Evaluating how intensive Information and Communication Technology courses can help bridge the Gender Digital Divide

Sofia Sundbom and Zoë Wyon

HELP to HELP

Evaluating how intensive Information and
Communication Technology courses can help bridge the
Gender Digital Divide

A case study on Tanzanian urban women

Abstract

Inclusion in the digital society can lead to improved communication and access to information which increases informed decision making and productivity for individuals and businesses. In turn, this has a positive effect on the socio-economic development of a country. Worldwide, more women than men lack the knowledge of, and access to, Information and Communication Technologies (ICT) such as computers and access to Internet. This occurrence is known as the Gender Digital Divide. Africa stands out as the continent with the largest regional gender gaps. There is no single solution found to tackle this problem and this thesis aimed to investigate if, and how, an intensive course for female university students or newly graduated students in Tanzania could be part of the solution. The study also aimed to explore which challenges and objectives the women pursuing ICT education had.

The approach was a case study on an intensive computer course arranged by the Swedish-Tanzanian NGO Help to Help. The study consisted of a profound literature review, a questionnaire, several qualitative interviews and observations in order to triangulate the findings.

The major objective for the studied women was to increase their ICT skills in order to be more competitive in the labour market. The most prominent challenge was finding time to practice or deepen their ICT knowledge due to other responsibilities such as domestic work. The women also encountered the gender norms of Tanzanian society where information technology and computers were viewed as a male area and was not encouraged for women. The major impact areas identified for former participants of the intensive course were, acquired ICT knowledge and skills, increased confidence, inclusion in an ICT network, and increased employability. A framework based on previous ICT research together with the findings from this case study was iterated and are presented in this thesis. The framework is suggested to be used to evaluate long-term impact of similar educational programs within ICT in low-income countries. The findings contribute to theory by filling the gap in literature on how the Gender Digital Divide manifests in Tanzania for urban women. The study primarily shows how intensive courses can help bridge the Gender Digital Divide and suggests a framework to decide the impact level of such initiatives.

Keywords: Gender Digital Divide, Information and Communication Technology, Evaluation, Evaluation Framework, Tanzania

Sammanfattning

Att inkluderas i det digitala samhället kan leda till förbättrad kommunikation och tillgång till information vilket i sin tur ökar antalet informerade beslut och ökar produktivitet både för individer och näringsliv. Detta har visat sig ha en positiv effekt på ett lands socio-ekonomiska utveckling. Globalt sett har färre kvinnor än män kunskap om och tillgång till informations- och kommunikationsteknologier som datorer och tillgång till internet. Detta problem benämns på engelska som "the Gender Digital Divide" (GDD). Afrika är den kontinent med de största regionala könsskillnaderna i detta avseende. En entydig lösning på detta problem har inte identifierats av tidigare forskning och detta examensarbete ämnade att undersöka om och i så fall hur en intensivkurs för universitetsstuderande och nyexaminerade kvinnor i Tanzania kunde vara en del av lösningen. Studien avsåg också att identifiera vilka mål och utmaningar kvinnor som gått kursen hade.

Metodiken i denna studie var en fallstudie av en intensivkurs i grundläggande datakunskap tillhandahållen av den svensk-tanzaniska välgörenhetsorganisationen Help to Help. Datainsamlingen bestod av en utförlig litteraturstudie, en enkät, flertalet djupintervjuer och observationer för att triangulera resultatet.

Kvinnornas största mål med att gå kursen var att öka deras datakunskap för att bli mer attraktiva på arbetsmarknaden. Deras största utmaning var att hitta tid att öva eller fördjupa sina datakunskaper på grund av andra åtaganden och hushållsansvar. De mötte även motstånd i de könsnormer som fanns i det tanzaniska samhälle där modern informationsteknologi och datorer ansågs vara ett manligt område som inte uppmuntrades för kvinnor. De största effekterna av att gå kursen var, utöver ökade datakunskaper, ökat självförtroende, inkludering i ett nätverk av datakunniga, samt ökad anställbarhet. Ett ramverk av de möjliga områden som en datakurs kan påverka itereras och presenteras i examensarbetet. Detta ramverk föreslås kunna användas för att utvärdera långsiktig påverkansgrad av liknande initiativ för att öka datakunskap i låginkomstländer. Resultatens bidrag till kunskapsbasen är påvisandet av hur GDD framträder för tanzaniska urbana kvinnor. Studien visar främst på hur intensivkurser i datakunskap bidrar till att minska GDD och ger förslag på hur effekten av dessa kurser kan utvärderas.

Nyckelord: Gender Digital Divide, Utvärdering, Utvärderingsramverk, Informations- och kommunikationsteknologier, Tanzania

Acknowledgments

Table of contents

VI

List of Figures

List of Tables

List of acronyms and abbreviations

ICT	information and communication technology
GDD	gender digital divide
MS	Microsoft
NGO	non-governmental organisation
SSA	Sub-Saharan Africa
TGEE	Technology for Gender Empowerment and Employability

1 INTRODUCTION

This chapter aims to introduce the topic of the master thesis by stating the relevant background information and the issue of study. Furthermore, the research questions and delimitations are presented.

1.1 BACKGROUND

The UN global goals include visions such as gender equality, economic growth, reduced inequalities and quality education for all citizens of the world. One major aspect to success in achieving these particular goals is the access to and knowledge of how to use Information and Communication Technologies (ICT), (The Global Goals, 2015). However, there are several obstacles to overcome when spreading ICT access and knowledge to everyone in the world. One approach to attempting to solve this problem is through intensive ICT courses in low-income countries. This thesis aimed to investigate the impact of such courses through a case study on an ICT boot camp arranged by the charity organisation Help to Help in Tanzania.

1.1.1 The Gender Digital Divide

ICT is defined as the use of computers (and similar electronic equipment) to collect, send and store information, (Cambridge Business English Dictionary, 2019). The socio-economic development in a country has been shown to relate to the use of ICT among its citizens, (Wamala, 2012). Having access to a computer and the knowledge to use it do not only improve contact with your surroundings locally and globally but can also provide important information which can lead to increased productivity of work and informed decision making, (Huyer & Carr, 2002). However, there is a difference in knowledge of ICT between men and women at the same income level, (Singh, 2017). This occurrence is referred to as *the Gender Digital Divide* (GDD). In 2017, the gender gap of Internet use was largest in low-income countries and Africa stood out as the continent with the largest regional gender gap, (International Telecommunication Union [ITU], 2017).

With an increasing digital divide, the disadvantages already existing for many people may be reinforced and result in complications on several levels. The lack of access to ICT may obstruct individuals from getting access to the labour market, social networks and learning opportunities. Not only will the lack of access lead to the tangible effects already mentioned but perhaps more importantly, the lack of confidence to learn as technologies evolve, (Organisation for Economic Co-operation and Development [OECD], 2000).

1.1.2 Skills gap

An emerging problem in low-income countries is the discrepancy between graduated students' skill set and employers' view of suitable candidates. The gap between a worker's skill set and the employer's requirements results in potentially lost opportunities and induce a constraint on development for both the company, the unemployed workforce and the community as a whole. Even a university degree does not guarantee employability since the institution is often unable to support the student within the demanded skills, (Deutsche Investitions- und Entwicklungsgesellschaft [DEG] & The Boston Consulting Group [BCG], 2016).

The skills gap concerns both hard and soft skills. Hard skills, such as the ability to operate machinery or technological knowledge and soft skills, such as creativeness, communication and teamwork are both required in order to qualify for a job, (DEG & BCG, 2016). Moreover, digitalisation has changed the way teams work together within an organisation by integrating the use of internal platforms to access knowledge and tasks, into the daily work routines. The introduction and use of such tools will therefore result in hard skills, such as ICT knowledge, becoming a requirement in itself and to some extent a necessity to be able to apply soft skills, (Khan & Forshaw, 2017).

The importance of closing the skills gap is great but with benefits usually only visible after a long period of time and with costs which are both tangible and visible from the start, it might be difficult for companies to prioritize, (DEG & BCG, 2016).

Beyond bridging the skills gap in general, it is especially important to prepare the new and existing workforce for the consequences when workplaces become digital. In order to be included in the digital economy, the workforce needs to learn and/or improve their digital literacy, self-efficacy to use digital knowledge, ability to use professional tools and programs, awareness of data sources, collaboration, creativity, motivation to learn and receptiveness to change, (Khan & Forshaw, 2017).

1.1.3 **Help to Help**

This thesis was conducted in collaboration with the charity organisation Help to Help. Help to Help is a crowdfunding platform launched in 2014 where private and corporate donors can contribute to school fees for young individuals in Tanzania, Kenya and Uganda who wish to pursue a university degree. Help to Help's approach focuses on the power of educating a population to help themselves rather than contributing with external expertise during a limited time, like many traditional charities and humanitarian organisations do. They have shown that 80% of graduated students sponsored by Help to Help increase their family income and 60% of them reimburse at least one sibling's education. Help to Help have thus far funded university educations for 208 Tanzanian, Ugandan and Kenyan students in the ages of 18-30 years, (Help to Help, 2019a).

Help to Help sponsor university education within the fields of social science, business, educational science, engineering, natural science and medicine and health. In addition to covering the selected students' university fees, they arrange training programs for them and provide access to a network of future employers, (Help to Help, 2019b). In Tanzania, Help to Help have initiated an additional project called Technology for Gender Empowerment and Employability (TGEE), described further in section 4.1.1 on page 31, which is the focus of the case study.

1.1.4 **Issue of study**

As a way of evaluating the TGEE project and in order to develop their work further, Help to Help initiated this study in collaboration with the authors. Help to Help saw an emerging need to evaluate the lasting effects of their intensive ICT course held in Tanzania. The organisation had a great interest in identifying these effects to be able to demonstrate the impact on participants to donors and to improve the TGEE project further.

The identification of the impact can in a greater perspective contribute to academic evidence on the importance of why governments and organisations should invest in educating women in ICT. Changes on a governmental level have a huge impact but take a lot of time. Therefore, projects by organisations such as Help to Help could speed up the change on an individual level and can also inspire and push for systematic change if their impact is sufficient.

It has also been shown that local NGOs have a unique advantage, compared to governments and global NGOs, in providing educational opportunities to

3

disadvantaged groups and by that make them available to the job market. This is due to the ability of being able to, in a greater extent, adapt or adjust the program to diverse groups and changing demands in order to provide lifelong learning for free or at an affordable price, (Garrido, Sullivan & Gordon, 2010).

As in the rest of the world, ICT is an important tool for development and for a country like Tanzania, where two thirds of the population live below the poverty line, a sustainable development needs to be high on the agenda in order to increase the living standards for the population, (The Swedish Institute of International Affairs, 2018). The Tanzanian Ministry for Work, Communication and Transports (2016) stated in a policy that without ICT, a maximal future development will not be possible.

In a broader perspective, a well-known fact in social studies is that a country receives several societal advantages when the women are educated. A report made by the UNESCO Institute for Statistics (UIS) and the United Nations International Children's Emergency Fund (UNICEF) 2015 showed how educating women resulted in higher economic growth and more productive farming which decreased malnutrition. Wamala (2012) has particularly pointed out that ICT training among women can strengthen both the socio-economic development and the gender equality in low-income countries. A result of the training is the increased use of Internet for the participating women which leads to increased awareness and an easier way to communicate with others.

There is a need to prove whether succinct educational efforts have a lasting impact on the participating women and the community as a whole. However, a suitable framework for measuring this effect in this specific setting could not be found in previous research.

1.2 PURPOSE

The purpose of this master thesis was to evaluate the effects of intensive ICT courses for women in Tanzania. Further, this study aimed to create and test a suitable evaluation method for such courses.

1.2.1 **Research questions**

1. What are the objectives and challenges for women pursuing ICT knowledge in Tanzania?
2. How can one evaluate lasting effects of an ICT educational program?
3. Which are the effects of ICT educational programs in Tanzania?

1.3 DELIMITATIONS

i) The study focuses primarily on urban women.

ii) The study focuses on activities for individuals, not corporations or governments and thus mainly the impact on individuals will be addressed.

iii) The ICTs which are included in the study are mainly basic computer programs and access to internet.

2 METHODOLOGY

This chapter aims to describe the methodology that was used in order to give transparency to the work process of the thesis. The research strategy is discussed, and the research design is stated. The data collection section states the relevant methodological theory that has been used in this study. The last sections account for the ethical aspects and the credibility of the research.

2.1 RESEARCH STRATEGY

This section describes the chosen research and methodological approach of this study.

2.1.1 Research approach

The two main approaches to research are quantitative and/or qualitative research. Quantitative research often uses statistical analysis to study a specific set of variables and test a hypothesis, (Denscombe, 2017). Qualitative research focuses on non-numerical data and the analysis is interpretive and situational, (Stake 2010). A hybrid of the two research approaches can be successful if used in such cases where triangulation is needed to validate new measures, (Edmondson & McManus 2007). Triangulation is a form of mixed method approach where the research topic is viewed from several perspectives in order to get a more complete understanding. One can use methodological triangulation to contrast findings made from different methods as well as data triangulation to check validity through different sources of information, (Denscombe, 2017).

There are three logical reasoning forms a research can take; deductive, inductive and abductive. Deductive reasoning begins with a hypothesised rule and follow a test to arrive at either falsifying or demonstrating the rule. Inductive reasoning starts with several given cases and examine their implied result to find a generalized rule. Abduction on the other hand, starts with consequences and constructs reason afterwards, (Timmermans & Tavory, 2012).

A qualitative research approach has mainly been used for this master thesis since the analysis has been done with a holistic perspective and with open research questions. There was limited previous research within this specific setting which led to triangulation of the qualitative data supported by some quantitative data. This thesis used a mixed methods approach using literature reviews, questionnaires, interviews and observations to triangulate the conclusions made. Therefore, both methodological and data triangulation were used in this thesis. This study used abductive logical reasoning since the study seeks a situational fit between observed facts and rules, which is one of the key aspects of the abductive reasoning according to Timmermans & Tavory (2012).

2.1.2 Methodological approach

The nature of this thesis was mainly exploratory since it aimed to understand a subject in a deeper sense, which is the key attribute of exploratory research, (Höst, Regnell & Runeson, 2006). The area of succinct ICT education for women in Tanzania is an emerging field of knowledge with limited previous research done.

2.2 RESEARCH DESIGN

The research strategy chosen for this thesis is a case study, since the aim of the study is to understand how a complex number of factors affect each other in a specific societal setting, (Denscombe, 2017). When the research questions are "how" or "why" questions, a case study, experiment or historic research strategy is suitable. Since the nature of the study is contemporary, and relevant behaviours cannot be manipulated and a variety of methods preferably can be used, the case study is the preferred method, (Yin, 2009).

The overall work process framework used in this study was the Hennink, Hutter, & Bailey (2011) qualitative research cycle, as the three iterative cycles were compatible with conducting a case study. The three cycles are illustrated in Figure 1 below.
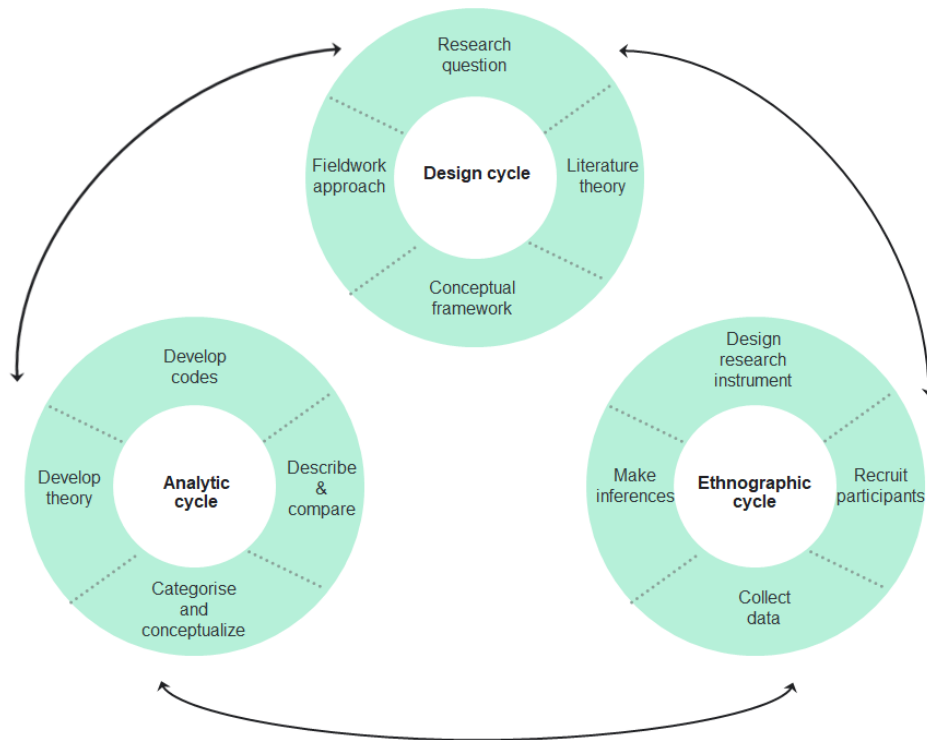
Figure 1. The qualitative research cycles

Hennink, Hutter & Bailey, 2011. Authors' illustration

2.2.1 Case study design

The case study approach is commonly used for small-scale research projects and allows a variety of data collection methods to be used. The case study is defined by its focus on only one instance and aims to go in depth rather than breadth. In order to get a holistic view of the case it is encouraged to use different types of methods for data collection and also a variety of types of data, (Denscombe, 2017).

A case study can be distinguished between an embedded or holistic approach with single or multiple case studies. The choice of which approach to choose is dependent on the research question and each of them have different advantages and disadvantages. The single-case study might be harder to generalise but has strengths regarding its possibility to test theory and analyse specific situations. The holistic approach should be chosen when no logical subunits can be found and when the theory used is itself in a holistic nature, however close attention during the research period is needed in order to identify if there is any shift in the nature of the case which makes the chosen approach inappropriate, (Yin, 2009).

8

	Single-case design	Multiple-case design
Holistic		
Embedded		

Figure 2. The chosen case study design

Adapted from Yin, 2009. Authors' illustration.

Due to the nature of the research questions and the uniqueness of the context which was investigated, a single-case design will be used, as illustrated in Figure 2. There was a lack of logical subunits and hence, a holistic approach was chosen. The data collection methods which were used were interviews, a questionnaire and observations.

2.3 DATA COLLECTION

The main part of the data collection in this study consisted of a thorough literature review and qualitative data through interviews, a questionnaire and observations. However, since part of the aim was to measure impact, some quantitative data was gathered through secondary data and a questionnaire. The methodological theory of the data collection is presented below. The practical implementation of the questionnaire, interviews and observations is described further in section 4.3 on page 37.

2.3.1 Literature review

In line with scientific methodology, one should conduct a literature review in order to get a perception of previous research done within the studied area in order to be able to further add to the body of knowledge. The literature review is an iterative process and should be continued as the study investigates deeper into the problem area, (Höst et al., 2006).

This study commenced with a literature review on the Gender Digital Divide and skills gaps in low-income countries in order to understand the problem area. Secondly, literature on scientific methodology was studied to validate the methods chosen in this study. Since the study aimed to identify a framework for ICT education impact, previous evaluation framework research as well as impact analysis research were studied. Two different frameworks created in previously published research papers looking at the effects of ICT education where found to be relevant to the case study. The two frameworks were combined by the authors in order to suit the case study of this research and to capture a holistic perspective of potential impact areas. When an appropriate framework had been created it was adapted to the thesis context and served as a part of the basis for question formulation in both the questionnaire and the interviews. When the results of this study were formulated, another literature review was conducted to further validate the results.

The sources used for the literature review were mainly found through Lund University's database LUBsearch. The keywords that have been used were primarily: Gender Digital Divide, Digital Inclusion, Evaluation of Education and ICT education. The keywords have been refined and detailed further and focus has been primarily on research on African women or countries of the same income level as Tanzania. The books, academic journals and peer-reviewed papers used in this study are mainly published by trustworthy institutions or authors. Some research articles used in the theoretical framework are several years old which can be a threat to the relevance of the results since the affected technologies discussed in this study are rapidly developing. The authors made an effort to find the most recent literature but in the cases where it could not be found in the right context, it was deemed that the literature could be used but with an understanding that the spread of the discussed ICT may have increased with time.

In the cases where facts were gathered from corporate reports or similar, the bias and commercial interest of the authors has been considered. No conclusions of this report are based on facts from commercial references. For example, industry reports by renowned consulting agencies were solely used to introduce certain background areas in this report.

2.3.2 **Secondary data**

Before conducting the data collection in this study, secondary data about the contextual aspects of this study were reviewed. Help to Help, had previously gathered data about the background of the former participants of the camp in order to choose participants from applicants. However, as Höst, Regnell and Runeson (2006) points out, when using secondary data, one must consider that the purpose of that data collection was different from the purpose of the new study. Meaning, the secondary data might be angled and does not necessarily give the whole picture. The secondary data was not used to draw any conclusions in this study, it was solely used as guidance in the beginning of the study and as an introduction to the life situation of the former participants in the ICT boot camp.

2.3.3 **Questionnaire**

The first step when conducting a questionnaire, is to determine the objective of collecting the data. Questionnaires are often used for quantification and can be used to analyse the effects of an intervention. When the objective is set, one can start designing the questions, carefully considering the design in order to obtain the most accurate result. Therefore, it is recommended to pilot test the selected questions before conducting the primary data collection as well as recognizing bias, (Slattery et al. 2011).

Another aspect to consider is the target population. Depending on the size of the target group, it might be more realistic to strive for a fair representation of the whole population instead of reaching the whole population. Measures should also be taken to minimize the loss of respondents, (Höst et al., 2006).

Ejlertsson (2005) state several aspects to consider while formulating the questions in a questionnaire. It is important that the questions are simple, concise, unambiguous, non-conductive and non-hypothetical. The response alternatives should represent exhaustive options in a symmetrical way. If one wants to measure opinions, attitudes and emotions, which is partly the objective in this study, a Likert-scale is appropriate to use. This allows the respondents to select alternatives on a five- or seven-degree scale to what extent they agree or disagree with a statement, (Höst et al., 2006).

2.3.4 **Interviews**

In qualitative research semi-structured or unstructured interview forms are appropriate. A semi-structured interview has a mix of set closed questions and open questions and the purpose is to explain or describe qualities and quantities. The order of the questions should be the same for all respondents in a semi-structured interview. Unstructured interviews use interview guides where the areas of investigation are stated but the questions are open and flexible to the respondent, meaning the order of the questions can change as well as which focus the interview has depending on the respondent's direction. The aim is to explore the respondent's perception of qualities of a certain subject, (Höst et al., 2006).

