizations (sometimes) fail. *Safety Science, 34*(1-3), 15-30.

Punch, K. F. (2005). *Introduction to social research : quantitative and qualitative approaches* (2nd ed.). London: Sage Publication.

Quarantelli, E. L. (1997). Problematic aspects of the information/communication revolution for disaster planning and research: ten non-technical issues and questions. . *Disaster Prevention ans Management, 6*(2), 94-106.

Ranum, L., & Andersen, L. B. (2014). *Krise - alle mann på Twitter! Et studie av politidistrikt i Norge og deres anvendelse av Twitter som krisekommunikasjonsverktøy.* (MSc), University of Stavanger, Stavanger.

Rasmussen, J. (1997). Risk management in a dynamic society: A modelling problem. *Safety Science, 27*(2/3), 183-213.

Reason, J. (1997). *Managing the Risk of Organizational Accidents.* . Ashgate: Aldershot.

Repstad, P. (1993). *Mellom nærhet og distanse. Kvalitative metoder i samfunnsfag.* . Oslo: Universitetsforlagets metodebibliotek

Riis, O. (2005). *Samfunnsvidenskab i Praksis: Introduktion til anvendt metode.* . København: Hans Reitzel Forlag.

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: The Free Press.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: The Free Press.

Rosness, R., Guttormsen, G., Steiro, T., Tinmannsvik, R. K., & Ivonne, A. H. (2002). Organisational Accidents and Resilient Organisations. Five Perspectives. *Trondheim SINTEF report STF38A*.

Rossman, G. B., & Rallis, S. F. (1998). *Learning in the field : an introduction to qualitative research*. Thousand Oaks, California: Sage.

Rouse, M. (s.a). ICT (Information And Communication Technologies) Definition from http://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies

RRP. (2014). *Syria Regional Response Plan. Lebanon.* UNCHR: Retrieved from http://www.unhcr.org/syriarrp6/docs/syria-rrp6-lebanon-response-plan.pdf.

Saab, D. J., Tapia, A., Maitland, C., Maldonado, E., & Tchouakeu, L. N. (2013). Inter-organizational Coordination in the Wild: Trust Building and Collaboration Among

Field-Level ICT Workers in Humanitarian Relief Organizations. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations., 24*(1), 194-213.

Samaha, N. (2015, 29.01). Hezbollah-Israel: No war for now. *AlJazeera*. Retrieved from http://www.aljazeera.com/news/2015/01/hezbollah-israel-war-150129111503611.html

Sandvik, K. B., Gabrielsen, M., Kalsrud, J., & Kaumann, M. (2014). Humanitarian technology: a critical research agenda. *International Review of the Red Cross*.

Schön, D., A. (1967). *Technology and change: The New Heraclitus*. New York Delacorte Press.

Seeger, M. W., & Sellnow, T. L. (2013). *Foundations in Communication Theory: Theorizing Crisis Communication*. Somerset, NJ. USA: John Wiley & Sons.

Simon, H. (1957). *Administrative Behavior*. New York: The Free Press.

Skretteberg, R., & Lindstad, M. (2014). Alt om mennesker på flukt verden over. In J. Egeland (Ed.), *Flyktningregnskapet*.

Temple, B., & Rosalind, E. (2002). Interpreter/ translator and cross-language research: Reflexivity and border crossings. *International Journal of Qualitative Methods, 1*(2), 1-22.

TheDailyStar. (2014, 08.09). Chaos, kidnappings spread in Bekaa Valley. *The Daily Star*. Retrieved from http://www.dailystar.com.lb/News/Lebanon-News/2014/Sep-08/269940-lebanese-army-detains-two-over-kidnapping-of-arsal-residents.ashx

TheSphereProject. (2011). Humanitarian Charter and Minimun Standards in Humanitarian Response. from http://www.spherehandbook.org/en/copyright/

Thompson, J. D. (1967). *Organizations in Action*. New York McGraw-Hill.

Turner, B. A. (1976). The Organizational and Interorganizational Development of Disasters. *Administrative Science Quarterly, 21*(3), 378-397.

Turner, B. A., & Pidgeon, N. F. (1997). *Man-Made Disasters* (2nd ed.). Oxford: Butterworth Heinmann.

Tveit, O. K. (2011). *Libanon farvel. Israels første nederlag.* Oslo: Aschehoug.