In order to make sure that the answers given in the interviews were as close to reality as possible and to enable the interviewee to give an answer to the root cause question, the five whys technique was used. The technique was used both in order to conclude why the participants had partaken in the ICT boot camp and to understand the participants' view of benefits of ICTs in their life. In order to identify the root cause of a problem, the question why is repeated five times, (Ohno, 1988). When using the technique, it is important that the interviewee provides honest and accurate answers to the questions and that the aim is to find the root cause. The latter requires ability from the researcher to be open to the answer, to facilitate the process adequately by asking the right questions and to be determinate to find the root cause, not just symptoms, (Serrat, 2017).

2.3.5 **Observations**

In order to reduce the risks related to observations, such as perception and memory, it is crucial to set up a process to do systematic observation. One way to achieve this is by making observation schedules, which enables the researchers to be more aligned and observe the same and right things. With the grounded theory approach, explained further in section 2.4, field notes should be used rather than tick-box schedules when qualitative data is observed. The field notes should be made continuously and include both context and circumstances.

One disadvantage with observations is that the observer may disturb the naturalness of the setting. To prevent this from happening, the authors participated in the boot camp in such a natural way as possible. However, one needs to consider that in order to minimize disturbances to the natural setting, the participants possibilities to give their consent are reduced. Therefore, the participant needs to be informed about the conducted research to give their consent. The strengths of the use of observations in combination with qualitative interviews is that observations record what people

actually do while interviews record what they say that they do. This aims to give a broad understanding of the information given, (Denscombe, 2017).

2.4 DATA ANALYSIS

The five stages of data analysis according to Creswell and Plano Clarke (2007) are data preparation, initial exploration, analysis of the data, presentation and display and finally validation of the data. Before the initial exploration, the data should be catalogued and protected in order to prevent any unintentional corruption and loss of data. All data, not already written down, should to be transcribed and not only the actual words said by the interviewee but also annotations such as informal comments and observations. After this process, line numbering should be added for easy identification and the transcript should also be coded, (Denscombe, 2017).

The analysis approach used in this study was the grounded theory approach, which is characterized by several aspects described by Denscombe (2017). By subsequent re-reading of the material, themes can be identified which can be documented through short memos of insights. These memos document the authors analytical thinking and are crucial in order to identify new insights and explore new possible perspectives. Codes, which need to be succinct, are then added to the raw data in order to enable links between the data and the analysis. A crucial part in this process is to identify which format the units the codes should be in and which kind of things will be coded, varying from implied meanings, use of a particular word or a type of action. When the 'unitizing' of the data is completed, codes are to be categorized and later reduced to fewer themes and thereafter placed into a hierarchy with codes and categories. During this process, codes will likely be refined and changed as a result of the use of the constant comparative method. Comparing codes with previous ones as they emerge enables the researcher to identify similarities and differences between the codes and to verify or refute working hypotheses directly instead of at the end of the project. When the iteration is done and the tree of codes and categories are determined, key concepts and insights can be identified, (Denscombe, 2017).

2.5 ETHICAL ASPECTS

In order to conduct research which was ethically correct towards all participating units during the process, several ethical aspects were taken into consideration. The core principles recommend by Denscombe (2017) guided the research work. First, it was stated that the anonymity of the questionnaire respondents and interviewees

would be granted. Secondly, it was stated which level of commitment that was required, that all participation was voluntary and that the participants at all times could withdraw from the research. This was done in order to avoid that the participants would feel obligated to answer questions or participate in the research. Thirdly, the research was conducted with scientific integrity and the researchers strived to be open and uphold the highest standards of professionalism. Last, the local laws, in this case in Tanzania, where the case study was conducted were complied with.

In order to ensure that these principles were followed, the above-mentioned principles were verbally communicated, a written consent form was used when needed, and the data was carefully taken care of. All details which could compromise the anonymity of the participants were deleted.

The consent form included the following: (Denscombe, 2017)
- Identity of the researcher
- Information about the research
- Expectations about the participant's contribution
- The right to withdraw consent
- Confidentiality and security of data
- Ownership of data
- Signature of participant and researcher

Consideration has been taken to the power position between researchers from a wealthy foreign country, Sweden, and the questionnaire and interview respondents from Tanzania. Language, choice of clothing, body language and interview physical settings were adapted to level the power positions with guidance from local employees of Help to Help.

There was also the risk of the respondents wanting to please the organisation that offered them this ICT education for free, potentially making them angle their answers and avoid criticizing or pointing out inefficiencies. In an attempt to minimize this risk, it was made clear that Help to Help would not take part of the detailed anonymous data collection. Furthermore, the authors were introduced to the respondents as external observers so as to not to be associated with Help to Help and the importance of honesty and the independence of the authors were highlighted before the interviews.

2.6 CREDIBILITY OF THE RESEARCH

It is of utmost importance that the research is credible and trustworthy in order to ensure the quality of the research and to provide the readers with enough information to evaluate the procedures that have been used and the conclusions made. The concepts which can be used to test the quality are trustworthiness, credibility, conformability and data dependability. This can be done by reviewing the validity, internal validity, external validity and reliability. Due to the nature of the study, which is exploratory, only the validity, external validity and reliability will be discussed below, (Yin, 2009). Additional to the mentioned aspects, transferability and confirmability will be added to the discussion.

In order to ensure that the study investigated the intended concepts and by that construct validity, adequate measures need to be established. The use of several sources of evidence and to have the draft report reviewed by key informants and stakeholders are two examples which construct validity, (Yin, 2009).

For external validity, the characteristics of the environment or domain where the conclusions of the study can be generalized to needs to be established and concretized, (Yin, 2009). To ensure validity one can return to the participants to validate the findings, use triangulation and also describe the fieldwork process in order to explain that the data is grounded extensively, (Denscombe, 2017).

For a study to be reliable, the same findings would be repeated if the same procedure was to be done in an environment with same characteristics. In order to ensure reliability, a case study protocol and case study database can be developed and used during the data collection phase, (Yin, 2009).

Transferability concerns how likely the findings in one setting are to be found in another, if the conclusions made are generalizable to a broader aspect. This can be an issue for especially small-scale qualitative research and Denscombe (2017) argues that the perspective should change from to what extent the findings could be generalized into to what extent the findings are likely to exist in other instances.

Confirmability refers to the extent the findings and the research procedure are independent from the researchers influence. With methods such as interviews and observations, the researcher's interpretation and perception will always affect the findings which will have consequences on the level of objectivity the findings will have. Confirmability will be strived for by being reflective, questioning each other's

perspectives and interpretations of a particular situation and by having clear and structured ways of gathering and analysing data, (Denscombe, 2017).

The results of this study were validated both by comparing with previous research on the subject and by being reviewed by both internal stakeholders at Help to Help as well as external stakeholders such as agents within the field of ICT for women in low-income countries. The findings were triangulated by theory and by using both a questionnaire and interviews as data sources. The reliability of the findings cannot be confirmed since the case study has not been repeated in another environment with the same characteristics as in Dar es Salaam because of the time and resource limitation of this master thesis. The transferability of this study's findings has been confirmed by other NGOs or organisations working with ICT for women in low-income countries. The case organisation was pleased with the results and saw several useful areas for continuing to develop and evaluate their ICT boot camp.

The authors made efforts to increase their confirmability in this study by structuring the data collection with observation schedules, interview guides and a systematic categorization of the collected data. However, the confirmability is a weakness in this study since the study is based on the authors interpretation of the collected data.

3 THEORETICAL FRAMEWORK

This chapter outlines previous research made on the Gender Digital Divide and evaluation framework creation.

3.1 GENDER DIGITAL DIVIDE

The access and knowledge of how to use ICT has been acknowledged as a primary factor to be included in the global information society and to be part of important human development, (Alozie & Akpan-Obong, 2016; Alves & Steiner, 2017; Huyer & Carr, 2002; Gigler, 2015; Wolfensohn, 2000). By not being digitally literate, important aspects such as professional development, social inclusion, freedom of expression and opinion and a continuous learning might be harder to get access to, (Lin, Tang, & Kuo, 2012). Hafkin and Huyer (2007) have shown that the use of ICT among women does not always correlate with how developed a country's internet infrastructure is, as one might assume. High-income countries, for example Norway and the UK, experience a low female Internet user rate below 50%. It has been concluded that women globally, and in low-income countries especially, to a lesser extent than men have access to or skills within ICT, (Alozie & Akpan-Obong, 2016; ITU, 2017; Singh, 2017). Despite a growing awareness of these issues, the gender gap of Internet use grows continuously. The digital area is also just one of the aspects where the inequalities of society as a whole are inflicted upon, creating an impeding environment for women, (Singh, 2017).

It is important to note that there can be a significantly large difference within a population of women in a country. It varies with ethnicity, age, education level, field of work, income, geographical location etc, (Rashid, 2016). However, when looking at women globally as one population, they are not included in the information society to the same extent as men, (Alozie & Akpan-Obong, 2016; Hafkin & Huyer, 2007; Singh, 2017).

3.1.1 **Why does a Gender Digital Divide exist?**

Alozie and Akpan-Obong (2016) have statistically proved the GDD, that men were more likely than women to own and use computer technologies, to be present in Sub-Saharan Africa (SSA). Their research implied that there were several factors to be considered when investigating the reasons behind the ICT gender gap. The most prominent factors for both men and women are their level of education, socioeconomic status, traditionalism and domesticity. The researchers argue that age, unemployment, poverty status, religion (being a Muslim) and the presence of children all had a negative effect on ICT use while education, urbanism, internet liberalization and Westernization had a positive effect.

3.1.1.1 A resource question?

In a study of 12 Latin American and 13 African countries by Hilbert (2011), it was clearly shown that women are using ICT less than men as a direct result of aspects related to employment, education and income. When these conditions were favourable for women, they were even more active users than men.

The women fall behind since they, to a larger extent, lack the resources like computers, smartphones or Internet access which is partly because of low financial power, (Alozie & Akpan-Obong, 2016; Sedoyeka, 2012). The digital literacy of women was shown to be one of many barriers for women to interact with ICTs. The gender gap is generally evident when it comes to digital literacy but there are other factors, such as ICT access, that are more prominent, (Alozie & Akpan-Obong, 2016).

Sedoyeka and Hunaiti (2008) found several perceived factors hindering the ICT development in Tanzania. The challenges were the lack of availability of service, poor or no public infrastructure, cost and lack of government policies paving way for ICT development. One of the main problems were low digital literacy, which leads to low demand for internet services and little public understanding of the benefits of ICT.

3.1.1.2 Perception of ICT

Sedoyeka (2012) also pointed towards the unwillingness of people to adapt as one major challenge in bridging the GDD. He found, while surveying Tanzanian citizens, a scepticism of technology and Internet use, as it was associated with a western way of life. However, the social aspects of connecting with your network or community through accessing the Internet privately or visiting an Internet café were viewed as positive. Macueve, Mandlate, Ginger, Gaster, and Macome (2009) saw similar tendencies among women taking computer classes in Mozambique when afterwards the women did not use the telecentre where the course was held

was due to the perception that computers were not for them and they could not see the immediate benefits of continuing to learn ICT skills.

3.1.2 **Bridging the Gender Digital Divide**

Many agree that the most important barriers are social. The access and knowledge to use technology are enablers to reach digital inclusion but will never be the sole solution to bridging the GDD, since it has complex intertwined political, socioeconomic and cultural factors affecting it, (Rashid, 2016).

Faulkner and Lie (2007) state that "there can never be a single 'cure all' strategy to improve gender inclusion in the information society - precisely because there is so much diversity and fluidity in both gender and ICTs."

3.1.2.1 Gender separation - good or bad?
Spender (1995) points out the first step in bridging the GDD as acknowledging that efforts aimed to expand human capital will have different effects on men and women. He claims that SSA women need targeted efforts since their surroundings impose an unequal view of technology. On the other hand, Sørensen, Faulkner, and Rommes (2011) argue that female targeted initiatives can sometimes reinforce technology as a masculine practice by being gender divided. Initiatives with more focus on ICT practices and less on gender, can according to them reconstruct the symbolic image of who can be a competent user of ICT. However, they also see how inclusion is a strong tool for change and state several successful female targeted ICT initiatives. The signals sent out by female targeted initiatives is still an interesting aspect that should be considered, so as to not fall victim to the same stereotypes that one is trying to break free from.

Huyer (2005) stresses the importance of creating an information society which is women-friendly. In order to achieve this, content which interests women and is customized to their local language, knowledge and cultural context should be created and education needs should be made available for women in order for them to be able to contribute to the information society. Singh (2017) confirms this and also points to a lack of relevant content, both in regard to language and subject matter, in order to help women use ICTs for income generation, advancement or education. This is in line with the views of Rashid (2016) who states that one of the most effective ways to bridge the GDD is to initiate female specific efforts such as building ICT skills and confidence at a young age, educational content designed for and by women and expanding digital education for female students. The important thing is the adaption after the social context and target group.

Furthermore, Singh (2017) points towards the importance of addressing the social and psychological barriers that discourage females of all ages from using ICTs. He also sees a need for more inspiration and interventions in order to encourage more young women to choose ICT related fields of work. Moreover, Huyer (2005) sees a need for employments within sectors where ICT is used to be promoted and increased. In addition, she states that ICT policies and regulations need to be updated to enable bridging the GDD.

3.1.2.2 Bridging on all fronts

Everyone agrees that the issue of the GDD is complex and needs a multidimensional approach to be solved, (Sedoyeka, 2012; Singh, 2017 Spender, 1995; World Summit of Information Society [WSIS], 2005). Governments are pointed out to have a major responsibility in bridging the GDD, (Alozie & Akpan-Obong, 2016; Sedoyeka, 2012; WSIS, 2005). Sedoyeka (2012) suggests that governments initiate public awareness campaigns to promote ICT and Internet use and claims that reforming public schools to focus more on ICT will have a chain effect on digital literacy since it is common to share such knowledge with one's close surroundings. This is supported by Singh (2017) who sees educational ICT efforts as a crucial grassroot solution. Furthermore, Sedoyeka (2012) suggests that governments should support local Community Centres that offer Internet cafés, computer classes and similar, to bridge the financial and digital literacy obstacles. This would also further reduce the gap between rural and urban communities.

There is a need for knowledge exchange, both on an international and regional level to distinguish between which initiatives have been successful and share information to learn from each other how to tackle the many obstacles of the GDD. This applies to both governments, organisations and corporations, (Singh, 2017).

3.1.2.3 The next step after ICT education

While investigating the impact on the digital divide between two different ICT diffusion approaches, (ii) a community technology centre for learning and (ii) giving free internet access to homes, Kvasny and Keil (2006) could see that both initiatives increased the basic digital literacy and provided needed resources or infrastructure to do so. However, neither of the two initiatives included a mechanism to take the ICT diffusion further, for example to get a technical certification, buying a computer or using the ICT knowledge to escape poverty. The initiatives did not reach the impact level to move people over the digital divide since the systemic political and economic challenges were too deeply rooted in the current communities. This is in line with the findings of Macueve et al. (2009), when they found that a challenge for rural women attending computer courses in Mozambique was the lack of follow up activities. However, in this case it was partly due to the fact that they could not afford to pay for using the telecentre where they could access computers. The researchers conclude that in order to increase the usage of ICT and empower the

women in their use of ICT, the tools and benefits must be presented in a way which emphasizes the potential benefits to their situation. They further point to improving the social-economic situation and to prioritise an increased literacy among females to be additional enablers to bridge the GDD.

Kvasny and Keil (2006) recommend creators of transformative community technology initiatives to engage with the targeted population to understand their objectives and to understand how the use of ICT in their daily life can benefit them. They further stress the importance of collaborating to find alternative solutions and the importance of localized interventions in order to achieve real change.

3.1.3 Objectives and challenges for women pursuing ICT education

This subsection introduces previous research with focus on the women expressing their purpose of using or not using ICT and what challenges they have experienced.

3.1.3.1 Objectives

When conducting interviews with female Kenyan university students taking ICT courses, Mbarika, Payton, Kvansy, and Amadi (2007) found that one major motivation for the women were the interest in ICT as a new and exciting subject. Paul, Thompson, and Heinström (2015) found that among female frequent ICT users in India, their interest has a basis in technology being encouraged from their childhood.

The women interviewed by Mbarika et al. (2007) express the job opportunities that would follow with enhanced ICT knowledge as something very positive. They stated that having ICT skills would bring them a competitive advantage since IT skills were rare among Kenyan citizens at the time, especially among women. A majority of the women saw that ICT knowledge was becoming a necessity in everyday life and also a requirement skill for professions not primarily related to IT. Several women stated the opportunity to start their own business as a motivation for ICT education.

Many women pursuing ICT education at university level express the opportunity to break gender stereotypes as appealing. The ICT education can therefore play a strategic role in female empowerment, with the important notion of ICT in itself not being the direct cause of the empowerment. However, women educated within advanced ICT in high-income countries, still struggle with the roles of women in ICT professions and have a high dropout rate due to family demands or organisational barriers, (Mbarika et al., 2007).

21

The women participating in basic ICT education are usually the ones who have realized the value it can bring to their daily life both personally and professionally. Rashid (2016) could see that women used public access ICTs to search for education and health information. More men than women used ICTs to seek information about employment opportunities. Paul et al. (2015) observed similarly that women used ICTs for getting information about work related matters, household purchases, for children's homework and family health. Other areas of use were e-shopping and communication.

Mbarika et al. (2007) state that women pursuing ICT with the purpose of escaping poverty often wish to do so for their family and invest their savings in their children. The challenge for them is their initial low economic status and often deficient level of education that can hinder them to attain and retain ICT knowledge, (Milek, Stork, & Gillwald, 2011).

Paul et al. (2015) showed that many women were appealed by the opportunity to help others through their ICT knowledge with for example information seeking. Johnson (2010) confirms this role of being able to help others as a meaningful motivator for ICT use among women. Umrani & Ghadially (2003) adds that an additional perceived benefit, apart from helping others and seeking information, is communication, mainly through emails.

3.1.3.2 Challenges

One challenge for women educated within ICT is that they still to a larger extent than men have family responsibilities hindering them to devote as much time and effort as men. This challenge is preventing women, regardless of education, to develop their ICT skills, (Geldof, 2011; Huyer, 2005; Mbarika et al. 2007; Paul et al., 2015). However, Paul et al. (2015) found that some women could use their ICT skills to support their household responsibilities and save time.

Mbarika et al. (2007) observed that many ICT skilled women underestimate their abilities and lacked the confidence to call themselves ICT experts even after pursuing a degree within computer science. The low ICT confidence among women is confirmed outside of ICT professions as well, (Geldof, 2011). In more basic ICT aspects, the use of ICT is viewed as something for boys and men and not for girls and women. This view is particularly strong in rural areas, (Geldof 2011; Obayelu & Ogunlade, 2005). This was indicated further by Paul et al. (2015) who found that the women interviewed by them lacked an ICT confidence and some even relied on their male spouse for information seeking, since they believed them to be better at it.

Many experience financial challenges as it is often expensive to take ICT courses. This is enhanced in IT since it is ever developing and one needs to update and renew one's skills and knowledge continuously, (Mbarika et al. 2007; Paul et al., 2015; Van Dijk & Hacker, 2003).

Women in ICT professions often experience the so called "glass ceiling" where very few move to managerial positions and instead stay on a clerical or data entry position, (Mbarika et al., 2007).

3.1.4 Impact of ICT access and education for women

There are several outcomes connected to increasing women's access and knowledge of ICT. ICT may not alone be the source of social and economic positive effects, but often act as an enabler. Alozie and Akpan-Obong (2016) state that bridging the GDD is not about satisfying individuals' immediate needs, such as acquiring a computer, it is more of a strategic need for women to be able to influence their own situation. In today's information society, being able to use technology for knowledge empowerment brings power. Therefore, including more women in technology can bring more women into powerful positions of decision making in both political and economic aspects. As a result of that, ICTs have become a tool for women to change their status in the community, (Alozie & Akpan-Obong, 2016; Hafkin & Huyer, 2006).

In a case study in Taiwan, the factors shown to be impacted by ICT education was learning satisfaction, computer self-efficacy, ICT usage, subjective well-being and Bourdieu's concept of social capital (explained further in section 3.4.4 on page 28). One conclusion of the study was that ICT usage did increase the women's well-being. However, in order for female learners to continue to use ICT, confidence and self-efficacy was shown to be more important than the women's learning satisfaction, (Lin et al., 2012).

3.1.4.1 Women as shapers of technology
Hafkin and Huyer (2006) point to the important shaping of socio-political, economic and development aspects through the use of technology that currently is done primarily by men. Including more women will ensure that female perspectives are influencing the way we create and use technology to a greater extent. Women will then not only be users but also shapers and policy makers of technology and the information society. However, it is important to understand that technology in itself will not diminish centuries of discrimination, (Hafkin & Huyer, 2006; Huyer, 2005; Hilbert, 2011; Mbarika et al. 2007). However, ICT does possess attributes to tackle

some root causes of inequality by making information accessible which can decrease cultural isolation.

3.1.4.2 Professional impact

Singh (2017) among others (Sharma, 2003; Umrani & Ghadially, 2003) lists increased self-confidence and the ability to make informed decisions, engage in public participation and building local and global networks as the most important social benefits of ICT. Thus, the ICT skills can be seen as a catalysator to achieve other skills and has been shown to lead to participation in environments with access to extended social networks and opportunities for self-learning, (Garrido et al., 2010).

ICT diffusion in a country has been shown to drive economic growth, (Farhadi, Ismail, & Fooladi, 2012; Hanafizadeh, Saghaei, & Hanafizadeh, 2009; Kpodar & Adrianaivo 2011). One of the economic benefits is the extended ability and freedom to choose a wider range of professions or to start an own enterprise. The effect has also been reduced poverty from creating new ways of livelihood and easier access to information.

Digital literacy is a crucial factor in order to access the workforce. An evaluation of a 40-hour ICT education for unemployed women with no or little ICT skills with the aim to increase employability and change their attitude towards technology showed that a majority of the women attending the course developed their computer literacy skills and increased their self-esteem and self-confidence on both a professional and personal level, (Ktoridou & Eteokleous-Grigoriou, 2011). Similarly, Gigler (2011) concluded that by improving ICT skills, the self-esteem of the participants increased.

3.2 SKILLS GAP

The mismatch between the skills of the university graduate and the needs of the employer is a view which exists in several countries, (Nghia, 2018; Mourshed, Patel, & Suder, 2014). In a study made in Ethiopia, especially the gap between the students' theoretical skills and the employers' requirement of practical skills stood out as a challenge. It could also be seen that while the way of working continuously develops, an even broader set of skills are required and universities can seldom provide its students with an education within the required skills with a satisfactory quality, (Yizengaw, 2018).

The term employability, rather than employment, is often used when measuring if an education has led to increased probabilities to get an employment. To achieve employment with NGO initiatives is both hard and also difficult to relate to the many factors which can lead to an employment. Employability is defined as the combination of factors and processes which may lead to an employment, remain employed and/or advance in the workplace. Meaning, individuals can increase their employability and still remain unemployed or at the same position in a workplace due to the other attributes the applicants possess or lack, (Garrido et al., 2010).

3.3 CLASSIFICATION OF ECONOMIES

The accuracy and usefulness of the classifications developing and developed countries have been questioned, (Rosling et al., 2018; Khokar, 2015). Instead of using the previously used terms which have been argued to be outdated, Rosling, Rosling and Rosling-Rönnlund (2018) suggests classifying populations depending on their daily income, as can be seen in Figure 3. The income levels are divided into four levels where level one has an income less than 2 USD per day, level two an income between 2 and 8 USD per day, level three an income between 8 and 32 USD per day and level four an income above 32 USD per day. The income is per person in dollars per day adjusted for price differences. The World Bank (2019) now categorizes countries based on their gross national income (GNI) per capita, as can be seen in Figure 4. The four types of economies are separated between low-income (less than 995 USD), lower-middle income (between 996 and 3895 USD), upper-middle income (between 3896 and 12055 USD) and high-income economies (above 12056 USD).
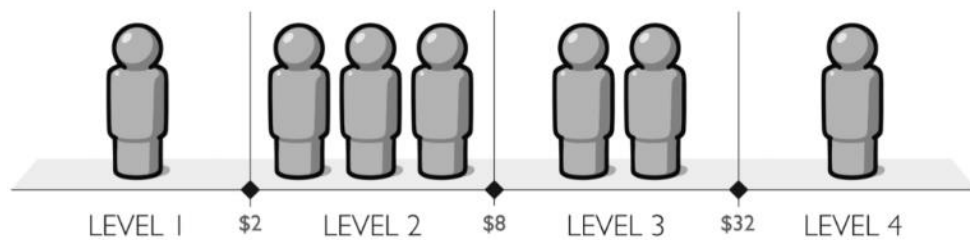
Figure 3. Rosling, Rosling & Rosling-Rönnlund's classification of income levels and global population distribution

Gapminder 2019

Figure 4. The four types of economies

World Banks' classification. Authors' illustration.

3.4 EVALUATION FRAMEWORKS

This section gives a brief introduction to the basics of educational program evaluation with both a general aspect and adapted to an ICT context.

3.4.1 Different forms of evaluation

Historically there have been two influential evaluation researchers, Scriven and Cronbach, pushing for different types of evaluation of an educational program. Scriven (1991a) viewed evaluation as determining the value or merit of the educational program under the microscope while Cronbach (1963) promoted evaluation more as an aid to decision-making. The purpose of the evaluation framework in this thesis is to measure the impact of an educational program and therefore, the view of Scriven (1991a) is the main focus.

There is also the distinction between summative and formative evaluation. Summative evaluation is giving account for the gains and losses of a program, often leading to a "go/no-go" decision, (Phillips, 2018). Formative evaluations have been judged to be a more effective way of evaluation since they can be carried out on a smaller scale with less formal design and therefore take less time and cost less. Formative evaluation is recommended while aiming to improve an educational program or deal with shortcomings, (Phillips, 2018). The evaluation carried out in this thesis is a formative evaluation since the aim is to see to what extent the objectives of Help to Help have been met as well as during the process measure which impact the educational program has had on its participants.

Phillips (2018) points to the importance of understanding the main concerns of the stakeholders of the educational program, if one wants the evaluation to be useful for

26

the constituent. Therefore, in the beginning of the evaluation, questions of who the stakeholders are, what they stand to gain or lose from the success or failure of the educational program and what the stakeholders want to know about the program should be asked.

3.4.2 Goal free evaluation

While an understanding of the creators of an education program's objectives and the intentions of their initiative is important according to Phillips (2018), Scriven (1991b) points to the risk of becoming too focused on the alleged effects to the extent that the unintended effects are overlooked. In some cases, it can be more important to evaluate what the actual effects were without the knowledge of what was intended with the program. Scriven (1991b) recommends looking at the curriculum of the educational program (not the objectives), form a hypothesis of what the effects might be and then use observation to test the hypothesis while also looking for new effects that have not been thought of by the evaluator.

3.4.3 Quality standards

The quality standards have been created by OECD (2010) in order to improve the quality of evaluations, to enable different evaluation units to more easily share learnings and insights with each other and to support partnerships in joint evaluations. The framework consists of a full evaluation process and principles to follow. However, OECD (2010) recommend that the evaluation should be adapted to the local context. Therefore, it is encouraged to remove the parts which are not feasible for the result and also add relevant parts from other frameworks.

The overarching considerations mentioned by OECD are to enhance credibility by ensuring an open and transparent evaluation process, to be mindful of language, gender roles, ability and other aspects when planning and executing the evaluation, to take the local and national context into consideration, to increase ownership of the development by involving other relevant stakeholders early in the evaluation process and lastly, to ensure a continuous quality control, for example with peer review or an advisory panel, during the evaluation process. Both consultation with and contribution from the full range of stakeholders is encouraged during the whole evaluation process, from designing to reporting.

Before executing the evaluation, the objectives and scope need to be stated. The scope includes a description of activity, target group, financial assets and other dimensions related to the development intervention which is to be evaluated. If

possible, discrepancies between the planned and actual execution of the activity should be identified. With the help of the objectives, specific evaluation questions should be formulated. Relevance, efficiency, effectiveness, impact and sustainability are five dimensions identified by the Development Assistance Committee and should according to OECD (2010) be applied in the evaluation process. However, not all five dimensions need to be used and additional ones can be added. The pre-phase includes consideration of the purpose, scope, objectives, methodology, resources and time allocated and lastly, reporting requirements.

When designing and choosing indicators for the evaluation, the purpose and construction should be carefully considered. By evaluating each indicator based on SMART criteria (specific, measurable, achievable, realistic, timely), they will be as precise as possible. The criteria aim to make sure that the indicator is clear on the desired result, regardless whether it has been achieved or not, that it is feasible to achieve, not dependent on external factors which cannot be controlled and lastly, that it has a pre-decided time-frame, (OECD, 2010).

3.4.4 Multidimensional social impact measurement

Since measuring impact in a social context is very complex with an endless number of variables that can be the cause of some observed effect, many impact researchers have based their approach on Bourdieu's (1984; 1986) concept of social and cultural reproduction, (Hayton & Bengry-Howell, 2016; Kvasny & Keil, 2006; Lin et al., 2012; Sedoyeka, 2012). The reproduction theory claims that technological innovation reinforces existing power relations meaning the educational program investigated in this thesis can be seen as an environment which legitimizes the power relations between those who possess and those who do not possess ICT skills and knowledge. Bourdieu's theory comprises the nature of the digital divide since it does not assume concrete impact areas as well as considers the historical social disadvantage of the target population in areas such as power, privilege, education and employment. The framework is a fairly simple way to investigate if and how a digital divide initiative can lead to social and cultural reproduction, meaning if and how it can lead to a lasting change in the affected groups' lives, (Kvasny & Keil, 2006).

3.4.4.1 Social and cultural reproduction theory
Bourdieu (1986) states that to understand the social world, one must consider every type of capital that a human is allocated. The social and cultural reproduction theory is a framework for mapping social change through looking at a human's allocated capital. The capital can change with some actions and one passes it along to the next generation. The most intuitive is the economic capital, which is the monetary means of which you can purchase things, services or other forms of capital. Bourdieu

further explains social reproduction through culture, which takes the form of cultural capital awarded to those with the right knowledge and skills. High cultural capital means one is viewed as educated or talented, and is greater with the privileged in educational settings, for example those coming from prosperous families. Social capital is when one is included in a group, where members can use or are credited with the collectives' capitals. The group can for example be a family, a class or a profession. Bourdieu (1984) also emphasises the importance of one's habitus, meaning that each class comes from its own cultural background and knowledge embedded in one's language, body and tastes. This habitus is usually inherited through the family.

3.4.4.2 ICT context

When using the basis of Bourdieu's theories in an ICT context, Kvasny & Keil (2006) looked at habitus, cultural capital, social capital and economic capital aspects as shown in Table 1. Sedoyeka (2012) used a similar framework but with the added perspective of technical means. Habitus can be viewed as the perceived usefulness of the technology, the willingness to engage in computer training or aspirations to enhance ICT skills. The cultural capital in this context is the possessed ICT knowledge and skills. The social capital is the effects of being a part of ICT communities or networks which can support with help and information. The economic capital would be the financial purchasing power to buy for example a computer, (Kvasny & Keil, 2006; Sedoyeka, 2012). The technical means is the connectivity and availability of for example computers or Internet access, (Sedoyeka, 2012).

Table 1. Framework for analysing impact of ICT projects

Created by Kvasny & Keil, 2006

Habitus	Cultural capital	Social capital	Economic capital
Dispositions about ICT-appropriateness and perceived usefulness of the technology, willingness to engage in computer training, aspirations for leveraging skills	Knowledge, skills, competencies and direct experiences with computing artefacts which influence success	The benefits received from participating in communities and networks – information, support, guidance or additional social contacts	Monetary means to support ICT purchases and maintenance

3.4.4.3 Capability approach

Capability approach is a framework often used for evaluation of well-being and social aspects. It defines capability as what people are able to do. According to Robeyns' (2005) description of the capability approach, it should focus on which capabilities the people studied have and then evaluate which challenges that could be removed in order to generate more freedom for these individuals. The approach has difficulties which makes it hard to use in practice. These difficulties include that certain capabilities are hard to measure and that the set of capabilities has to be defined a-priori. However, it has also been argued that the capability approach is suited well for micro-studies thanks to its focus on non-income variables, (Comim, 2001). In his framework based on the capability approach, Gigler (2015; 2011) focuses on if, and how, ICT can improve the informational capabilities on a community and individual level, focusing on rural communities in Bolivia. Instead of focusing on technology, Gigler puts human well-being and development in the centre of the evaluation, an approach also used by Sen (1997) and Heeks (1999). By enhanced informational capabilities, individuals will gain benefits such as empowerment and a greater ability to control life choices.

The impact chain, shown in Figure 5, illustrates under which conditions ICT becomes relevant for the target group in a way where they perceive ICT usage as meaningful and can translate the use into informational capabilities and as a result enhance human and social capabilities. Gigler stresses the importance of educating ICT skills and enable the learnings to move from use of ICTs to a meaningful use of ICTs instead of focusing on providing access to ICT. He also points out that grassroot-organisations are more likely to create a successful program than governments and global NGOs thanks to their broader focus on the role information plays in the community and thus being able to enhance informational capabilities, (Gigler, 2011).
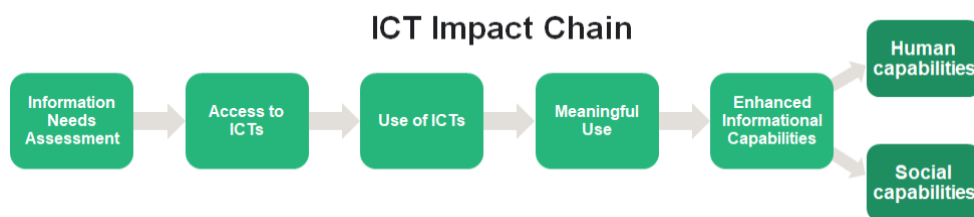
Figure 5. Part of ICT Impact Chain

Adapted from Gigler, 2011. Authors' illustration

4 DESCRIPTION OF THE CASE STUDY

This chapter describes the case study object, the intensive ICT course conducted by Help to Help, and gives a brief introduction to Tanzania. Furthermore, it describes the practical implementation of the methodological elements in the work process of this thesis. Lastly, a first iteration of an evaluation framework based on the conducted literature review is presented.

4.1 CASE STUDY OBJECT

The focus of the thesis was to study the effects of an intensive ICT course by conducting a case study on the TGEE project's initiative in Dar es Salaam, Tanzania. This section aims to give a background to the TGEE project and the context of the ICT course. The practical implementation of the case study is presented in section 4.3 below.

4.1.1 Technology for Gender Empowerment and Employability

Help to Help's TGEE project focused on educating young women in basic ICT skills and was initiated in 2015. The target group for the project was female students or graduates in Tanzania, aged 18-30, with little or no basic ICT skills who are not yet employed. They further selected the participants who cannot afford an ICT course on their own and offer a basic ICT education at no cost for the participants. There were several other ICT educational programs in Tanzania, but none of them offered their courses for free. The TGEE initiative consisted of four main activities; training for mentors and trainers, an ICT boot camp, a follow-up workshop and mini-IT boot camps, as shown in Figure 6 below.
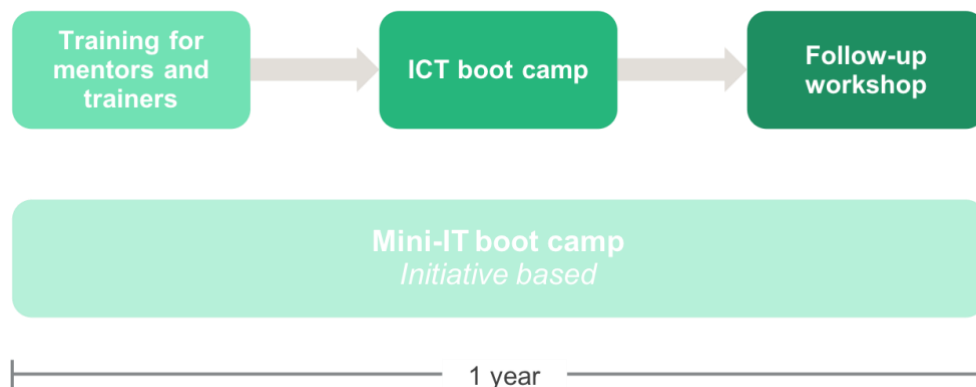
Figure 6. One TGEE cycle

Authors' illustration

The two main goals of TGEE was to contribute to reduced unemployment amongst female youths and to increase gender equality. In addition to the overall goals, four objectives were formulated. TGEE aimed:

I. To provide female university students with ICT knowledge through practical, hands-on computer training in topics such as computer fundamentals, Microsoft Word, Excel, PowerPoint, open source solution and e-mail.

II. To raise awareness about ICT, to motivate and inspire participants to further explore the field by having local IT entrepreneurs and technological companies present how they use ICT in their businesses and why ICT skills are important.

III. To raise awareness about gender issues among the target groups and the consequences it has in society through inspirational lectures from local female role models.

IV. To enable technology outreach by training students to become Technology Ambassadors who can teach basic computer skills to their fellow students as well as in their home communities. TGEE hereby aims to have an impact, which reaches beyond the project itself, (Mhagama, 2019).

4.1.1.1 Training for mentors and trainers

The mentor training was held prior to the boot camp as a two-day course. The mentors were chosen based on their application and was usually equally divided between former participants of the ICT boot camp, former mentors and women with an ICT background, either studying or working within ICT. The trainers were chosen based on both their ICT knowledge and their leadership skills and attended a three-day course prior to the boot camp.

32

4.1.1.2 ICT boot camp and follow-up workshop

Help to Help's main activity was an ICT boot camp in Dar es Salaam where around 100 women learned the basics of ICT during an intensive six-day course held by three trainers with the help of approximately 30 mentors. The boot camp was funded by Help to Help who selected participants based on application. The ICT boot camp has become very popular lately and receives far more applications than they can accept for each camp. The women got information about the camp through different channels such as social media and mouth to mouth. Those applying came from different regions in the country and therefore had to travel far in order to attend the boot camp in Dar es Salaam. In earlier years, Help to Help offered to pay for transportation to attend the camp, only in 2019 did the participants pay for transportation themselves if they live outside of Dar es Salaam.

From the start in 2015 until 2018, one ICT boot camp and a follow-up workshop has been planned and executed each year. From 2019 and forward, their aim is to arrange three ICT boot camps with follow-up workshops each year. Help to Help provides computer access to all participants during the boot camp and the follow-up workshop. The participants perform a skills test just before and just after the boot camp as well as an overall evaluation of the course at the end of the boot camp. Six months after the ICT boot camp, all participants meet again for a two-day follow-up session, where Help to Help both get the chance to develop the participants ICT skills further and evaluate the short-term knowledge reach of the ICT boot camp, (Help to Help, 2019c). After the completion of the boot camp process, the participants can keep in touch and continue to discuss ICT related topics in a WhatsApp group chat set up by Help to Help, (Castor, 2017).

The course syllabus includes topics of basic MS Office knowledge, introduction to basic programming and online learning platforms as well as inspirational lectures from professional ICT women. Theoretical sessions are supported by practical training in computer labs. The last day of the ICT boot camp is focused on a session discussing gender equality and a workshop where the participants get to develop their own strategy for how they will share their knowledge, for example by conducting peer-to-peer training or arranging mini-IT boot camps.

The ICT boot camp has been shown to increase the participant's basic ICT knowledge in a short-term perspective. The participants also gain higher confidence in using ICT as well as a general increase in confidence after completing the course, (Castor, 2017).

4.1.1.3 Mini-IT boot camp

The mini-IT boot camp initiative was added to the TGEE project in 2017 and consists of small-scale boot camps arranged by former participants at universities or in local communities. The mini-IT boot camps can take place several times every year and are purely initiative based. Therefore, it does not have a fixed frequency or curriculum. The covered areas of the mini-IT boot camps can vary based on the initiative taker. The non-ICT related sessions also varied, meaning that not all mini-IT boot camps may discuss gender equality or entrepreneurship, and some have added sessions related to writing resumes and cover letters. The former participant who wants to arrange a mini-boot camp is responsible for finding a suitable venue and invite at least 30 confirmed participants. Then, Help to Help provide trainers and food for the participants. The mini-IT boot camps were added to the TGEE project with the goal to further spread ICT knowledge, increase the number of women who are reached and to provide an opportunity for young women to develop their leadership skills, (Cronqvist, 2019).

4.2 CASE STUDY SETTING

The intensive ICT course in this study was held in Dar es Salaam, Tanzania. Tanzania was chosen as a setting since it was where Help to Help have based their organisation and it was also a suitable country where previous research on ICT for urban women was absent in this context.

4.2.1 **Introduction to Tanzania**

Tanzania was a part of German East Africa, from 1885 until the end of World War I when Tanzania became a British colony. The United Republic of Tanzania was formed in 1964, by merging Tanganyika (main land) and Zanzibar (island archipelago), after their independence from Britain. Tanzania is considered a stable democracy since 1995. The country has experienced an economic collapse during the 1970's and is still working towards full recovery. The economic growth has begun to stabilize. However, Tanzania struggles with severe corruption and insufficient infrastructure among other factors which affect the progress, (Nationalencyklopedin [NE], 2018; Swedish Ministry of Foreign Affairs, 2016).

The population is over 55 million people and about a third of them live in urban areas. The population is young, with two thirds of the population under the age of 25. Around 99% of the population is African and there are around 130 different tribes represented within the population with Kiswahili and English as the two main languages. Furthermore, 95% of the population are Bantu people but there are

Nilotic people in the north of the country as well. Tanzania institutes freedom of religion and the largest religions represented in the country are Christianity followed by Islam (concentrated mainly on the coast line and Zanzibar) and a minor population with traditional African indigenous beliefs, (Central Intelligence Agency [CIA], 2019; NE, 2018).

Although, the majority (65%) of the workforce are in agriculture, it is the natural resources and tourism that drive Tanzania's economic growth of 6-7% per year, (CIA, 2019). Almost every child receives at least eight years of primary education and 25 % continue with secondary education. The national literacy rate is 78 %, (CIA, 2015). Lately, the share of workers in the agricultural sector has declined and job opportunities within the service sector have increased. Men have generally a lower unemployment rate than women, defined as the employment-to-population ratio. The minimum-wage was increased to 152 USD per month 2015. However, the minimum wage only covers those employed in the formal sector and does not regulate the informal sector, where the majority are employed. Another aspect which needs to be stressed is the fact that there is no guarantee that the legislations are enforced, especially due to the fact that many workers lack proper contracts, (Danish Trade Union Council for International Development Cooperation [LO/FTF Council], 2018).

There are extreme differences of wealth in Tanzania. Tanzania is classified as a low-income economy (World Bank, 2019) and while the economy is growing, only half of the population have access to clean water, (NE, 2018). In Tanzania, 35% of the population have an income of less than 1,9 USD per day and therefore falls into income group one when using the classification of Rosling et al. (2018). Furthermore, 32% have an income between 1,9 and 3,1 USD and 18% between 3,1 and 5 USD, which makes them fall into income level two. The remaining 15% have an income of more than 5 USD per day and therefore fall into income level two but potentially three and four, (LO/FTF Council, 2018). The TGEE's target group falls into the high end of income group two or beginning of level three.

4.2.2 The digital development in Tanzania

In Tanzania, only 19% of the population have occasional access to the Internet or own a smartphone and only 2% have a working landline connected to their home as illustrated in Figure 7. Of those who have occasional access or own a smartphone, 35 % use the Internet to look and/or apply for a job and 32% of them use the Internet to get health information. 71% of the Tanzanian respondents of the Pew Research Center Global Attitude survey (2014) stated that the increased use of internet in their country has had a positive effect on their education and 60 % believe it has a good influence on their economy. The positive view of Internet access is even stronger with the young and educated of the population, (Pew Research Center, 2014).

35
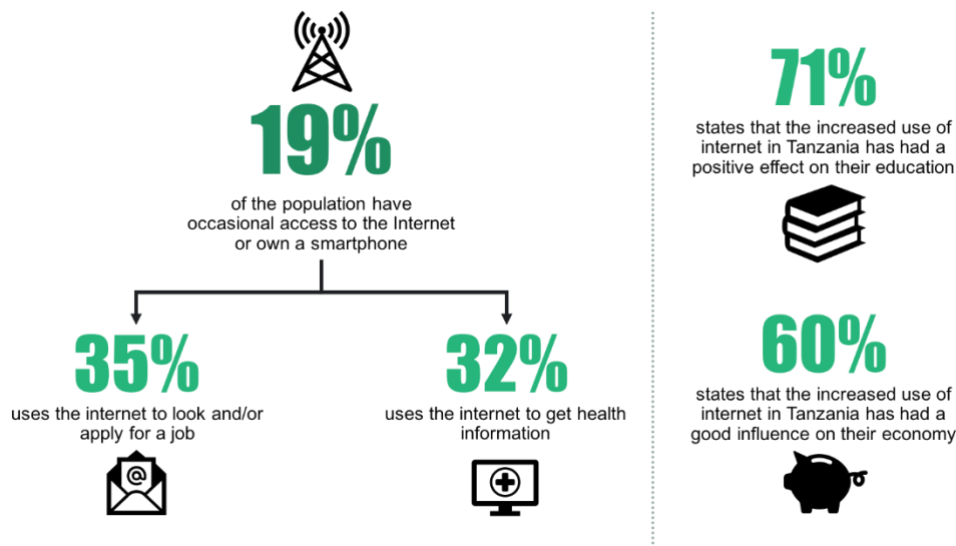
Figure 7. Visualization of internet access and effects due to the increased use of internet

Pew Research Center, 2014. Authors' illustration

One of the reasons behind the growing digital differences between high-income countries and countries like Tanzania, besides cost and IT infrastructure, is low digital literacy. This occurrence is shown to be a systemic societal issue and is closely connected to social-ideological challenges and not only technical aspects, (Sedoyeka, 2012).