UN-OCHA. (2012). Humanitarism in the Network Age. Including World Humanitarian Data and Trends 2012. *OCHA policy and Studies Series 2012.*

UN-OCHA. (s.a-a). Information Management Retrieved 01.06, 2015, from http://www.unocha.org/what-we-do/information-management/overview

UN-OCHA. (s.a-b). Leadership. Retrieved 07.06, 2015, from http://www.unocha.org/what-we-do/coordination/leadership/overview

UN-OCHA. (s.a-c). Who does what? . Retrieved 07.06, 2015, from https://www.humanitarianresponse.info/en/about-clusters/who-does-what

UN-OCHA. (s.a-d). Who We Are. Retrieved 04.06, 2015, from http://www.unocha.org/about-us/who-we-are

UNHCR. (2013a). Managment response to the recommendations of " From slow boil to breaking point" - A real-time evalution of UNHCR's reponse to the syrian refugee crisis

UNHCR. (2013b). Note on the mandate of the High Commissioner for Refugees and his office. from http://www.unhcr.org/526a22cb6.html

UNHCR. (2015). 2015 UNHCR country operations profile - Lebanon. . from http://www.unhcr.org/pages/49e486676.html

UNHCR. (s.a-a). Emergency Information Management Toolkit. Retrieved 09.06, 2015, from http://data.unhcr.org/imtoolkit/pages/view/overview-and-function/lang:eng

UNHCR. (s.a-b). Syria Regional Refugee Response. Inter-agency Information Sharing Portal. Retrieved 01.05.2015, from UNHCR http://data.unhcr.org/syrianrefugees/regional.php

UNRWA. (s.a). Palestine Refugees. Retrieved 08.06, 2015, from http://www.unrwa.org/palestine-refugees

Veil, S. R., Buehner, T., & Palenchar, M. J. (2011). A Work-In-Process Literature Review: Incorporating Social Media in Risk and Crisis Communication *Journal of Contigencies & Crisis Management, 19*(2), 110-122.

Weick, K. E. (2001). *Making Sense of the Organization*. Malden: Blackwell Publishing.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (1999). Organizing for high reliability: processes of collective mindfulness. *Research in Organizational Behavior, 21*, 81-123.

Wildavsky, A. (1991). *Searching for Safety* New Brunswick, USA: Transaction Publishers.

Wohlstetter, R. (1957). *Pearl Harbor: Warning and Decision* California: Stanford University Press.

Yin, R. K. (2003). *Case Study Research: Design and Methods* (3rd ed.). Thousand Oaks, CA.: Sage Publisher.

Yin, R. K. (2014). *Case Study Research. Design and Methods.* (5th ed.). Thousand Oaks, CA.: Sage Publisher.

Åsveen, G. (2014). *Crowd Innovations. A study of the introduction of innovations for a larger involvement of beneficiary communities in emergency aid and response.* (Msc), University of Stavanger, Stavanger.

Appendix A – Interview guide

Interview guide national level - UN, INGO, NGO.

Organization:	Date:
Background:	Age:
Position:	Gender:

COORDINATION AND INFORMATION SHARING

1) How is your sector structured, and what is your part within this sector?

2) Who do you co-operate with within you sector?

3) What information is shared on your coordination meetings?

4) What is your view of the information sharing within you sector?

5) If people don't share information, what do you think the reason is for not sharing?

TECHNOLOGICAL SYSTEMS

6) Do you use ActivityInfo?
If yes- what is the value of the information shared here for your organization?
If yes- does ActivityInfo influence the coordination between agencies?
If no- why not?

7) Have you heard about UNDPs program Atlas?
If yes- are you going to use it?
If no- why not?

8) What type of technology solutions can contribute to better coordination between agencies?

9) Do you think it is possible to have one national technological program for coordination?
And what is needed for this to be possible?

10) What challenges exist when using technology within coordination?

11) Do you use other types of technology for inter-agency coordination?
If yes- does it contribute to better information sharing?

12) What are the benefits and challenges with using technology to share information and manage coordination?

13) What is your view of not having cluster approach here in Lebanon, and what do you think is the main difference between clusters and sectors?

14) What are your main concerns regarding the humanitarian response in Lebanon?

Interview guide for national level – MoSA

Organization:	Date:
Background:	Age:
Position:	Gender:

1) Can you short tell us about the Ministry of Social Affairs?