4.2.3 Skills gap in Tanzania

Because of a low growth in job creation, many Tanzanian are accepting underemployment to generate an income, (LO/FTF Council, 2018; The Swedish Institute of International Affairs, 2018). When employed, a man earns in average 39% more than a woman. In the survey Formal Sector Employment and Earnings from 2015, only 6% of graduates with secondary and tertiary degree found formal waged employment annually. There is a gap between the educational system and the requirements from the employers, where especially the practical skills and the graduate's mindset has been highlighted as the major issues. There is also research showing that the unemployment rate in Dar es Salaam is 6 times as high compared to rural areas. The informal sector constitutes 65% of the labour market in urban areas, compared to 32% in rural areas, (LO/FTF Council, 2018).

36

A survey performed by Help to Help in 2015 highlighted three main challenges regarding the skills gap between employers and students. Firstly, students face a high risk of not getting employed after graduation due to the existing skills gap. Secondly, there is a low awareness of what ICT is and which benefits skills within ICT can offer students. Lastly, the confidence in using ICT is low among women and there is a common view that ICT and other technologies are mainly for men, resulting in that men have a deeper knowledge of ICT. (Cronqvist, 2019)

4.3 WORK PROCESS

The cycles in the qualitative research cycle by Hennink et al., (2011), shown in Figure 1 on page 8, were adapted to the specific context of this study. The activities in each cycle performed in this study are specified in Figure 8 below.
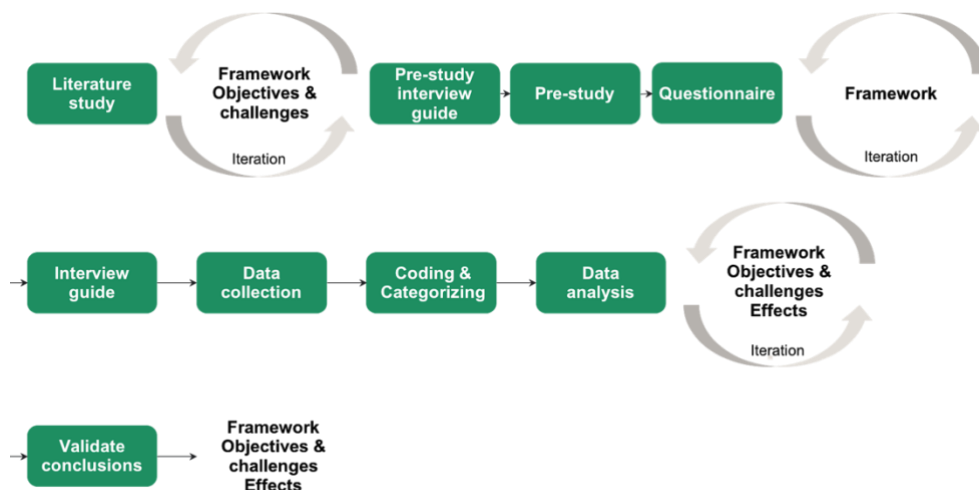
Figure 8. The qualitative research cycles adapted to this study

Authors' illustration

The adapted methodology was partly based on evaluation theory where both understanding of stakeholders' objectives and identifying unintended effects were the main focus. This resulted in an iterative process of creating a theoretical framework which conceptualized parts of the answers to the research questions. A detailed description of the data collection activities presented in the sections below are summarized in Table 2. See Appendix A for a detailed list of interviewees.

Table 2. The data collection elements of this study

Activity	Number
Literature review	38 reviewed research articles
Pre-study	2 interviews
Questionnaire	100 respondents (~30% of target population)
Qualitative interviews	25 interviews
Digital interviews	12 interviews
Observations	Five full days of the 2019 ICT boot camp and follow-up workshop
Contacts for result validation	6 email conversations

4.3.1 Pre-study and questionnaire

A questionnaire was primarily used as one part of the triangulation to understand the long-term impact of the ICT boot camp. The questionnaire consisted of both a quantitative part with closed questions and a qualitative part where questions were formulated more openly and free text answers were required. Five-degree Likert scales were used when the purpose of a question was to measure a subjective perception of areas such as interest, use of knowledge and confidence. The questions were formulated in English using simple language as some of the respondents did not have English as their native tongue. The form was created with the tool Google Forms. A full disclosure of the questionnaire can be found in Appendix C.

The questions were based on the research questions of the thesis and the evaluation framework created after the literature review, discussed in detail in section 4.4 on page 42. The questionnaire started with demographic questions and questions based on the theoretical framework were posed. The framework consisted of five impact areas which were all included in the questionnaire. Due to the nature of the impact areas, not all areas were deeply investigated in the questionnaire since it was determined that those areas were more suitable to focus on in an interview setting.

Before the questionnaire was sent to the whole target population, a pre-study was conducted as recommended by Slattery et al. (2011), in which the questions were tested on two women from the target population. The questions were also reviewed by Swedish and Tanzanian staff of Help to Help and the thesis supervisor. After the pre-study, the questionnaire was iterated to its final form.

The way in which the result of the questionnaire can be used is dependent on the selection of the respondent population, (Höst et al., 2006). This questionnaire was sent out to all previous participants of the ICT boot camp primarily through the medium WhatsApp, since it was the most accessible medium for the respondents and was recommended by the Help to Help local staff. The respondents without access to WhatsApp were sent an email.

The data from the questionnaire was analysed and visualized using Microsoft Excel. The questionnaire was completed by 100 women which accounts for almost 30% of the respondent population. The responses came from women in between the ages of 18-33 and who participated in the camps between 2015-2018. The majority of the respondents (71%) have graduated from the university and 48% of them are currently earning an income either through employment or by being self-employed. 38% are unemployed and full-time university students can be found in that category as well. The demographics of the questionnaire can be seen in Figure 9-12. The respondents came from various fields of study.
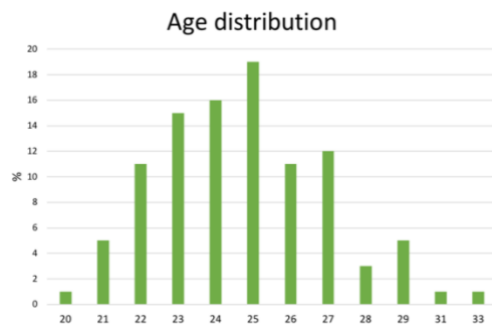
Figure 9. Age of questionnaire respondents
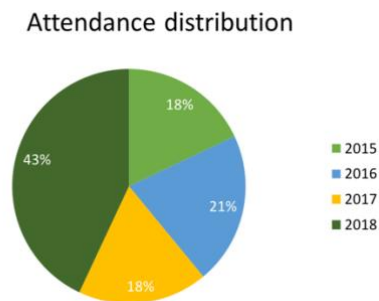
Figure 10. Year of ICT boot camp attendance of questionnaire respondents
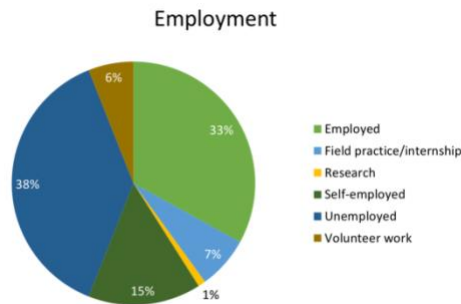
Figure 11. Occupation of questionnaire respondents
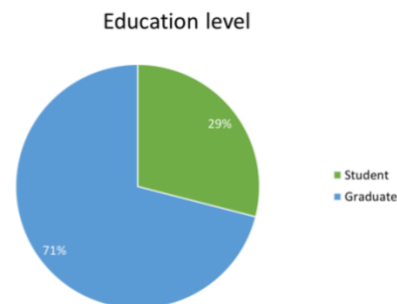
Figure 12. Educational level of questionnaire respondents

4.3.2 Qualitative interviews

In total 25 interviews were conducted. The interviews were recorded and notes were taken during the interviews. 2 interviews were conducted with former mini-IT boot camp participants, 2 with representatives from Tanzanian employers and 21 interviews were conducted with former participants of the main ICT boot camp. To get a fair representation of the former participants of the main ICT boot camp, interviews were conducted with a variation of the following parameters;

- Year of boot camp (2015-2019)
- Occupation (Student, Employed, Unemployed, Volunteering)
- Engagement level with Help to Help (Active, Non-active)
- Field of study (Business and finance, Human resources, Medicine, Engineering, Education, International relations, Social studies, Logistics, Insurance and risk management, Marketing)

The interview questions posed to the former participants of the ICT boot camp, the target group of the case study, were primarily based on themes from the evaluation framework created after the literature review, described in section 4.4 on page 42, as well as to serve the research questions. Every interview started with open questions of why they wanted to apply to the boot camp using the five whys technique and how attending the boot camp had affected them before moving on to the questions based on the theoretical framework themes. This in order to ensure that the participants were not biased by the aspects of the theoretical framework while answering the open questions. All interviews were held in English using semi-structured interview guides found in Appendix B. The level of English proficiency was concluded to be sufficient for being able to communicate effectively although it differed somewhat between interviewees.

In order to obtain an understanding of the secondary effect of the boot camp, to investigate how strong the impact would be when shared through former participants, two interviews were held with participants of a mini-IT boot camp arranged by a former ICT boot camp participant.

In order to delve deeper into the employability of the former participants, which was discovered to be one objective of the women, two interviews were held with two different employers, referred to as Company A and B, in Dar es Salaam. Company A was an international corporation operating in the oil and gas industry and Company B was present in East Africa in the telecommunication industry.

To form a perception of the impact of the ICT boot camp on participants living outside of Dar es Salaam, 12 digital interviews were conducted with written questions sent to former participants of the main camp as well as a mini-IT boot camp. The digital interviews were initially planned to be phone interviews, but the telephone reception and limited network while on site in Dar es Salaam made written communication a superior solution. Nine of the digital interviews were conducted with former participants of the main boot camp and three with women from a mini-IT boot camp. The questions posed in the digital interviews were the same as in the face-to-face interviews, covering both open questions and all themes from the theoretical framework approach. The results from the digital interviews were not primarily used when analysing the data. The digital interviews were due to the medium structured interviews, since no supplementary questions could be asked and was therefore only used to verify that the patterns found from the face-to-face interviews were not limited to apply to only participants living close to Dar es Salaam.

4.3.3 Observation

The authors attended several sessions during the 2019 ICT boot camp as well as sessions on a follow-up camp for the 2018 participants while conducting the case study in Dar es Salaam. Notes were taken according to an observation schedule prepared in advanced. Observations were made during computer classes covering MS Excel, MS PowerPoint, breaks, panel discussions, full class seminars and participant presentations.

Observations were also made during the interviews. Notes about confidence and body language were written down in order to add to the insights of the participant's answers.

4.3.4 **Categorising and analysing the qualitative data**

The collected qualitative data, consisting of interviews, observations and the open questionnaire questions were categorized according to which research question the data aimed to answer as well as the affected part of the theoretical framework. The data was screened for answers deviating from the theoretical framework so as to not be locked to the initial desktop study findings. The textual data was then summarized and coded to be able to recognize patterns and similarities and deviations from the theoretical framework. In addition to the framework areas, other parameters were included in the pattern analysis. These were personal ambition, computer access, digitally literate parents, prior ICT experience, encouragement from family and the level of engagement with Help to Help.

4.3.5 **Validating conclusions**

In order to triangulate the results from the data collection, a further literature review was conducted as well as validation of the results with both Help to Help stakeholders and external experts within the field of ICT for women in low-income countries.

4.3.6 **Quantitative data analysis**

The element of quantitative data analysis was not primary in this study. Some secondary data sets provided by Help to Help were studied in the beginning of the study in order to ensure the demographic and life situation for the participants of the ICT bootcamp.

The questionnaire sent out consisted of some quantitative elements used to further confirm or cancel conclusions made from qualitative analysis. The gathered data was categorized when needed and presented visually in diagrams. No statistical conclusions were made based on the quantitative data collected in the questionnaire.

4.4 FIRST ITERATION OF EVALUATION FRAMEWORK

After reading previous research on impact evaluation of ICT education a need for a framework adapted to the context of this study emerged. The authors created a framework based on the integration of two previous frameworks in an attempt to capture a holistic perspective of the impact areas that were investigated. The

framework presented in Figure 13 is similarly to Gigler's framework (2011; 2015) focused on the human aspect of the impact rather than solely on the access to internet and computers or the frequency of ICT use. However, Gigler's framework is adapted to the empowerment of a rural population through ICT which is why it is not fully compatible for this research. The target population of this thesis has moved further down Gigler's impact chain as they are university students in more urban habitats within a higher income level. The last half of Gigler's impact chain is more important in this context since the target population has received basic ICT education and it is relevant to evaluate whether they have moved to a meaningful use of ICT and enhanced their informational capabilities to achieve a social impact, even though the definition of these aspects can differ due to the target group's different income and education levels.

The framework used in this thesis, presented in Figure 13, is based primarily on Bourdieu's different forms of capital adapted to an ICT context similar to Kvasny and Keil (2006) and Sedoyeka (2012) where impact is viewed as effects on one's habitus, cultural capital, social capital, and economic capital. This approach was an attempt to structure the complex parameters of a person's attributes. It was chosen to be used in this thesis because the previous work of Kvasny and Keil (2006) and Sedoyeka (2012) had proved that Bourdieu's concepts were appropriate to adapt to an ICT context.

Of course, one must understand the level of ICT knowledge and skills someone has in order to understand what it is that has led to a social impact. Habitus, here defined as the history, experience, cultural needs and tastes of someone is important to take into account when it comes to the target populations' view of ICT. To understand why a person wants to explore ICTs, one must understand their context, interest and perceived usefulness of ICT. It is also interesting to see which effects the inclusion to the group of 'ICT educated' has given the participants and/or if they have received any other benefits from being included in new networks and social groups which is why social capital is included in the framework. An important factor in social change is monetary means, which is usually obtained through a job generating income. Since one of the main aims for Help to Help was to increase the participants' employability, it was important to include this in the category economic capital. There was a need to stress that an increased employability did not automatically generate an income and therefore increased financial power. An increased employability could entail being eligible to apply for more jobs but not meaning that the application was successful and led to increased financial power. In conclusion, Bourdieu's concepts are suitable to this context since it is a feasible approach to investigate if and how a complex social change can be obtained by an ICT initiative.

The framework also includes the term *human capital*, which is based on the last step in Gigler's impact chain where some of Bourdieu's concepts equivalences could be found except for individual empowerment and political participation summarized in the term human capabilities. Gigler argues that that a person's self-esteem and sense of belonging in the modern world are important for the psychological empowerment of a person. Therefore, as a complement to Kvasny and Keil's framework, the *human capital* theme was added, a term created by the authors. Consideration was also taken to the aim of Help to Help which is why both employability and confidence are illustrated in the framework under the definitions of Kvasny and Keil (2006) and under *human capital*. Included in the curriculum is a session aiming to engage the participants to share their knowledge with others after the boot camp is completed. Therefore, shared information is illustrated in the framework as a possible outcome but also potentially input for additional impact.

INDIVIDUAL IMPACT AREAS

CULTURAL CAPITAL	HABITUS	SOCIAL CAPITAL	ECONOMIC CAPITAL	HUMAN CAPITAL
Knowledge and skills	Perceived usefulness Interest and continuous learning	Network and community	Employability Financial power	Confidence Self-empowerment Political participation

SHARED INFORMATION
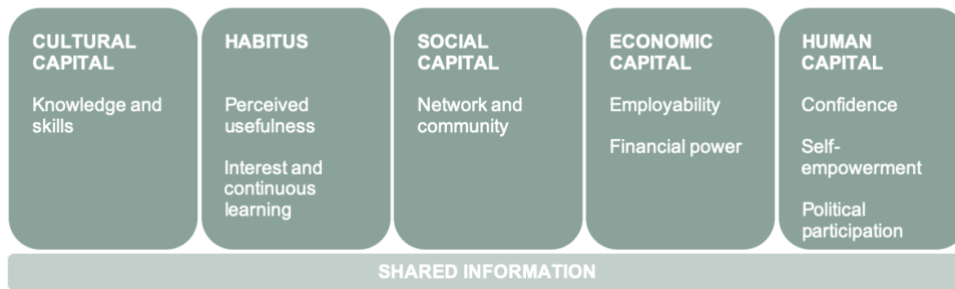
Figure 13. The theoretical framework used in this thesis

Based on Bourdieu's theory, 1986; 1984, combined with parts of Gigler's ICT impact chain, 2011. Authors' illustration

The five aspects of impact in this framework are all intertwined. As Gigler (2011) points out; an increased self-esteem can be but does not have to be critical for the employability of a person when pursuing new employment. It is therefore important to note that there is no single way to impact in a person's life. It is also close to impossible to find causal linkages between the ICT education alone and an impact area for one individual.

Furthermore, it is important to highlight that although the questionnaire and interviews in this thesis were primarily based on the framework, the framing of the open questions also allowed for the respondents to go beyond the hypothesised impact in order to find the unintended or undiscovered effects as suggested by Scriven (1991b).

44

5 EMPIRICAL FINDINGS AND ANALYSIS

In this section the empirical findings are presented and analysed continuously. The empirical findings are based on combined data from the questionnaire, interviews and observations. The collected data was categorized either as an objective or challenge for the women relating to the first research question or as an impact area in the theoretical framework defined in the desktop study related to the second and third research questions. First, the objectives and challenges identified are discussed and a revised evaluation framework is presented. This is followed by a complete review of the empirical findings applied through the theoretical framework and which external factors that influence the impact. Additional findings outside the categorization of the theoretical framework are also presented. Lastly, the impact of the ICT boot camp is then summarized.

5.1 OBJECTIVES OF WOMEN PURSUING ICT EDUCATION

It was clear that the major objective for the participating women was to *increase their employability*, since they understood that computer skills were something important and sought after by employers. It is evident that ICT knowledge and skills are neither the sole problem or only solution to helping the participants of the ICT boot camp achieve their objectives and overcome their challenges. The depth of understanding of why it is important to have computer skills varies between the women, where some have a more short-term view that it will make them more competitive when applying for jobs while others want to keep up with technology advancements so as to be competitive in the long term.

The second objective for the women was to *acquire computer skills* to be able to type school assignments themselves in order to save time, effort and for the ones who had previously paid for computer typing services, money. The third substantial objective for the women to apply to the ICT boot camp was not ICT related. They wanted to *network* and meet other women. For the entrepreneurs, this was a chance

to find potential business partners and/or customers while others just wanted to meet new friends.

The empirical findings did not indicate that the women's main objective was to use their computer knowledge to change their societal situation or to be active in the spreading of this knowledge to their community. Nor were there any clear indications that the women who had attended the ICT boot camp did so because they wished to change professional paths and pursue a career within IT. This was confirmed by other ICT educational effort initiatives who stated that the main reasons they saw why women want to learn ICT skills are to be able to generate an income and to broaden their knowledge base. What was not found in this study in Tanzania but could be seen by other organisations was that the objective for some women to learn about ICT was to teach others, (Mtonga, 2019). It was mentioned by all but one of the women that they had shared their knowledge and the majority of them believed women to be better at sharing their knowledge with their family and friends, as will be discussed in a later section, but there were not many who mentioned sharing their knowledge as the root objective to why they wanted to gain the knowledge in the first place.

5.2 CHALLENGES OF WOMEN PURSUING ICT EDUCATION

The most frequently mentioned challenges were related to *time and available resources*. The challenge that women do not have time to use ICTs due to their many other responsibilities such as domestic chores, is also frequently mentioned in interviews with other organisations arranging IT education for women, (Mtonga, 2019; Oichi, 2019). Some women's ability to practice their ICT skills is also obstructed by having to use a shared computer either at their home or university. However, the computer labs available at university are seldom unavailable and rarely used by students which may indicate a lack of motivation or interest among the women. Many interviewees understand the importance of practicing regularly but also again highlight the hindrance in terms of time due to other duties such as studying and running their own businesses. Their motivation also has an impact on the frequency of practising and to which extent the former participant continues to learn. When having to practice or learn in their leisure time, other activities seem to be prioritised higher than developing their computer skills on their own.

The women were also facing a challenge in terms of *encouragement from their families*. The interviewees who mentioned their family situation as a challenge, explained that their parents, if encouraging their children at all, encouraged their sons and not their daughters to learn about computers. In an interview with an

organisation operating in Uganda, it was pointed to that some families viewed their daughter's education as unnecessary since their main objective was for her to get married, (Rankloo, 2019).

While discussing ICT skills and knowledge with Tanzanian women, it was evident that the GDD could be seen by everyone. Many women addressed the issue that more men than women know how to type their own school assignments at university and that the majority of women do not see the value of acquiring ICT skills. In the interviews, many interviewees also highlighted the power structure between the genders, where men are often seen as superior to women. They also state that men are seen as more knowledgeable within ICT. Some were critical to this norm and wanted to be a part of changing the views of others, while some accepted the situation to be a fact of life that cannot be changed, even though the former ICT boot camp participants themselves were breaking that norm to some extent. While discussing the challenges identified with other organisations within the field, the patriarchal structures was mentioned as common in other African countries as well. (Mavura, 2019) The studied women pointed to gender inequalities on many levels in the Tanzanian society. One major issue mentioned was that women in Tanzania are not allowed to go back to school if they get pregnant.

> *"Most girls do not have the knowledge and they are not willing to learn computer, men like IT knowledge more"*
>
> - P10, former participant

> *"...especially in Africa, in our culture men are the ones knowing about computers and women are the ones that know how to cook and do domestic activities but not computer. In order to match with the world now, the women need to be knowledgeable about computer so we can compete in different positions and places"*
>
> - P3, former participant

> *"We have to inspire women, so that they want to learn"*
>
> - P2, former participant

The women pointed to inequalities in many different forms and besides finding time this was the second largest challenge for the women pursuing ICT education. Solving these challenges probably requires larger efforts than providing ICT education and this kind of systemic and mindset changes can take a lot of time. A

country such as Sweden, where equality is high on the agenda, still struggles with some gender related injustice issues, amongst others in IT related areas. The target population of this study were university students indicating that their families, if unsupportive of ICT education, still value and accept that the women pursue higher education in general. This might not be the case for other women outside the scope of this study.

An inadequate connection to internet, either due to power outage or technical factors, posed a challenge for the participants during the boot camp. The insecure connection to internet did at several occasions interfere with the education and focus of the group. However, inadequate internet network was not highlighted by the former participants as a challenge in order to use computers afterwards. This may be due to either different demands from the participants regarding availability to internet or that many of the skills taught during the boot camp do not require internet access.

The findings did not show any evidence that guidance and support when running into ICT related difficulties composed a challenge for the participants. All the interviewees had someone they could turn to when facing a challenge related to computers. This could be both from the boot camp, fellow participants and mentors, but also from friends or family studying computer related subjects.

Some of the interviewed women stated the cost of ICT education as a challenge before they found the ICT boot camp. Help to Help have completely overcome this challenge since they are offering their ICT boot camp and a follow-up camp free of charge for the participants.

5.3 IMPACT FRAMEWORK

The framework presented in Figure 14 has been iterated to take into account previous research on this subject as well as the collected data in this thesis. The findings from the case study supported the work of Kvasny and Keil (2006), Sedoyeka (2012) and Gigler (2011), meaning that all indications from the collected data could be categorized as suggested in this framework although a new finding was the relative size of impact between the different areas and that no indications of political participation was found. Gigler, who had found political participation as an effect of ICT knowledge studied rural women as opposed to urban university students who were the target population in this study. The difference between income and societal status and probable need for political action to change their life situation of the two different populations could explain why political participation was affected for one group but not the other.

48

The empirical findings showed some external factors found to influence the impact areas all discussed further in section 5.4.2. These were ICT education, personal ambition and computer access. Furthermore, a vast majority of the former participants became an agent who shares her knowledge which is not categorized as an impact area but is still an identified outcome from the ICT boot camp.

When discussing the theoretical framework with Help to Help and other similar organisations it became evident that in order to be understandable, the framework needed to be intuitive. The themes based on Bourdieu's theory are not widely known outside of academic circles which is why the authors decided to visualize the impact areas only without specifically naming which theoretical theme they belong to. The impact areas are further described in Table 3. The themes from the theoretical framework are still considered to be of importance in order to make sure one has covered a holistic perspective of impact on human lives and they have been used as a basis for the empirical findings presented in the section below.
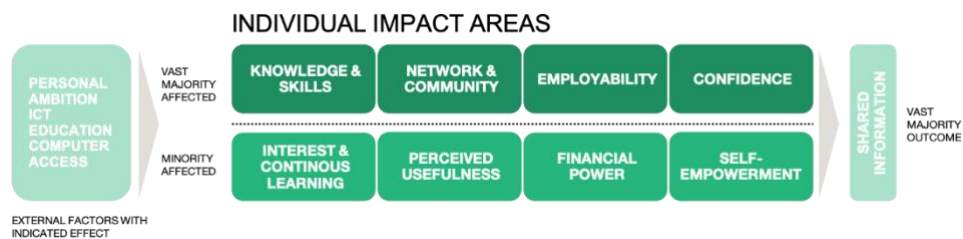
Figure 14. Impact areas found in the case study

Based on Bourdieu's theory, 1986; 1984, combined with parts of Gigler's ICT impact chain, 2011. Authors' illustration.

Figure 14 also found in Appendix D.

It is important to note that providing ICT education and the supporting infrastructure for women does not automatically lead to all impact aspects or to any at all. This framework is solely the impact areas that have been identified in this study, and the extent the area has been affected varies between women as shown in Figure 14 and as discussed in the section below.

5.3.1 **Evaluation form**

In order to evaluate an ICT initiative, the authors suggest using the table presented in Table 3 in order to make sure one has covered all potential impact areas and to be able to make an overall assessment of the impact. Given the general nature of the

framework and the broad definition of the impact areas, the authors believe the framework to be useful for all ICT initiatives in low-income countries regardless of which gender the initiative is targeted towards. The assessment of level of impact is recommended to be high if more than a majority of the participants have been affected positively. A moderate impact implies that more than a fourth but equal to or less than half of the participants have been affected. Less than moderate impact is categorised as low. No impact should be illustrated by leaving that row blank in the evaluation form.

Table 3. Evaluation form

Based on themes from Bourdieu, 1986;1984, adapted to an ICT setting

IMPACT AREA	DESCRIPTION	LEVEL OF IMPACT		
		LOW	MODERATE	HIGH
KNOWLEDGE AND SKILLS	To which extent has the initiative increased the knowledge and skills level?			
PERCEIVED USEFULNESS	To which extent does the participants understand the benefits of ICTs? To which extent does the participants use ICTs?			
INTEREST AND CONTINUOUS LEARNING	To which extent has the initiative increased the participants IT interest? To which extent have the participants continued to learn more about ICTs?			
NETWORK AND COMMUNITY	To which extent can the participants get help related to ICT questions? To which extent does the participants feel included in a network? To which extent does the participants identify as IT knowledgeable?			
EMPLOYABILITY	To which extent has the initiative increased the number of job opportunities for the participants? To which extent are the skills taught relevant for the labour market?			

50

FINANCIAL POWER	To which extent has the initiative resulted in generating an income for the participants?			
SELF-EMPOWERMENT	To which extent has the participants' changed their life situation as a result of the initiative?			
CONFIDENCE	To which extent does the participants feel more confident about their ICT skills?			
POLITICAL PARTICIPATION	To which extent have the participants engaged in any form of political participation due to their ICT knowledge?			

5.4 IMPACT OF BASIC ICT EDUCATION

Before describing each part of the theoretical framework separately, a holistic perspective is presented by stating the identified patterns from the interviews. Then, the external factors which can influence the impact of the ICT educational initiative are identified and described. Lastly, the collected data is applied to the theoretical framework and the level of impact in each area is discussed.

5.4.1 Identified patterns from the interviews

After categorizing and coding the interviews, there were some patterns that could be identified when applying a broad perspective. A pattern is identified when three or more interviewees had similar experiences. The overall impact is defined through the impact framework meaning that it is high when an interviewee has pointed to being affected in several impact areas. Previous ICT experience is defined as the prerequisite a participant has acquired and can come from digitally literate parents, private schooling and/or other ICT related educational settings. Continuous learning is defined as learning something beyond practicing what was taught at the ICT boot camp. Employability is defined as high if the ICT boot camp certificate or the skills gained from the boot camp positively impacted a job opportunity.

All of the identified patterns are indicative and will be further discussed.

- The three biggest impact areas identified, aside from gaining ICT knowledge and skills were in order; increased confidence in ICT, inclusion in an ICT network and increased employability
- Mentors or the people who have continued to engage with Help to Help all measured high on overall impact
- All of the participants not owning a computer measured low on overall impact (No pattern found regarding owning a computer)
- Owning a computer does not guarantee continuous learning (No pattern found regarding if all participants who had continued learning had own computer)
- Low general IT interest beyond MS Office and leisure use
- IT interest beyond MS Office and leisure use is not dependant on previous ICT experience
- All participants with IT interest beyond MS Office and leisure use are driven or ambitious
- All of the participants who appeared to be non-driven or unambitious measured low on overall impact
- All of the participants who appeared to be non-driven and unambitious did not have previous ICT experience

5.4.2 External factors affecting the gap

To be able to answer how Help to Help's ICT boot camps have affected its participants one must first consider which external factors that also may have an impact. The empirical data indicated that personal ambition, computer access and previous ICT education affected the level of impact for the participants. These variables are difficult to affect directly by organisations such as Help to Help and look different for each woman. These findings indicate which of these external factors that can affect the level of impact from the ICT boot camp on the GDD.

5.4.2.1 Personal ambition

One aspect that was identified to be of importance for the level of impact the ICT boot camp had on the participants was if the individual was a driven and ambitious person or not. While interviewing the former participants one got an overall impression of whether the woman's ambitions had been or were going to be turned into action. There appeared to be a variance in personality that made enough difference to be included in the pattern identification analysis. The origin of this drive could be from an endless number of social parameters, all beyond the scope of this study. What was indicated in the patterns of the empirical data was that everyone that measured low on ambition also measured low on impact. The data also suggested that ambitious women also measured high in impact. If this is a key

52

aspect to reaching high impact from the ICT boot camp as out data suggests, more effort should be focused to encourage higher ambitions and for example to take action on increased IT interest.

One identified pattern showed that all individuals who appeared to be unambitious lacked previous ICT experience, which may indicate that without early exposure to ICT, it can be more difficult to spark ambition potentially due to lack of awareness or encouragement. This is however difficult to conclude since many more factors than ICT experience can influence how ambitious a person is.

5.4.2.2 ICT education

In Tanzania, there is little or no ICT education during the mandatory school years. However, there was a clear difference between private and government schooling. Private schooling usually entails computer experience from a young age, which was not on a professional level (using MS Office, emailing) but rather entailed things such as typing experience, increased confidence and habitual use of computers. However, the majority of the interviewees had not interacted with a computer until starting university. Help to Help have in more recent years tried to target solely the women who would, without the camp, not get other chances to learn computer knowledge.

At university, regardless of your field of study, you get a brief introduction on how to use a computer since school assignments are expected to be computer typed. However, this introduction was for many women only one session and with only theoretical elements so that the first practical interaction they had with a computer, aside from leisure use such as watching a film, was at the ICT boot camp.

For the students who do not own a computer, or do not know how to type, there are stationaries which is a place where you can pay for a hand-written school assignment to be typed and printed. This service is fairly expensive for students so some students ask digitally literate friends to type for them. However, it is more common for students to use the stationaries. Many interviewees stated that it was more common for their fellow male students to type their own assignments, since a greater number of female students are not comfortable using a computer.

5.4.2.3 Computer access

Among the respondents of the questionnaire, 93% had access to a computer, either their own (66%) or a shared computer (27%). Some women owned a computer as a result of the boot camp, either by own saved money or by getting them as a gift from parents afterwards. The majority of the ones who did not own a computer attended the boot camp 2018 which could indicate that the younger women, who might not

have finished their studies, are less likely to own a computer. Some individuals not owning a computer actively saved to buy one.

Furthermore, computer access was mentioned as the most important thing in order to continue to learn about IT. However, whether the former participants were computer owners did not seem to matter when looking at their continuous IT learning. Not every participant who owned a computer continued to learn after the boot camp and women without a computer still managed to continue to learn by getting access to computers from their university or friends. According to the interviewees, the computer labs at the universities almost always had available computers to use.

One pattern found was that all of the interviewees not owning a computer measured low on overall impact. This might entail that those with a low computer interest were less affected by the ICT boot camp and to a lesser extent wished to acquire a computer *or* that owning a computer works as an enabler for an IT interest and higher impact potential. The fact that out of the computer owners there were not a clear indicator for high overall impact suggests that the low IT interest might result in a lower interest in purchasing an own computer. Both ambitious and unambitious participants without computer ownership all had low overall impact from the ICT boot camp which can be another indication that those with low impact are less likely to purchase a computer. However, this could also support that guaranteed access to a computer is in fact an enabler since not even the ambitious women were able to practice their skills and possibly nurture an IT interest.

There is an obvious additional obstacle to overcome if you have to borrow computers from friends or to access stationary computers in schools or similar to practice. This gives computer owners a fairly big advantage in practicing their ICT skills, which could be one reason for why the non-computer owners measured a lower impact from the camp. This view is supported by Alozie & Akpan-Obong (2016) and Sedoyeka (2012) who have both found that one major reason behind the GDD is the women's lack of resources such as computers. The results from this study can indicate that owning a computer might be a first step, but is far from a guarantee to making women more ICT engaged in the long term since there are other factors weighing more heavily than computer ownership.

5.4.3 Help to Help's ICT boot camp impact

The impact of the ICT boot camp is presented through each area of the theoretical framework created in the desktop study. Lastly, the result is summarized by stating the level of impact for each impact area.

5.4.3.1 Habitus

As described in the theoretical framework, a person's habitus is defined as a person's ICT interest and aspirations for continuous learning as well as how one is leveraging the ICT skills.

5.4.3.1.1 Interest and continuous learning
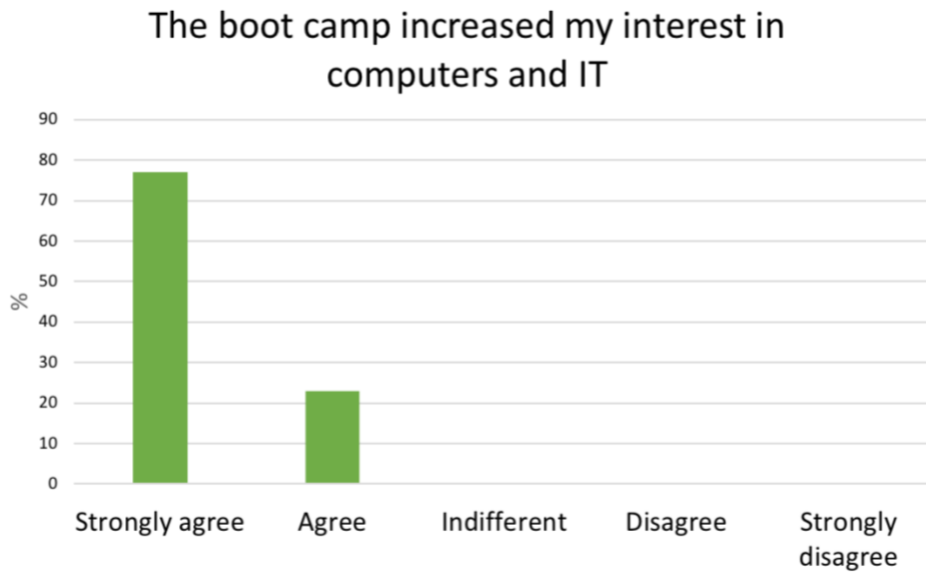
Figure 15. Increased IT interest of the former participants

When asked about their interest in IT, every one of the respondents of the questionnaire agreed that the ICT boot camp had increased their interest in IT as shown in Figure 15. Many of the participants had not interacted with computers before the camp and the general opinion among the participants was that learning IT and how to use a computer was very important.

> *"I learned the importance of computers from school and people on the streets, everyone knows it's important"*

> -   P16, former participant

The IT interest of the women was already strong enough for them to apply to the ICT boot camp. Their interest lay in acquiring computer skills which were viewed as attractive for employers. While the questionnaire responses showed that the participant's IT interest had increased after the boot camp, the findings from the interviews contradicted this. The interviews showed little indication that the boot

camp had increased the participant's IT interest compared to before, beyond MS Office and leisure use, with some exceptions. There were a few rare examples of women who wished to pursue IT on a professional level after attending the course.

A potential explanation to the contradiction between the questionnaire and interview findings may be the differing individual views of what it means to have an IT interest. While categorizing the data in this study, having an IT interest was defined by the authors as showing signs of wishing to or having learned something more computer related. Some women who answered the questionnaire might have interpreted having an IT interest as just using the computer more in their daily life. An aspiring IT interest did not seem to be dependent of previous IT experience but rather the ambition and drive of the woman who wanted to take action based on her IT interest. This indicates that early exposure to IT is beneficial but not necessary in order to develop an IT interest and interact more with computers later in life.

The aspirations for continuous learning varied a lot among the participants. Some had continued to advance their skills and had taken further action to learn about new IT areas while others thought that what they had learned at the camp was sufficient for considering themselves as computer knowledgeable.

From the questionnaire, it could be seen that the former participants mostly enhanced their skills in areas already being taught at the boot camp; MS Office and Internet & Information Searching, as illustrated in Figure 16 and 17. 39% continued to learn *new* skills after attending the boot camp, such as web page creation, programming and photoshop. However, the interviewees who had attempted programming had only tried to learn the basics, no one had pursued it at a more serious level. The low IT interest was confirmed in the interviews where the women stated that their interest was satisfied when they learned about MS Office and information searching as they could see how that would simplify their life regardless of occupation. The majority were not interested in learning about other programs or application areas.
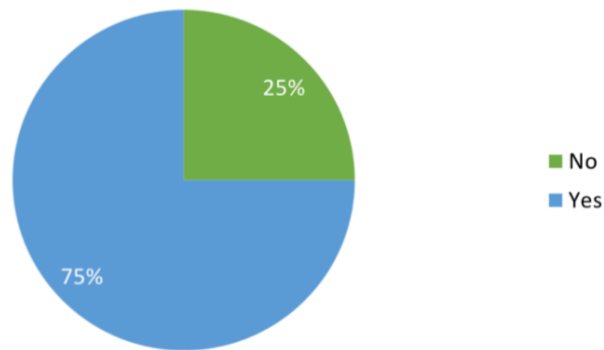
Figure 16. Continued IT learning after the boot camp
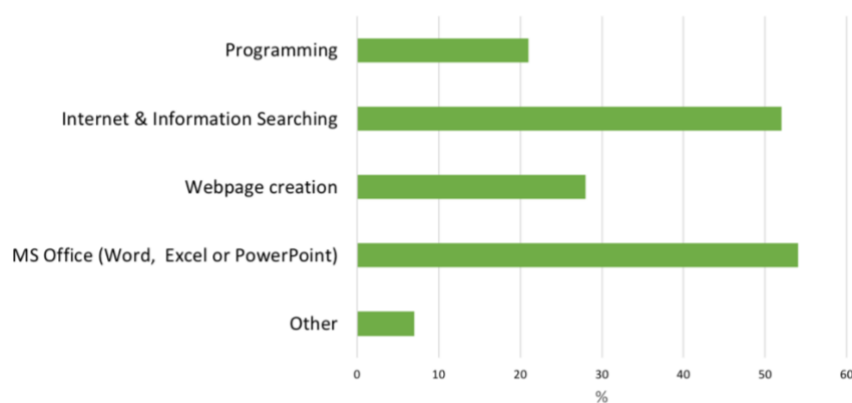
Figure 17. Areas of continued learning after the boot camp

5.4.3.1.2 Perceived usefulness

All respondents of the questionnaire saw several benefits of being able to use a computer. The most frequently mentioned benefits can be seen in Figure 18. This was again confirmed in the interviews, in which many women expressed how computer knowledge simplified tasks at university and work.
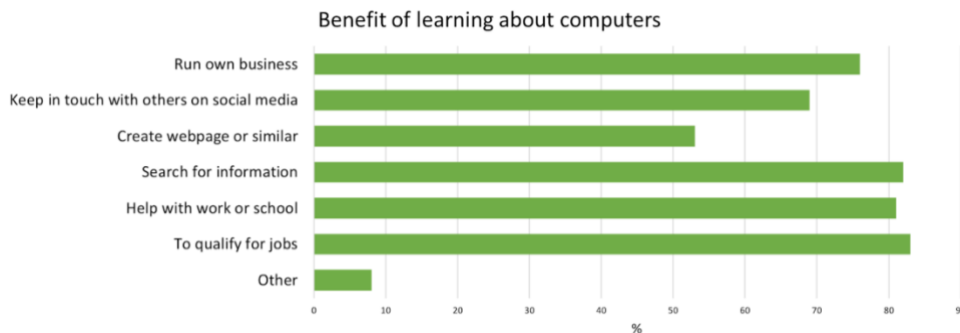
Figure 18. Perceived benefits of learning about computers

By attending the ICT boot camp, several women viewed themselves as more competitive in the labour market. This was seen as a major benefit since the unemployment rate among fresh graduates was high. Many of the women, but not a majority, who had previously interacted with computers mentioned that before the camp, they only used computers for leisure but after the camp, they started seeing more professional benefits in addition to the competitive advantage it could give them by being competent in MS Office and knowing professional email etiquette.

Some also mentioned the cost savings they would make when being able to type their own university assignments instead of paying a clerk at a stationary. Even though the majority of the interviewees expressed several benefits of learning about computers, not all of them gained more than being able to type university assignments by themselves.

> *"...many tasks you are given are related to computer skills. If you know computer it is an advantage for you. It is very important to know to get a job"*
>
> - P5, former participant

> *"Before the boot camp, I was not confident. When something with computer came, I backed off. I used a lot of money paying someone else to type my work. After, I was the one doing that job to others"*
>
> - P18, former participant

The self-employed entrepreneurs who wished to continue with their business, and not the women generating an income while they apply for other jobs, saw how computers could slightly simplify their work. However, they only used computers

for budgeting and inventory information, giving them a digital storage and accessibility benefit.

Almost no negative views of ICT were expressed by the former participants in the interviews or the questionnaire. This was probably due to the fact that the target population was young and obviously saw enough benefits to apply to the ICT boot camp. One respondent mentioned cyber hate as a negative effect of IT use although she had not been subjected to it herself.

5.4.3.2 Cultural capital

The cultural capital in the framework approach used in this thesis is defined as a person's skills, and knowledge. Since there was recent research done on the ICT boot camp's impact on the participants skills and knowledge levels by Castor (2017), this study mainly focused on the usefulness of the skills and knowledge perceived by the participants.