2) What are your concerns about the situation in Lebanon now?

3) What is the UN agencies position in the current situation in Lebanon?

INFORMATION SHARING AND COORDINATION

4) How do you co-operate with the UN in practice?

5) Do you co-operate with the NGOs and INGOs?

6) Are you familiar with UNHCR's ActivityInfo?

7) What is your role in the UNDP's new program of MRP and financial tracking?

8) Do you apply to technological systems for information sharing and coordination in this response?

9) Who do you identify as the main actors in this response?

10) What challenges are you facing within coordination in the humanitarian response?

11) What kind of information do you receive from other key actors in the response?

12) Do you feel included by the UN in the response mechanism?

13) What sectors do you co-lead?

14) What are your thoughts of coordination meetings here?

15) How would you classify the information sharing between you and the UN, INGOs, NGOs and municipalities?

Interview guide for field level – field officers, MoSA

Organization:	Date:
Background:	Age:
Position:	Gender:

1) What is your position and role in MoSA?

2) What is your position in the response?

INFORMATION SHARING AND COORDINATION

3) How is the coordination structure at field level?

4) What challenges do you meet in the field?

5) What are your thoughts of the new response plan 2015-16?

6) How do you co-operate with the UN, INGOs and NGOs?

7) What are your thoughts on the assessments done by humanitarian organizations?

8) What are your concerns here in the field?

9) Do you work with the IM and focal points from the humanitarian organizations?

10) Do you attend any official meetings in the response?

11) What are your thoughts on the information sharing in the field?

TECHNOLOGICAL SYSTEMS

12) What technological systems do you use?

13) Have you heard of UNHCR's ActivityInfo, and are you using it?

14) Have you heard about UNDP's new program Atlas?

15) Do you report to the UN?

16) What kind of technology are you in the field need of?

Appendix B - List of informants

No.	Organization	Description
1	UNHCR	Information manager
2	UNHCR	Information manager
3	UNHCR	Distribution worker
4	UNHCR	Sector lead
5	UNHCR	Sector lead
6	UNHCR	Sector lead
7	UN agency	Sector lead
8	UN agency	Information manager
9	UN agency	Information manager
10	UN agency	Head of office
11	UN agency	Head of office
12	UN agency	Humanitarian affairs officer
13	INGO	Legal advisor
14	INGO	Information manager
15	INGO	Information manager
16	INGO	Information manager
17	INGO	Information manager
18	INGO	Information manager
19	INGO	Information manager
20	INGO	Information manager
21	INGO	Country director
22	INGO	Country director
23	INGO	Country director
24	INGO	Country coordinator
25	INGO	Field worker
26	INGO	Field worker
27	INGO	Field worker
28	INGO	Field worker
29	INGO	Field worker
30	INGO	Project quality coordinator
31	INGO technological tools	Country director
32	NGO	Country director
33	NGO	Country director
34	NGO	Country coordinator
35	NGO	Refugee field worker
36	NGO	Refugee field worker
37	NGO	Field worker
38	NGO	Field worker
39	NGO	Field worker
40	NGO	Field worker
41	NGO	Information manager field
42	NGO	Program implementer
43	NGO	Program implementer
44	NGO	Unit coordinator

45	NGO	Doctor
46	NGO	Program coordinator field
47	NGO	Program coordinator field
48	MoSA	Director general in charge
49	MoSA	Focal point field
50	MoSA	Field coordinator
51	MoSA	Field coordinator
52	MoSA	Field worker
53	MoSA	Field worker
54	MoSA	Field worker
56	Municipality	Mayor
57	Municipality	Mayor
58	Norwegian company	Lawyer
59	Provider of ICT tools	Developer
60	Refugee	Camp leader
61	Refugee	Camp leader
62	Refugee	Male
63	Refugee	Male
64	Refugee	Female
65	Refugee	Female
66	Refugee	Female
67	Refugee	Female
68	Refugee	Female
69	Refugee	Female
70	Refugee	Female
71	Refugee	Female
72	Local population	Military general
73	Local population	University professor
74	Local population	Store manager
75	Local population	Taxi driver for INGOs
76	Local population	Hezbollah soldier
77	Local population	Hezbollah soldier
78	UNIFIL	Previous UNIFIL soldier