5.4.3.2.1 Knowledge and skills

The empirical findings of this study confirm the usefulness of the practiced skills and the level of confidence the participants have in them, as shown in Figure 19 and 20.
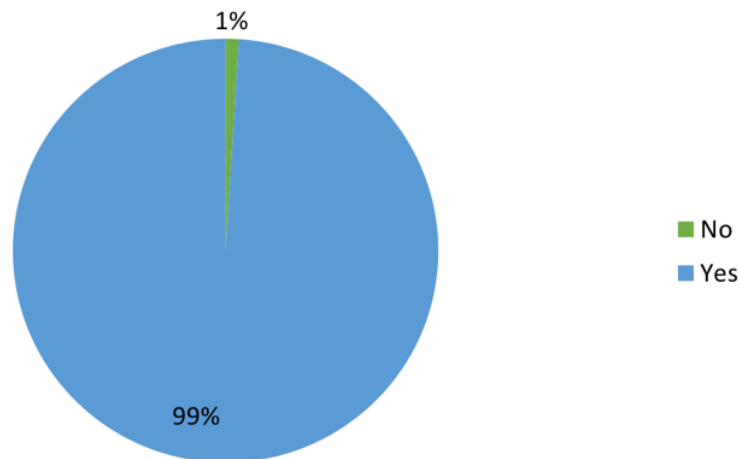
Figure 19. Perceived usefulness of IT skills
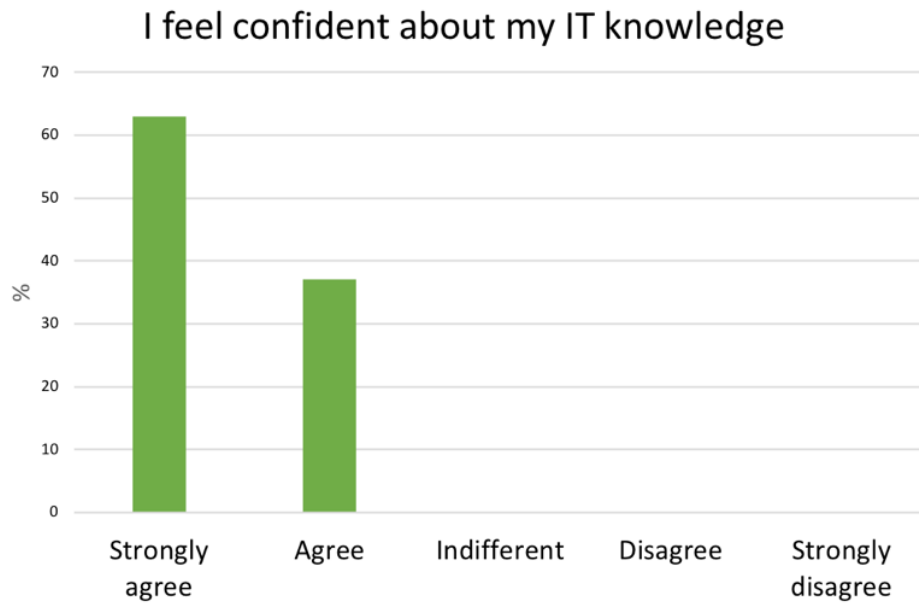
Figure 20. Perceived confidence of IT skills

The questionnaire result, illustrated in Figure 21, as well as the conducted interviews indicate that the skills practiced at the ICT boot camp are relevant for the participants, especially in a professional setting. Almost a majority of the women used many of the skills acquired at the boot camp daily.
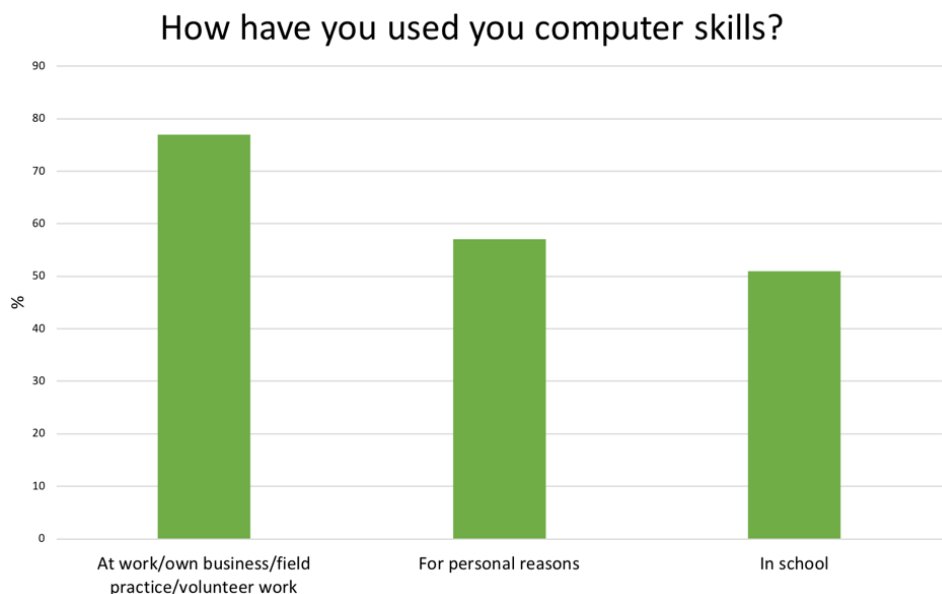
Figure 21. How the computer skills have been used

Almost all interviewed women stated that gaining ICT skills was the main benefit from attending the ICT boot camp. The usefulness of the skills was further confirmed in the interviews as well.

An insight from the case study was the large variation of computer knowledge needs among the women. Because of the variety of educational fields and future professional aspirations, there was a broad spectrum of how deep the computer knowledge had to be in order to reach the women's main objective of being employable. Hence, the skill and knowledge level differed between the women.

5.4.3.3 Social capital

In this thesis, social capital is defined as the benefits, such as information, support, and social contact, which a person receives by being a part of a network or a community.

5.4.3.3.1 Network and community

By attending the ICT boot camp, the majority of the former participants feel included in a network with their fellow participants, as illustrated in Figure 22. The vast majority of those expressing that they feel indifferent or disagree with the statement are participants from the two first years of the boot camp (2015 and 2016). The same goes for the majority of those who have not reached out to or been contacted by any former participants. As can be seen in Figure 23, the most common

61

reason to reach out to or be contacted by a fellow participant was job opportunities, followed by personal reasons and further computer/IT knowledge. The most used channel for interaction was the chat application WhatsApp.

Approximately 25% of the participants have continued to be engaged in Help to Help, either by arranging mini-IT boot camps and/or by being mentors at boot camps. 10% of all former participants have arranged a mini-IT boot camp in their community, where 8% of the ones arranging mini-IT boot camps were participants from the two most recent years (2018 and 2017). This can be explained by that the concept of arranging mini-IT boot camps was initiated 2017.
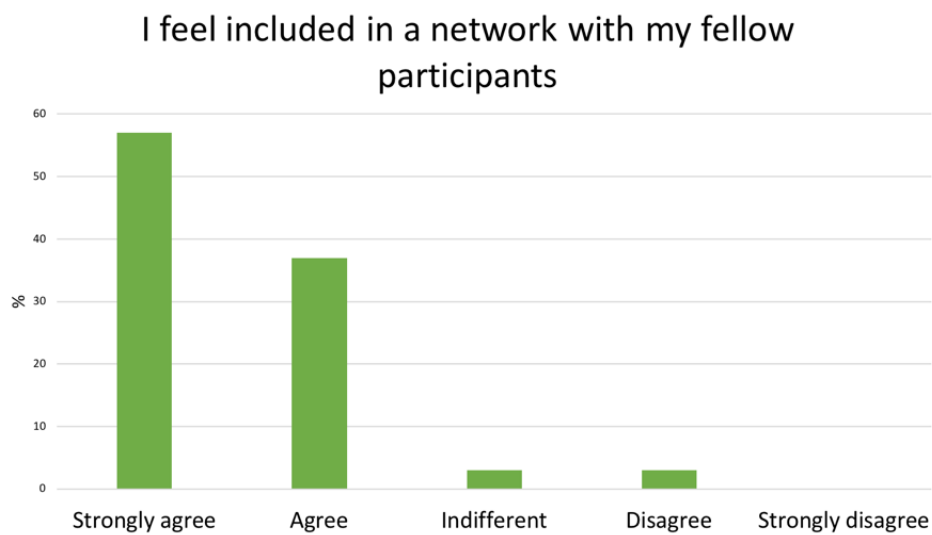
Figure 22. To which extent former participants feel included in a network consisting of their fellow participants
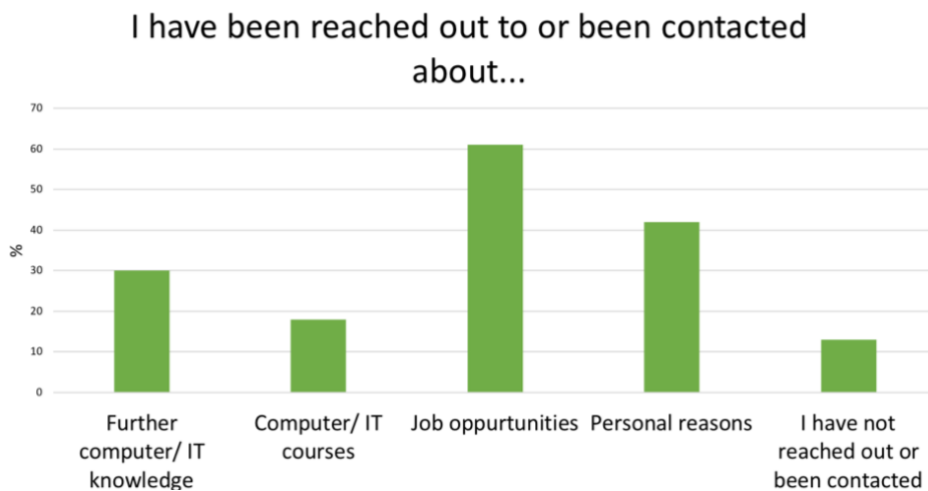
Figure 23. The most common reasons to reach out to or to be contacted by former participants

Many of the interviewees mentioned network and connections to be great benefits which they gained by attending the boot camp and were still in contact with one or more of the former participants. Connections were also mentioned as a critical aspect when securing an employment. Two interviewees started businesses together with former participants they met at the boot camp and another former participant got a job offer after arranging a mini-IT boot camp from the school where the boot camp was held.

> *"We're like family. In every field, there is people, lawyers, doctors, you can ask directly in their private inbox"*

> - P2, former participant

> *"I have friends from the boot camp, especially mentors. Because I call them to get help on computers"*

> - P18, former participant

The form of ICT education, bringing only girls together for classroom education, increased the participant's sense of belonging. This network may have been further strengthened through the many non-ICT related events such as gender equality seminars, personal story sharing with the group and perhaps mainly from socializing with other women with similar interests during an intensive week.

63

The interviews also showed that the participants of the ICT boot camp view themselves as digitally literate and as a part of the group of computer knowledgeable which is partly what Bourdieu (1986) defines as increased social capital. Some also mentioned that they are proud to be viewed as computer knowledgeable among friends and family. If this self-image of digital literacy is aligned with reality was not something that was tested in this study although the increased skills have been confirmed by Castor (2017). The women also gave examples of occasions when they have used the collective knowledge of the network from the ICT boot camp when posing computer related questions to other participants or the whole group, long after the boot camp was finished.

One pattern identified was that participants who have become mentors measured high on overall impact from attending the boot camp. This pattern is likely due to the fact that if you felt a high impact from the boot camp you are more likely to apply to become a mentor.

5.4.3.4 Economic capital

The economic capital relevant to look at in this study is employability, meaning to what extent the acquired skills are competitive on the labour market, and financial power, i.e. if the acquired skills have generated an income in any way.

5.4.3.4.1 Employability from the women's perspective

To a great extent, those who were employed, self-employed, volunteers or did an internship/field practice found it easier to gain their position after attending the boot camp, as shown in Figure 24. Out of the respondents, 65% had an occupation and every one of them, except two, found that attending the boot camp increased their employability. When asked how they had used their computer skills, 92% of the respondents with an occupation had used their computer skills at work. These findings indicate that not only are the skills relevant, but the women have also practiced their skills in a professional setting which further strengthens their employability. When having to choose which of their new skills they had used the most at work, MS Office stands out making up 64% of the answers followed by information gathering (16%).
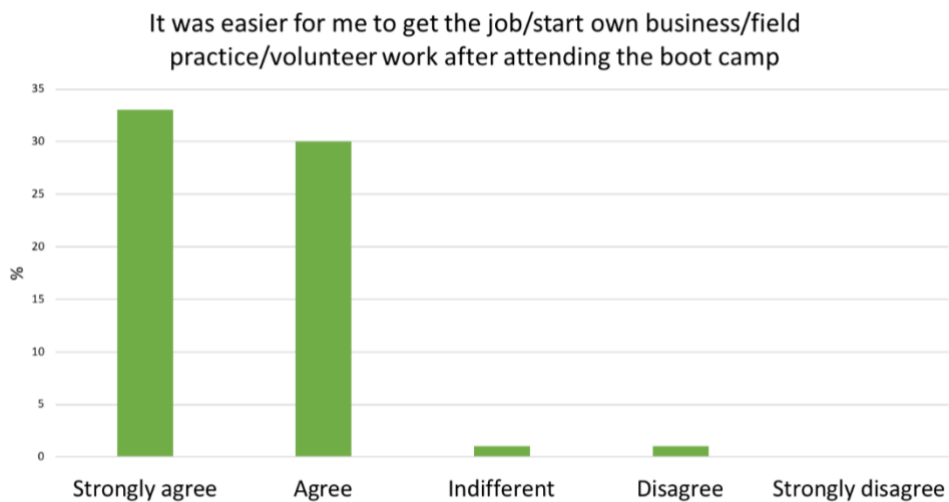
Figure 24. To which extent the ICT boot camp affected the participants job opportunities

Many of the interviewed women who had graduated and were unemployed were forced to take unpaid internships or volunteer at different companies and organisations to gain experience in order to have a chance of potentially getting paid employment in the future. The general perception is that it is very hard to get a job which requires a university degree unless you have a lot of previous experience or relevant connections.

From employers and in job advertisements, the interviewees are told that computer knowledge is either required or poses a great advantage when applying for a job. Many of the interviewees had their ICT boot camp certificate in their resumes and had presented it on job interviews. Even when being self-employed, the interviewees see the benefit of knowing how to use a computer.

> *"We will not get a chance in the labour market if we do not have ICT skills. Even if you are an entrepreneur you will work old fashioned - computers will simplify things"*
>
> - P6, former participant

> *"In the labour market, women are very few. Lack of computer skills are one of the things which excludes them"*
>
> - P23, former participant

Even when ICT skills are not required for a job position, they can function as an enabler to gaining employment. One participant mentioned that she got a job as a part-time teacher, which was outside her field of study, by being knowledgeable within IT which therefore increased her employability.

5.4.3.4.2 Employability from the employer perspective

At company A, ICT skills such as MS Office proficiency was mentioned as a requirement in order to get employed. Depending on the position, the applicant might be given a case assignment where knowledge within MS Office is required and according to the HR responsible, only accepting online applications was a test in itself which enables them to filter out applicants who are digitally illiterate. At company B, it was common that employees did not have sufficient ICT knowledge both due to prior education and also the speed of the technological development. The company was providing training for those employees in order for them to develop personally and being able to cope with the technical development.

At the boot camp, there were also sessions where employers presented their view on how to secure employment and what characteristics they regarded as most valuable to possess as an applicant and employee. A piece of advice many of the speakers gave was to start gaining experience early during the university education. At company A, when asked if they got enough applications for each position, they explained that the problem was not the number of applicants but the number of applicants with the right qualifications. Business acumen, IT skills and soft skills such as communication skills were highlighted as the most important for the employer. To find applicant with these skills was mentioned as a challenge. It was stressed that in their opinion, university education was not preparing the graduates for work. The company representatives believed that the students were encouraged to perform well in exams and follow instructions over applying their skills practically and thinking independently. One representative also mentioned the way the students are raised as an equally important factor in order to succeed at the workplace.

A company representative at Company B highlighted the importance of gender targeted initiatives of ICT education in order to make sure women excel in their fields and to let them become role models and inspire others to do the same.

The empirical results confirm the existence of the previously proven skills gap (Yizengaw, 2018) between the employers' requirements and the graduates' skills. This seems mainly to be due to the speed of technology development and the graduates previous educational background, where the universities are unable to provide sufficient knowledge. The skills which applicants are lacking are mainly

ICT skills together with soft skills. Apart from having basic ICT knowledge, the attitude towards changing environments and continuous learning stood out as the most important qualities in order to increase one's employability.

5.4.3.4.3 Financial power

By attending the boot camp, the financial power of women has the potential to increase. All interviewed participants who previously had payed to get their school assignments typed stated that they, after attending the boot camp, started to type their assignments themselves. Two of the interviewees even started to work as data clerks temporarily.

By extending the participants' network and opening up possibilities to apply for jobs, where they before did not fulfil the requirements, the boot camp impacted the participants possibilities to increase their financial power. An interviewee stated that with her new-found ICT knowledge, she was able to get a part time job, where the employer required skills in MS Office and another was able to secure full-time employment outside her field of study after graduation because of her ICT skills.

By increasing financial power, challenges faced when trying to bridge the GDD such as access to a computer can be overcome. However, the potential to bridge the GDD is dependent on whether the particular women also understands the benefit of accessing a computer and has that as a priority over other purchases. Indicated by the findings, the importance of owning a computer seems to be acknowledged among the former participants.

Apart from the participating women, the boot camp also impacts the women arranging and working at the boot camp. In addition to the TGEE project manager, who was a full-time employee at Help to Help, there was one intern, around three trainers and approximately 30 mentors who were getting paid. Some mentors were former participants of the ICT boot camp who showed extra interest. Becoming mentors both increased their financial power as well as employability by providing them with valuable experience when applying for jobs and/or other opportunities.

5.4.3.5 Human capital

From the desktop study, it was found that ICT education can lead to enhanced confidence and self-empowerment for women as well as political participation. Self-empowerment is defined as initiative or aspiration to change one's life situation as a result of the acquired ICT skills. Political participation is defined as taking part in any form of organised political situation.

5.4.3.5.1 Confidence

As shown in Figure 20 on page 60, the respondents to the questionnaire felt confident about their IT knowledge. According to the interviewees, to know how to type on a computer, use simple computer programs and navigate web browsers was sufficient to be considered "good with computers" and having a high level of IT knowledge. Many mentioned that they now confidently could declare their digital literacy at job interviews and to friends.

A great majority of the interviewed women mentioned that they gained confidence by attending the course. However, this was not solely connected to enhanced computer knowledge since many mentioned getting pushed to speak in front of the large group of participants, speaking in a microphone, learning to speak up and to ask questions in the training sessions as the reasons behind the increased confidence. Additionally, many of the interviewees listed the inspirational sessions held at camp, either by organisations, invited guests, mentors or former participants, to have major importance. It empowered them to see that other women were able to speak confidently, achieve their goals and stand up for their rights.

"I got more confidence from the camp, we got to talk in public. Because we were only girls, they created a comfortable environment where we were free"

- P16, former participant

The increased confidence could also be derived from factors related to being knowledgeable within a new subject. Many participants had no prior experience with computers and therefore no prior skills which creates an opportunity for a great improvement possibility. Since computers can be used in several settings, the shift created by increased IT skills can be visible in different scenarios. Some effects, such as being able to type their own school assignments, could provide an immediate tangible effect for the former participants which could further strengthen their confidence in using ICTs.

It is worth stressing the difference between an increase confidence in general and an increased confidence in using IT skills. The aim of the ICT boot camp was to increase employability and empower women by educating them in ICTs. This results in a great focus on encouraging the participants to speak in front of each other, create networks, gain role models and to be aware of their rights in order to achieve these goals. Singh (2017) has highlighted inspiration to be an important aspect to address in order to reduce the psychological and social barriers which discourage women from using ICTs. However, it is hard, if not impossible, to

68

distinguish to what extent the increased confidence is related to the acquired ICT skills, the additional focus areas, or the supportive setting.

5.4.3.5.2 Self-empowerment

Some women felt empowered after attending the camp, but similarly to the increased confidence, the change was not directly connected to the ICT knowledge. Many women did express pride and raised ambitions due to their new IT skills but the majority lifted the gender equality insights and entrepreneurial knowledge from the camp to be the main reasons behind the feeling of empowerment.

> *"...they teach you to stand tall and as a woman to speak out"*
>
> - P6, former participant

A few of the interviewees have changed their careers because of the ICT skills they gained at the camp. As previously mentioned, one woman wanted to pursue IT professionally and some women wanted to make a living out of spreading ICT knowledge to other women. The majority of the women did however not use their new ICT skills and knowledge to change or impact their life situation.

5.4.3.5.3 Political participation

This study found no indications that the boot camp lead to active political participation with the exception of questioning gender norms connected to ICT. No political actions, except on a personal level, had been taken to change those gender norms.

5.4.3.6 Shared information

One of Help to Help's objectives is to get the agents that they connect with to share their knowledge with more people, in order to create a ripple effect of their impact. Hence, the importance of knowledge sharing was frequently stressed during the ICT boot camp.

How many have you shared your skills with?

1%
42%   40%
17%

- 0
- 1-5
- 6-10
- More than 10
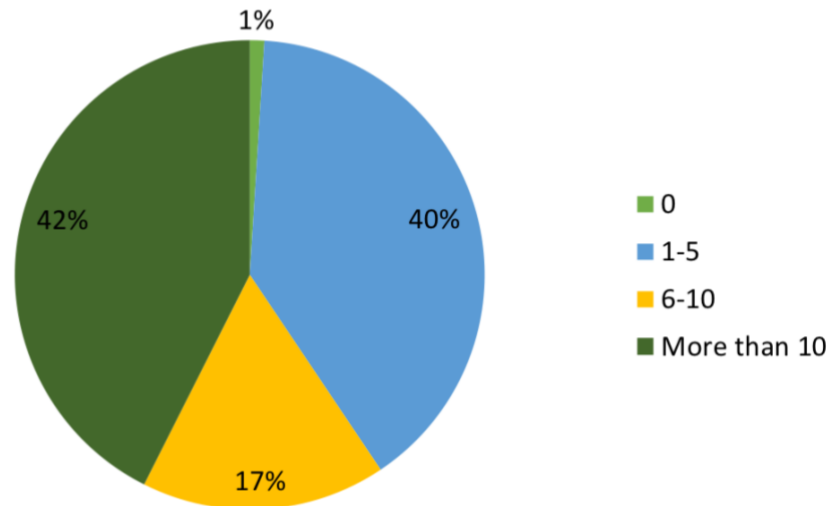
Figure 25. The level of knowledge sharing by the participants

As shown in Figure 25, 99% of the questionnaire respondents have shared their knowledge with another individual, and the majority with more than six other persons. From the interviews, it was evident that the level of knowledge sharing varied greatly, from sitting down with a younger sibling to show how to navigate the computer to arranging computer training sessions for 150 fellow students. Included in the category of people who have shared with more than ten people are mentors and mini-IT boot camp arrangers. It was mostly common to share the knowledge of MS Office programs with friends, as can be seen in Figure 26 and 27. This means that it was mainly the particular skills which they learned at the ICT boot camp that was shared, indicating that the skills learned were enough to teach others the same. One reason why mostly MS Office was shared could be that the former participants felt more comfortable teaching others those skills in combination with the substantial current need of acquiring these skills for people in their surroundings.
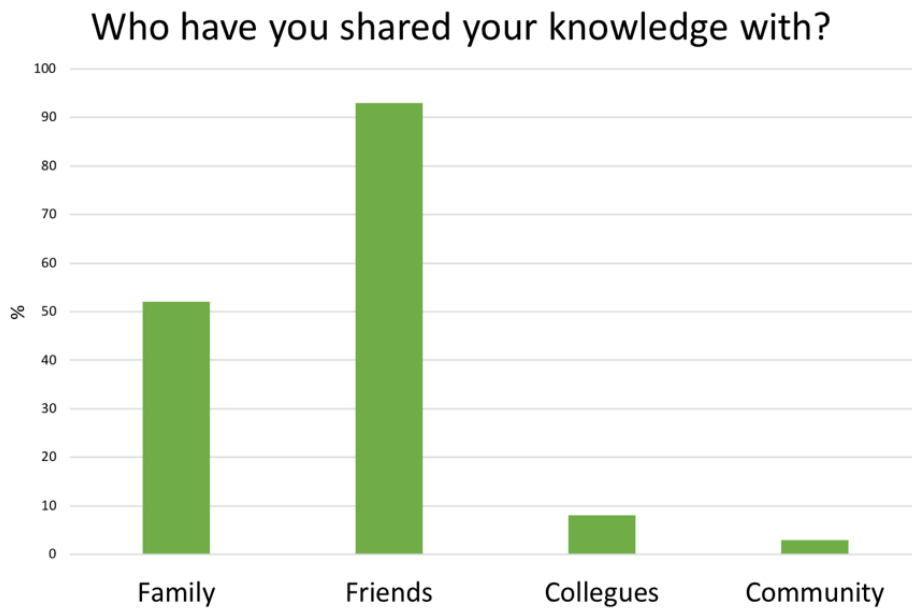
Figure 26. To whom information has been shared after attending the boot camp
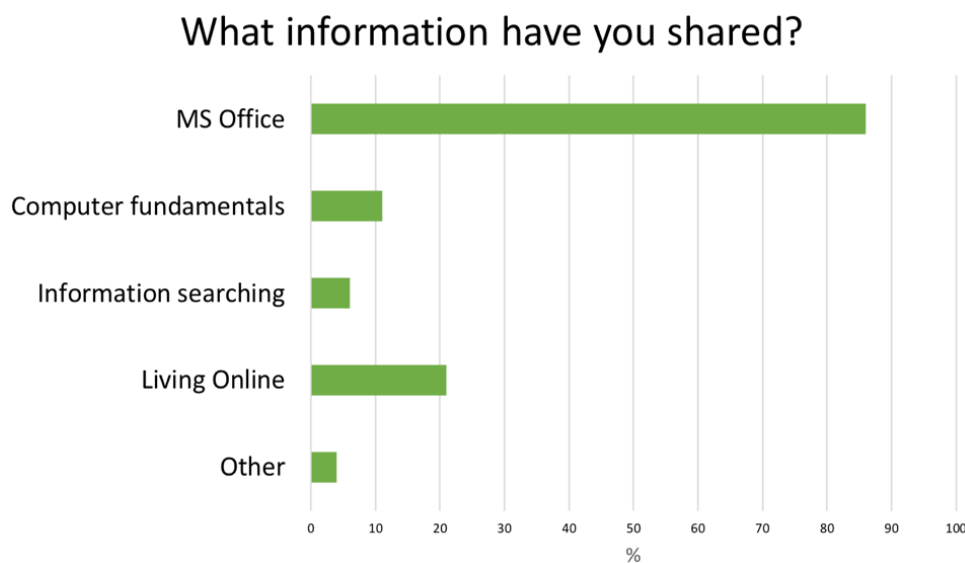
Figure 27. What information has been shared after attending the boot camp

From an open question in the questionnaire summarized in Figure 28, it was found that the most common reason for sharing the knowledge was because they wanted to help and teach others. This was also confirmed in the interviews.

The reasons for sharing skills
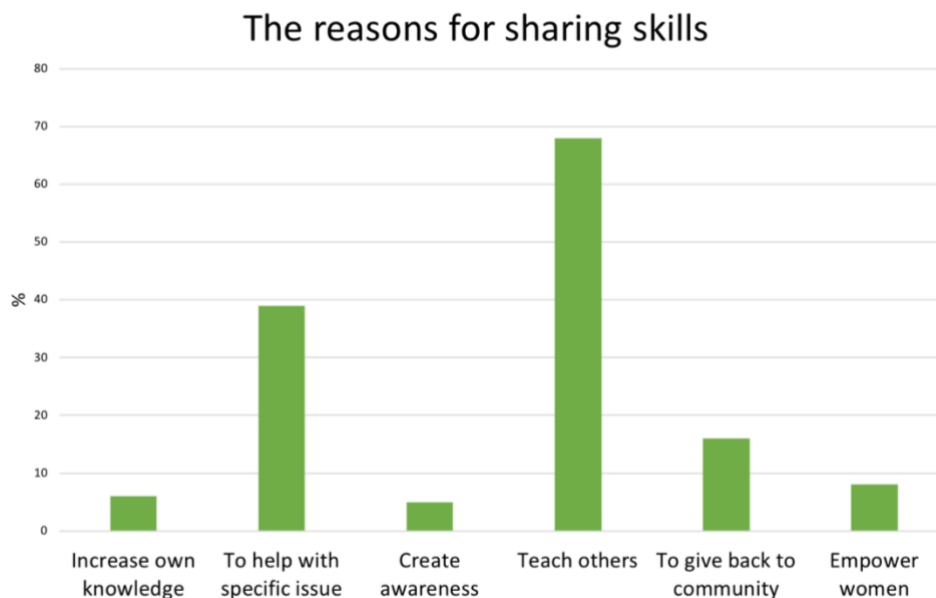
Figure 28. The reasons for sharing the IT skills with others

The interviewees who either had arranged a mini-IT boot camp or considered doing it stated that they wanted to arrange one for the people, often girls, in their home community in order to share their acquired knowledge with them. Many interviewees also stated that they had shared the knowledge which they gained with their parents and siblings. A former participant from 2015 arranged two trainings after attending the boot camp, one for students and one for her colleagues at her first workplace.

> *"...There is a lot of nurses who don't know computer. Nowadays, we are in the world of technology and we have to use computers in our work. [...] I was the one training other nurses in how to use the computer"*

> - P15, former participant

In order to understand one aspect of the secondary effect of the boot camp, two participants of mini-IT boot camps were interviewed face-to-face and three digitally. The interviews with the participants did not show any clear indications other than that they all had been influenced in some positive way even though the overall impact differed between interviewees. No conclusions could be made based on the low representation of the population of participants from mini-IT boot camps.

5.4.3.7 Additional non-ICT related findings

One session at the boot camp was dedicated to gender equality and this topic was also covered in some inspirational sessions. During this time, the input was a mix between discussions, facts and figures and personal stories. The areas which were mentioned were sexual harassment, unequal/equal sectors and the importance of gender equality.

Another part of the boot camp, mentioned by one interviewee as the most useful knowledge she learned, was a session covering entrepreneurship. Many interviewees also mentioned that it had helped them start their own businesses and those applying for jobs simultaneously could generate an income while applying. Two interviewees mentioned the knowledge about branding to be one of the main key takeaways from the boot camp. One former participant stated the opportunity to improve her English to be her main objective to apply for the boot camp.

5.4.3.8 Summary of the ICT boot camp impact

After analysing the impact of the ICT boot camp using the model previously described, the different impact areas within each category of capital have been labelled according to which extent the ICT boot camp impacts each of them, shown in Table 4. The level of impact in the different impact areas are derived from the interviews combined with support from the questionnaire.

Table 4. Summary of ICT boot camp impact

IMPACT AREA	LEVEL OF IMPACT		
	LOW	MODERATE	HIGH
KNOWLEDGE AND SKILLS			X
PERCEIVED USEFULNESS		X	
INTEREST AND CONTINUOUS LEARNING	X		
NETWORK AND COMMUNITY			X
EMPLOYABILITY			X
FINANCIAL POWER		X	

SELF-EMPOWERMENT	X		
CONFIDENCE			X
POLITICAL PARTICIPATION			

The data showed that three impact areas aside from increasing ICT knowledge and skills were affected the most. The first impact area was increased confidence, both in general and ICT related. The second was inclusion in a network of computer knowledgeable people both in the sense that they have someone to turn to with ICT questions but also that they are viewed by themselves and their surrounding as someone who knows computers. The latter occurrence can also be a source of increased confidence. The last high impact area was increased employability where a majority of the former participants who are employed today believe the ICT boot camp helped them get their employment or gave them a competitive advantage when applying for jobs. This was confirmed by the two interviewed companies suggesting that the employers also believe the ICT boot camp to increase its participants' employability sufficiently, although a larger population of employers needs to be heard before a conclusion can be drawn from the employer perspective.

The multidimensional impact suggests that Help to Help have successfully engaged with their targeted population, as recommended by Kvasny and Keil (2006). The TGEE initiative does not touch on all actions suggested by previous research on how to bridge the GDD because their own stated objectives are not primarily to bridge the GDD, it is to provide practical computer knowledge to the targeted female population as well as to raise awareness about the field of ICT and to start a ripple effect to spread basic computer knowledge in Tanzania. This is an important part of the global work to provide ICT access and knowledge to women but larger initiatives are needed to reach a systemic change. It is also important to tackle the root problems to why the GDD exists, such as inequalities due to gender, education level and wealth.

5.5 VERIFYING THE RESULTS THROUGH PREVIOUS RESEARCH

The findings of the study are connected to previous theory with the aim to strengthen the validity of the results. The findings are presented below based on which research question they answer.

5.5.1 **Objectives and challenges for women pursuing ICT education**

The main objective of the women pursuing ICT education in the present study was the competitive advantage on the labour market. This is in line with the findings of Mbarika et al. (2007), who looked at the objectives of Kenyan women pursuing ICT education. The second finding of this study, that time is the main challenge for women pursuing ICT education is partly confirmed in previous research (Geldof, 2011; Huyer, 2005; Mbarika et al. 2007; Paul et al., 2015), demonstrating that the domestic responsibilities for women gives them less time for pursuing things such as ICT use.

Furthermore, the view of women and ICT in the society composed challenges both prior to and after attending the boot camp. This is in line with Singh (2017), who found that a large challenge for bridging the GDD was the discouraging view of ICT being seen as a male area. This study partly confirms that access to a computer is a challenge for the women as shown by Alozie & Akpan-Obong (2016) and Sedoyeka (2012). Additionally, the results indicated that although owning a computer can act as an enabler to bridge the GDD it is not certain that ownership will lead to more meaningful use of ICTs.

Mbarika et al. (2007) among others (Paul et al., 2015, Van Dijk & Hacker, 2003) saw a financial challenge among women to engage with ICT education which has been identified in this study as well by women stating that other ICT courses and computers were expensive.

5.5.2 **Impact of ICT education**

Paul et al. (2015) and Johnson (2010) have identified helping others as a motivator for ICT use among women. This can partly be confirmed in this study since a vast majority have engaged in helping others through using their own ICT skills to teach others about ICT. However, when asked about the motivation as to why the women wanted to learn about ICT in the first place, almost no one stated that the motivation came from wanting to help others after acquiring the knowledge.

Many participants have been given job opportunities both thanks to their ICT skills and the network created from the boot camp, which is in line with previous theory (Farhadi et al., 2012). These opportunities varied from full- or part-time employments, internships and volunteering positions during their studies or after graduation. Many of the opportunities were not within the participants' field of study, but had been made available for them with ICT knowledge as an enabler.

Benefits and usage areas of the taught computer skills were frequently discussed during the training sessions of the boot camp. The empirical findings showed that all women saw several benefits in learning computers and their answers were similar to what was addressed at the boot camp which indicates that the ICT boot camp has affected the participant's view of benefits. This finding contradicts those of Sedoyeka (2012) who found a general scepticism against ICT among Tanzanians. This could be explained either by a shift in perception of ICT in the past seven years, or by the fact that this study only interviewed young women who have applied for an ICT education meaning that they probably did not possess this scepticism in the first place.

The finding that increased confidence was one major impact area after attending the boot camp is supported by previous research stating that increased ICT skills would result in increased self-esteem both personally and professionally, (Castor, 2017; Gigler, 2011). One of the identified major impact areas perceived by the participants themselves was also increased ICT skills and knowledge which is confirmed by Castor (2017) who proved that the participants skill level increased after attending the boot camp.

One of the major impact areas identified in this study was inclusion in an ICT network. This impact has also been identified in a study by Garrido, Sullivan and Gordon (2010) when looking at how ICT education provided by NGOs affects participants. In their study, they further found that ICT skills could lead to self-learning which could only be partly identified in this study. The majority of the women had practiced their skills but not continued to deepen or extend their IT knowledge but they all stated that the boot camp had increased their interest in IT. This finding shows the breadth of the definition "computer knowledge" and why it is not strange that someone in for example teaching will be satisfied with her computer knowledge when she knows how to use MS Excel for calculating grade averages while someone in accounting will not be considered knowledgeable if she only knows the same. This could also suggest that the challenges the women are facing are too great for them to overcome since in most cases their increased IT interest had not been turned into action.

Previous research on ICT education for women (Kvasny and Keil, 2006; Singh, 2017) state that socio-economic factors play a large role in bridging the GDD which is in line with the findings of this case study. Help to Help does not for example work towards affecting the Tanzanian government or ICT use from a younger age which are some suggestions stated in previous research, (Rashid, 2016; Sedoyeka, 2012). This is due to the scope of Help to Help's TGEE initiative of trying to reach

the women who have not been introduced to computers at a young age and who are not pursuing careers within IT. However, Help to Help tries to support the participants to find income either by employment or self-employment through ICT but also through lessons on entrepreneurship. Tackling the income issue for the participants may be an important stepping stone in order to achieve a sustainable bridge over the GDD.

The conclusions of the impact areas found in this study have also been confirmed by external experts within the field of ICT in low-income countries, which further validates the findings, (Brudvig, 2019; Oichi, 2019; Mavura, 2019).

6 CONCLUSIONS

In this chapter, the conclusions of this master thesis are presented. First, the research questions are answered and then recommendations to the case organisation are given. Lastly, the contributions to the theory are discussed as well as suggestions for future research.

6.1 ANSWERS TO RESEARCH QUESTIONS

The answers to the three research questions are summarized below.

1. What are the objectives and challenges for women pursuing ICT knowledge in Tanzania?

The main challenge of the women targeted in this case study is getting an employment within their field of education in Tanzania. Therefore, their main objective is to acquire the ICT skills sought by Tanzanian employers. Their short-term objective for pursuing ICT knowledge is simplifying their university assignments by learning how to type on a computer, as this will save them both time and, in some cases, money.

The main challenge after attending the ICT boot camp is finding time to practice and renew their skills. Other obligations such as domestic chores have a higher priority than practicing or learning more about computers. A challenge identified by the studied women was access to a computer, however the findings in this study show that even if owning a computer may be an enabler to use ICT skills, it is neither a guarantee for further use nor a necessity in order to practice or continue to learn more. Furthermore, there is still a general challenge concerning the view of ICT to be more of a male area.

2. How can one evaluate lasting effects of an ICT educational program?

Performing correct evaluations is a complex matter which has an infinite number of different approaches to serve the same purpose. In this study, it was decided to use

a combination of Bourdieu's (1986; 1984) concepts of social and cultural reproduction theory together with one aspect from Gigler's (2011) impact chain as an appropriate framework to base the evaluation of the educational program. This was partly in line with previous research by Kvasny and Keil (2006) and Sedoyeka (2012) on similar topics.

The method of evaluation suggested and used in this study was interviewing former participants and external agents when possible, for example interviewing employers when trying to measure employability. One way to evaluate an ICT educational program could therefore be to look at to what extent the different impact areas have been affected by using the form shown in Table 3 on page 50. An optimal way to evaluate an initiative would be to use the form both before and after the ICT initiative in order to distinguish the impact the effort has made.

3. Which are the effects of ICT educational programs in Tanzania?

The ICT educational program focused on in this case study had four major effects. The first is increased ICT knowledge and skills for the participants. The remaining effects were increased ICT confidence, inclusion in a network of ICT knowledgeable and perceived increased employability. This means that Help to Help's ICT boot camp meets the major objectives of the women participating. Other identified impact areas, although to a lesser extent, were increased IT interest, continuous learning, increased financial power and a sense of self-empowerment. No negative effects were found. The main challenge of time and gender inequalities for the women remains even though the ICT boot camp attempts to address some aspects in their non-ICT related sessions.

The findings of this study indicate that an intensive ICT course can in fact have a positive effect in bridging the GDD but is far from being the solution to completely bridge the gap. The case study organisation is a small-scale effort that can help the affected women in Tanzania but in order to bridge the GDD, large-scale efforts are needed since it is a global and systemic problem. The ICT boot camp contribute to bridging the GDD on a small-scale by firstly giving the participants knowledge and skills to use a computer free of charge for the women. They also increase the participants confidence and employability which further strengthens the sustainability of their effort since the participants can continue to use the skills attained in the course at a future employer and will have the confidence to do so.

6.2 SUGGESTED SOLUTION TO BRIDGE THE GENDER DIGITAL DIVIDE

It is important to note that there is no general consensus on a one-way-fix, everyone does agree that a complex issue such as the GDD is best solved through a multidimensional solution with initiatives working on different fronts. In that sense, ICT boot camps like the one in this case study targets one distinctive group of many without computer knowledge; adolescent girls who have acquired enough resources to pursue a university degree but not enough to fund an additional computer training course. However, the ICT boot camp is even with the ripple effect of shared ICT knowledge on a too small scale to reach systemic change. The global issue of the GDD still remains. To solve it, multiple societal issues must be tackled first. This is due to the fact the GDD is closely related to inequalities related to education, wealth and power. There is a divide of ICT access and knowledge between high and low-income countries and the global gender structures, where men are treated as superior to women, increase these inequalities for women. Hence, in order to fully bridge the GDD, initiatives targeted to increase equality between genders are needed as well as global or governmental initiatives to increase ICT access and knowledge to everyone regardless of gender.

In regard to the GDD in Tanzania today, Help to Help need to scale up their initiative in order to make a national impact. To increase their impact, research suggests targeting women in a younger age as an effective way to spread ICT knowledge in a society. Furthermore, the boot camp participants believed their IT interest had increased after attending the course, although not many had pursued IT related advanced courses or career paths which remains an issue perpetuating the GDD. One of the main issues connected to the GDD is the lack of women pursuing IT professionally. One way for Help to Help to increase their effect on the GDD could be to encourage and support women in changing career paths towards IT. However, the ICT boot camp cannot affect all possible parameters that can help bridge the GDD. The authors believe Help to Help's concept of mixing ICT education with non-ICT related topics connected to gender equality and entrepreneurship makes their impact multidimensional and efficient when tackling the GDD on an individual level.

80

6.3 RECOMMENDATIONS TO THE CASE ORGANISATION

Based on the findings of the study, some recommendations to further improve the important work of the case organisation are presented below.

Keep a multidimensional approach

Since the entrepreneurial skills and the inspirational sessions seemed to be of importance for the confidence and self-empowerment for the participants, the non-ICT related topics should continue to be an essential part of the boot camp. By stressing the importance of ICT skills, confidence and gender equality, the perspective of the participants was expanded and sparked discussions and inspiration. Also, as long as unemployment poses a great challenge for Tanzanian youth, tools to generate an income will be important.

Encourage continuous learning

In order to increase the continuous learning and spark the IT interest amongst the participants after attending the boot camp, more focus should be on the importance of practicing their skills and also that their current knowledge can and needs to be both deepened and extended. At present, many participants regard themselves as computer knowledgeable after attending the course and do not see the benefit of learning more afterwards.

Encourage individual reasoning

An observation made during the study was that many women repeated opinions and facts word for word that had been expressed during the boot camp in the interviews. If the impact from the ICT boot camp is to be sustainable it is important that the women themselves develop a deeper understanding of why they need to learn and what they have been taught. The tendency to just follow instructions and authorities and accept facts without questioning them needs to be disrupted. Help to Help should encourage the women to think independently and to develop a sense of critical thinking. This will not only sustain the impact of the boot camp but will also increase their independence and therefore their employability.

Help the women overcome their challenges

The challenges of finding time to practice ICT skills and the gender norms that still hinder many women from deepening their IT interest and continue to learn after the

boot camp still remains for the women. To tackle the challenge of time or prioritizing time is difficult because of the individual solutions it would require for everyone. However, Help to Help can further encourage the women to prioritize and show examples of how other women have overcome this challenge. In order for the women to prioritize better they need to understand the immediate benefits of ICT in their daily life, perhaps in a deeper sense than being able to type their own school assignments. To tackle the gender norms in Tanzanian society, several systemic changes have to be made. Help to Help can play a role in the major change that needs to happen but can never tackle it alone. Help to Help already tries to educate women about their rights and equality which we recommend them to continue doing.

Continue to stress the importance of sharing

In order to reach a large number of individuals, it needs to be continuously stressed how important it is to share your newly acquired knowledge with others and demonstrate ways to do so. The knowledge acquired at the boot camp seems to be sufficient in order to teach someone else and to increase the reach, it is highly important to ensure that the participants maintain and spread their knowledge as much as possible.

Set long term goals

In order to maximize the impact, the organisation may reflect on however their aim is to reach as many women as possible or to educate women who without the boot camp would not have been given the chance to get an IT education. If the aim is to maximize the ripple effect, more focus could be made to educate those women who seem to be more likely to share to a big group of women after acquiring the knowledge, even if it is a woman who might be able to acquire IT skills on her own. If, on the other hand, it is to increase employability and knowledge for women who would not get the chance without the boot camp, focus should be on making sure that the target group is reached and for example not accept women with prior IT education. If scaling up the business, the application process could be supplemented with an assessment test, to decrease the manual work.

Continuously update the curriculum

In order to ensure that the impact of the boot camp remains, is critical to ensure that the education is based on current and feasible topics. The curriculum needs to be continuously revised, due to the speed of technology development and societal changes. In order to ensure increased employability and that the participants fully understand the potential in using ICTs, which may lead to a more meaningful use, the skills taught must be attractive for employers and useful in personal and

professional situations. The recommendation for the case organisation is to keep a close dialogue with employers in order to understand their changing needs and requirements for recent graduates, both in hard and soft skills.

Further efforts to bridge the Gender Digital Divide

Previous research shows that introducing ICT at a younger age as well as governmental structural changes are other ways to bridge the GDD. If closing the gender gap of ICT use would become a main objective for the TGEE initiative a way to expand the efforts could be to arrange similar multidimensional ICT boot camps for young girls. As previously mentioned, one aspect of the GDD is the few women pursuing IT professionally. Closer collaboration with organisations who offer fast track educations to computer programming or similar courses that can lead to IT careers could not only create more female role models within IT but could also increase the women's employability and financial power.

6.4 CONTRIBUTION TO THEORY

The authors have created and tested a framework of combined previous research theory on the aspects of GDD and the impact of ICT education. This framework has been shown by the authors to be effective when evaluating the impact of an ICT educational initiative and can be used as an evaluation tool for other ICT initiatives.

The findings in this study have given further support to the previous work of Geldof (2011), Huyer (2005), Mbarika et al. (2007) and Paul et al. (2015) that domestic responsibilities impede women to pursue further ICT practice and to continuously learn about computers. Additionally, this study concludes that the gender norms related to ICT, previously discussed by Singh (2017) are also evident in Tanzania and affects the Tanzanian women's view of ICT.

Furthermore, this study has shown that initiatives such as the ICT boot camp in this case study have a positive effect in bridging the GDD on an individual level. Previous research on the GDD had not looked specifically to modern day Tanzania.

6.5 SUGGESTIONS FOR FUTURE RESEARCH

To further verify the transferability of the results, studies on similar educational programs in countries with comparable characteristics to Tanzania would be highly

interesting. The multidimensional approach that has been deemed successful in this case study could potentially help other low-income countries and organisations to tackle the GDD.

It would also be of interest to use the suggested framework on an ICT related initiative that is not in a course setting or in a similar form as the one in this study. This in order to see if the evaluation framework is transferable to other forms of ICT initiatives and could be useful for evaluation and comparison between different forms of ICT education in low-income countries.

In order to isolate which effects that are connected to the ICT education, a longitudinal study looking at the same parameters before and after the ICT initiative would be beneficial. This study was limited to a retrospective view, only interviewing participants after attending the ICT boot camp.

Due to the fact that some interviewees were students, the level of impact within areas such as employability were difficult to determine for them. Hence, to further confirm the specific impact on employability, repeated research after the program has been running for a longer period of time is recommended.

To further strengthen the indications shown in this study, a more quantitative approach measuring for example how many have generated an income because of the initiative or how many people the knowledge has been transferred to, could be of value.

In order to find a sustainable way to bridge the GDD, the knowledge needs to be passed on to women beyond the boot camp. In this study, focus has been on which impact the boot camp has resulted in for the participating women. So far, the ICT boot camps which have been arranged are dependent on the case organisation to provide resources, which has its limits in terms of time, geographical reach and experienced trainers. If the impact of the mini IT-boot camps can be shown to be equal to the main ICT boot camp this could help the case organisation plan their development strategically. The findings of the secondary effects of the ICT knowledge in this study could not be verified due to the low representation of the target population. Further research should be done on how the former participants' acquired knowledge is shared with others informally. This could give clearer indications as to which extent the ICT educational programs' ripple effects help to bridge the GDD in the long-term.

7 DISCUSSION OF LIMITATIONS

The biggest threat to the findings of this study could possibly be the theoretical framework approach. When basing the questionnaire and interview questions on the framework there was a risk of leading the answers to make them fit into the framework. There was also a risk that the authors looked for answers confirming previous theory that the framework was based on. This was mitigated by starting the interviews with open questions. To our satisfaction, all participants mentioned areas in the open-question answers that were included in the framework, without us having mentioned any impact area. Through those answers we could identify the major impact areas. The impact areas with moderate to low impact were in some cases mentioned in the open answer questions but were partly also identified because questions were posed about the specific area.

As the risk of observer bias is hard to mitigate completely, we recommend further research on other similar initiatives to confirm the transferability of the findings. However, we have not found results which contradict previous research in any significant incidence. The study could therefore be viewed as confirming hypothesis created by previous research in this case study setting. Furthermore, the framework covers many aspects and the impact areas are broadly defined which could be another explanation as to why so many participants' answers could easily be categorized within the framework.

An ever-present potential risk when conducting qualitative case studies is to not acquire a sufficiently representative sample, which can jeopardise the findings of the study. In order to minimise this risk, we tried to attain a balance between the different demographic parameters, previously mentioned in section 4.3.2 on page 40. Limitations of this study were the fixed geographical location, Dar es Salaam, and that Help to Help had to act as an initial intermediary between the former participants and the authors before the interviews were scheduled. Attempts to also include participants not present in Dar es Salaam were made by conducting digital interviews.

Almost 30 % of the target population of former participants of the ICT boot camp answered the questionnaire. Because of the variation in demographic profiles, the

results were deemed to be fairly representative of the whole population. However, there is always the risk of sampling bias. For example, because of the digital form of the questionnaire, it only reached the part of the population who have access to smart phones or computers. If there was a part of the population who have stopped using ICTs completely, it was not reached in this study. Moreover, the aspect that only the participants who were satisfied with the boot camp may have answered the questionnaire may also pose a selection bias risk to potentially distort the conclusions based on the questionnaire data. This risk has to some extent been addressed by distributing the questionnaire to all former participants combined with a text explaining the purpose of the questionnaire and the importance to both fill it out and to be honest. This was further stressed by representatives from the case organisation and again in the questionnaire. The findings from the questionnaire were also verified with both external parties, previously made research and through other different collected data sources such as interviews and observations.

However, when studying the nature of the ICT boot camp, the lack of negative input from the former participants might to some extent be explained. The ICT boot camp offers an intensive course free of charge covering a topic which is believed to be highly relevant by the participants. Additionally, the participants get free breakfast and lunch, a chance to meet new friends and an opportunity to network with future employers. Since the boot camp was held during a holiday, the participating students are not missing any of their lectures. Given these factors, a positive attitude towards the boot camp was likely to be found among all former participants.

Given the many different forms of data support, both empirically and in previous theory, we believe the findings of this study to be valid and transferable to contexts with similar characteristics. This means that other ICT educational efforts in low-income countries can use our suggested framework and that the results in this study can be used to support that such initiatives are valuable in bridging the GDD.

8 REFERENCES

Printed sources

Alozie, N.O., & Akpan-Obong, P. (2016). The Digital Gender Divide: Confronting Obstacles to Women's Development in Africa. Development Policy Review, 35(2) https://doi.org/10.1111/dpr.12204

Alves, E., & Steiner, A. (2017). Globalization, Technology and Female Empowerment: Breaking Rights or Connecting Opportunities?. Social Indicators Research, 133(3) 859-877. https://doi.org/10.1007/s11205-016-1395-1

Bourdieu, P. (1984). Distinction: A social critique of the judgement of taste. Cambridge, MA: Harvard Univ. Press.

Bourdieu, P. (1986). The forms of capital, Granovetter, M. & Swedberg, R. (Eds.), The Sociology of Economic Life (2nd ed., pp. 96-111). Boulder, CO: Westview Press.

Cambridge Business English Dictionary. (2019). ICT. Cambridge University Press. https://dictionary.cambridge.org/dictionary/english/ict

Castor, C. (2017). Empowering women through ICT (Master Thesis, School of education and communication in Engineering, KTH Royal Institute of Technology, Stockholm University, Stockholm, Sweden).

Central Intelligence Agency (CIA) (2019). The World Factbook - Tanzania. Retrieved February 11, 2019, from https://www.cia.gov/library/publications/the-world-factbook/geos/tz.html

Central Intelligence Agency (CIA) (2015). The World Factbook – Tanzania, People and Society. Retrieved February 11, 2019, from https://www.cia.gov/library/publications/the-world-factbook/geos/tz.html

Comim, F. (2001). Operationalizing Sen's capability approach. In Justice and Poverty: Examining Sen's Capability Approach Conference (pp. 1-16).

Creswell, J.W., & Clark, P. W. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: Sage.

Cronbach, L.J. (1963). Theory of Generalizability: A liberalization of reliability theory.

British Journal of Statistical Psychology, 16(2) https://doi.org/10.1111/j.20448317.1963.tb00206.x

Danish Trade Union Council for International Development Cooperation (LO/FTF Council). (2018) Tanzania and Zanzibar Labour Market Profile 2018, Danish Ministry of Foreign Affairs, Denmark.

Denscombe, M. (2017). The Good Research Guide - For small-scale social research projects (6th ed.). London, Great Britain: Open University Press McGraw-Hill Education.

Deutsche Investitions- und Entwicklungsgesellschaft (DEG) & The Boston Consulting Group (BCG). (2016). Bridging the skills gap in developing countries - A practical guide for private-sector companies. Association of European Development Finance Institutions.

Edmondson, A.C., & McManus, S.E. (2007). Methodological fit in management field research, Academy of Management Review 32(4).

Ejlertsson, G. (2005). Enkäten i praktiken - En handbok i enkätmetodik. Lund, Sweden: Studentlitteratur.

Farhadi, M., Ismail, R., & Fooladi, M. (2012). Information and communication technology use and economic growth. PloS one, 7(11).

Faulkner, W., & Lie, M. (2007). Gender in the information society: Strategies of inclusion. Gender, Technology and Development, 11(2), 157-177.

Garrido, M., Sullivan, J., & Gordon, A. (2010). Understanding the links between ICT skills training and employability: an analytical framework. In Proceedings of the 4th ACM/IEEE International Conference on Information and Communication Technologies and Development https://doi.org/10.1145/2369220.2369234

Geldof, M. (2011). Earphones are not for women: Gendered ICT use among youths in Ethiopia and Malawi. Information Technologies & International Development, 7(4), 69-80.

Gigler, B-S. (2011). Information Capabilities: The missing link for the impact of ICT on Development. SSRN Electronic Journal. http://dx.doi.org/10.2139/ssrn.2191594

Gigler, B-S. (2015). Development as Freedom in a Digital Age: experiences from the rural poor in Bolivia. Washington, DC: The World Bank.

Hafkin, NJ., & Huyer, S. (2006). Cinderella or Cyberella? Empowering women in knowledge society. Boulder, CO: Kumarian Press.

Hafkin, NJ., & Huyer, S. (2007). Women and Gender in ICT Statistics and Indicators for Development, Information Technologies and International Development 4(2) 25–41.

Hanafizadeh, M. R., Saghaei, A., & Hanafizadeh, P. (2009). An index for cross-country analysis of ICT infrastructure and access. Telecommunications Policy, 33(7), 385-405.

Hayton, A., & Bengry-Howell, A. (2016). Theory, evaluation, and practice in widening participation: A framework approach to assessing impact. London Review of Education, 14(3), 41-53.

Heeks, R. (1999). Information and communication technologies, poverty and development. Manchester, UK: Institute for Development Policy and Management, University of Manchester.

Help to Help. (2019a). Our Mission. Retrieved February 10, 2019, from https://helptohelp.se/our-mission

Help to Help. (2019b). Homepage. Retrieved February 10, 2019, from https://helptohelp.se/

Help to Help. (2019c). Closing the skills gap. Retrieved February 10, 2019, from https://helptohelp.se/academy

Hennink, M., Hutter, I., & Bailey, A. (2011). Qualitative Research Methods, London, Great Britain: SAGE Publications.

Hilbert, M. (2011). Digital gender divide or technologically empowered women in developing countries? A typical case of lies, damned lies, and statistics. Women's Studies International Forum, 34(6) 479-489. https://doi.org/10.1016/j.wsif.2011.07.001

Höst, Regnell, Runeson (2006). Att genomföra examensarbete (6th ed.). Malmö, Sweden: Studentlitteratur Holmbergs.

Huyer, S. (2005). Women, ICT and the information society: Global perspectives and initiatives. In Proceedings of the international symposium on Women and ICT: creating global transformation (p. 1). ACM.

Huyer, S. & Carr, M. (2002). Information and Communication Technologies: A Priority for Women. Gender, Technology and Development, 6(1), 85-100. https://doi.org/10.1080/09718524.2002.11910024

International Telecommunication Union (ITU). (2017). ICT Facts and Figures 2017. Geneva, Switzerland.

Johnson, V. (2010). Women and the Internet: A micro study in Chennai, India. Indian Journal of Gender Studies, 17(1), 151-163.

Johnston, C., & Olekalns, N. (2002). Enriching the learning experience: A CALM approach. Studies in Higher Education, 27(1), 103-119.

Khan, N. & Forshaw, T. (2017). New Skills Now - Inclusion in the digital economy. Accenture.

Khokhar, T. (2015). Should we continue to use the term "developing world"? Retrieved February 11, 2019, from https://blogs.worldbank.org/opendata/should-we-continue-use-term-developing-world

Kpodar, K., & Andrianaivo, M. (2011). ICT, financial inclusion, and growth evidence from African countries (No. 11-73). International Monetary Fund.

Ktoridou, D., & Eteokleous-Grigoriou, N. (2011). Developing digital immigrants' computer literacy: the case of unemployed women. Campus-Wide Information Systems, 28(3), 154-163.

Kvasny, L., & Keil, M. (2006). The challenges of redressing the digital divide: A tale of two US cities. Information systems journal, 16(1), 23-53.

Lin, C. I., Tang, W. H., & Kuo, F. Y. (2012). "Mommy Wants to Learn the Computer" How Middle-Aged and Elderly Women in Taiwan Learn ICT Through Social Support. Adult Education Quarterly, 62(1), 73-90.

Macueve, G., Mandlate, J., Ginger, L., Gaster, P., & Macome, E. (2009). Women's use of information and communication technologies in Mozambique: A tool for empowerment. African women & ICTs: Investigating technology, gender and empowerment, 21-32.

Mbarika, V. W., Payton, F. C., Kvasny, L., & Amadi, A. (2007). IT education and workforce participation: A new era for women in Kenya?. The Information Society, 23(1), 1-18.

Milek, A., Stork, C., & Gillwald, A. (2011). Engendering communication: a perspective on ICT access and usage in Africa. info, 13(3), 125-141.

Ministry of Works,Transport and Communication. (2016). National Information and Communications Technology Policy. United Republic of Tanzania.

Mourshed, M., Patel, J., & Suder, K. (2014). Education to employment: Getting Europe's youth into work. McKinsey & Company.

Nationalencyklopedin (NE). (2018). Tanzania. Retrieved February 19, 2019, from https://www.ne.se/uppslagsverk/encyklopedi/l%C3%A5ng/tanzania

Nghia, T.L.H. (2018). The skills gap of Vietnamese graduates and final-year university students, Journal of Education and Work, 31:(7-8), 579-594, https://doi.org/10.1080/13639080.2018.1559280

Obayelu, E. & Ogunlade, I. (2005). Analysis of the uses of information and communication technology for gender empowerment and sustainable poverty

alleviation in Nigeria. International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2(3), 45-70.

Ohno, T. (1988). Toyota Production Systems: Beyond Large-Scale Production. Portland, Oregon: Productivity Press.

Organisation for Economic Co-operation and Development (OECD). (2000). Learning to bridge the Digital Divide. Paris, France: OECD Publishing.

Organisation for Economic Co-operation and Development (OECD). (2010). Quality standards for development evaluation, DAC Guidelines and Reference Series. Paris, France: OECD Publishing.

Paul, A., Thompson, K. M., & Heinström, J. (2015). After access: An inquiry into ICT use factors for Indian women. In Proceedings of the 78th ASIS&T Annual Meeting: Information Science with Impact: Research in and for the Community (p. 35). American Society for Information Science.

Pew Research Center. (2014). Internet Seen as Positive Influence on Education but Negative on Morality in Emerging and Developing Nations - Internet Usage More Common Among the Young, Well-Educated and English Speakers.

Phillips, D.C. (2018). The Many Functions of Evaluation in Education, Education Policy Analysis Archives, 26(45/55), 1-14.

Rashid, A. T. (2016). Digital inclusion and social inequality: Gender differences in ICT access and use in five developing countries. Gender, Technology and Development, 20(3), 306-332. https://doi.org/10.1177%2F0971852416660651

Robeyns, I. (2005). The capability approach: a theoretical survey. Journal of human development, 6(1), 93-117. https://doi.org/10.1080/146498805200034266

Rohleder, P., Bozalek, V., Carolissen, R., Leibowitz, B., & Swartz, L. (2008). Students' evaluations of the use of e-learning in a collaborative project between two South African universities. Higher education, 56(1), 95-107.

Rosling, H., Rosling-Rönnlund, A., & Rosling, O. (2018). Factfullness. Stockholm, Sverige: Natur & Kultur.

Scriven, M. (1991a). Evaluation thesaurus. Sage.

Scriven, M. (1991b). Prose and cons about goal-free evaluation. Evaluation Practice, 12(1), 55-62.

Sedoyeka, E. (2012). Obstacles in bridging the digital divide in Tanzania. International Journal of Computing and ICT Research, 6(1) 60-72.

Sedoyeka, E. & Hunaiti, Z. (2008). WiMAX in Tanzania: a breakthrough for underserved areas. Info Emerald Insights, 10(2) 34-46. https://doi.org/10.1108/14636690810862794

Sen, A. (1997) Editorial: Human capital and human capability. World Development, 25(12), 1959-1961.

Serrat, O. (2017). Knowledge solutions. Singapore, Singapore: Springer. https://doi.org/10.1007/978-981-10-0983-9_32

Sharma, R.C. (2003) Barriers in using technology for education in developing countries. International Conference on Information Technology: Research and Education. Proceedings. ITRE2003. https://doi.org/10.1109/ITRE.2003.1270670

Singh, S. (2017). Bridging the gender digital divide in developing countries, Journal of Children and Media, 11(2), 245-247. https://doi.org/10.1080/17482798.2017.1305604

Slattery, EL., Voelker, CC., Nussenbaum, B., Rich, JT., Paniello, RC., & Neely, JG. (2011). A Practical Guide to Surveys and Questionnaires, Otolaryngology - Head and Neck Surgery, 144(6) 831-837. https://doi.org/10.1177/0194599811399724

Sørensen, K. H., Faulkner, W., & Rommes, E. W. M. (2011). Technologies of inclusion: Gender in the information society. Trondheim: Tapir Academic Press.

Spender, D. (1995). Nattering on the Net: Women, power and cyberspace. Toronto, Canada: University of Toronto Press.

Stake, RE. (2010). Qualitative Research : Studying How Things Work, New York, NY: Guilford Publications.

Swedish Ministry of Foreign Affairs. (2016). Mänskliga rättigheter, demokrati och rättsstatens principer i Tanzania 2015-2016. The Swedish Government Offices, Sweden.

The Swedish Institute of International Affairs. (2018). Tanzania. Retrieved February 19, 2019, from https://www.ui.se/landguiden/lander-och-omraden/afrika/tanzania/

Timmermans, S., & Tavory, I. (2012). Theory Construction in Qualitative Research: From Grounded Theory to Abductive Analysis, Sociological Theory, 30(3) 167-186. https://doi.org/10.1177/0735275112457914

Umrani, F., & Ghadially, R. (2003). Empowering women through ICT education: Facilitating computer adoption. Gender, Technology and Development, 7(3), 359-377. https://doi.org/10.1080/09718524.2003.11910097

UNESCO Institute for Statistics (UIS) & UNICEF. (2015). Fixing the Broken Promise of Education for All: Findings from the Global Initiative on Out-of-School Children. Montreal: UIS. http://dx.doi.org/10.15220/978-92-9189-162-7-en

United Nations (UN). (2015). The Global Goals for Sustainable Development. Retrieved February 19, 2019, from https://www.globalgoals.org/

Van Dijk, J., & Hacker, K. (2003). The digital divide as a complex and dynamic phenomenon. The information society, 19(4), 315-326. https://doi.org/10.1080/01972240309487

Wamala, C. (2012). Empowering women through ICT. Stockholm: Universitetsservice US-AB. Retrieved from http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-74018

Wolfensohn, J.D. (2000). Development and International Cooperation in the Twenty-First Century: The role of information technology in the context of a knowledge-based global economy, Washington, DC: World Bank Group.

World bank. (2019). World Bank Country and Lending Groups. Retrieved February 11, 2019, from https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

World Summit on the Information Society (WSIS). (2005). Tunis agenda for the information society. Retrieved 19 February, 2019, from https://www.itu.int/net/wsis/docs2/tunis/off/6rev1.html

Yin, R.K. (2009). Case study research: Design and methods (4th ed.). London, Great Britain: Thousand Oaks SAGE Publications.

Yizengaw, J. Y. (2018). Skills Gaps and Mismatches: Private Sector Expectations of Engineering Graduates in Ethiopia. IDS Bulletin, 49(5), 55-70. DOI: 10.19088/1968-2018.174

Interviews

Brudvig, I., Gender Policy Manager Word Wide Web Foundation, Email conversation. (2019, 6 May)

Cronqvist, M., Founder of Help to Help, Stockholm, Sweden. (2019, 1 February)

C1, company representatives, Dar es Salaam, Tanzania. (2019, 7 March)

C2, company representative, Dar es Salaam, Tanzania. (2019, 18 March)

Mavura, A., Campaigns, ICT and Advocacy Coordinator ActionAid, Email conversation. (2019, 3 May)

Mhagama, E., Project Manager TGEE, Email conversation. (2019, 23 January)

Mtonga, R., Founder of Asikana Network, Email conversation. (2019, 28 February)

Oichi, R., Social Innovation Manager Maarifa Kona, Email conversation. (2019, 27 March)

P1, former participant of Help to Help's ICT boot camp 2015, Dar es Salaam, Tanzania. (2019, 7 March)

P2, former participant of Help to Help's ICT boot camp 2018, Dar es Salaam, Tanzania. (2019, 7 March)

P3, former participant of Help to Help's ICT boot camp 2018, Dar es Salaam, Tanzania. (2019, 8 March)

P4, former participant of Help to Help's ICT boot camp 2016, Dar es Salaam, Tanzania. (2019, 9 March)

P5, former participant of Help to Help's ICT boot camp 2018, Dar es Salaam, Tanzania. (2019, 9 March)

P6, former participant of Help to Help's ICT boot camp 2016, Dar es Salaam, Tanzania. (2019, 9 March)

P7, former participant of Help to Help's ICT boot camp 2018, Dar es Salaam, Tanzania. (2019, 11 March)

P8, former participant of Help to Help's ICT boot camp 2018, Dar es Salaam, Tanzania. (2019, 11 March)

P9, former participant of Help to Help's ICT boot camp 2017, Dar es Salaam, Tanzania. (2019, 11 March)

P10, former participant of Help to Help's ICT boot camp 2017, Dar es Salaam, Tanzania. (2019, 11 March)

P11, former participant of mini-IT boot camp, Dar es Salaam, Tanzania. (2019, 12 March)

P12, former participant of mini-IT boot camp, Dar es Salaam, Tanzania. (2019, 12 March)

P13, former participant of Help to Help's ICT boot camp 2019, Dar es Salaam, Tanzania. (2019, 12 March)

P14, former participant of Help to Help's ICT boot camp 2019, Dar es Salaam, Tanzania. (2019, 12 March)

P15, former participant of Help to Help's ICT boot camp 2019, Dar es Salaam, Tanzania. (2019, 12 March)

P16, former participant of Help to Help's ICT boot camp 2016, Dar es Salaam, Tanzania. (2019, 12 March)

P17, former participant of Help to Help's ICT boot camp 2018, Dar es Salaam, Tanzania. (2019, 12 March)

P18, former participant of Help to Help's ICT boot camp 2015, Dar es Salaam, Tanzania. (2019, 13 March)

P19, former participant of Help to Help's ICT boot camp 2015, Dar es Salaam, Tanzania. (2019, 15 March)

P20, former participant of Help to Help's ICT boot camp 2018, Dar es Salaam, Tanzania. (2019, 15 March)

P21, former participant of Help to Help's ICT boot camp 2015, Dar es Salaam, Tanzania. (2019, 15 March)

P22, former participant of Help to Help's ICT boot camp 2015, Dar es Salaam, Tanzania. (2019, 19 March)

P23, former participant of Help to Help's ICT boot camp 2017, Dar es Salaam, Tanzania. (2019, 19 March)

Rankloo, K., Founder of Help at Hand, Malmö, Sweden. (2019, 24 April)

9 APPENDICES

Appendix A – List of interviewees

Appendix B – Questionnaire

Appendix C – Interview guides

Appendix D – Impact areas

Appendix A List of interviewees

Code	Explanation
P1-P10, P13-P23	Female former participants of Help to Help's ICT boot camp (face to face interviews)
D1-D4, D6, D8, D10-D12	Female former participants of Help to Help's ICT boot camp (digital interviews)
P11, P12	Female former participants of a mini-IT boot camp (face to face interviews)
D5, D7, D9	Female former participants of a mini-IT boot camp (digital interviews)
C1-C2	Tanzanian company representatives

Appendix B Questionnaire

Help to Help TGEE boot camp former participants

We are two female students from Sweden who are writing our Master Thesis together with the organisation Help to Help. We have sent you this form because you are a former participant of Help to Help's TGEE boot camp, where you learned computer knowledge, MS Office and got to listen to inspirational lectures. It would help our research tremendously if you would answer this form as thoroughly as you can.

All responses will be ANONYMOUS and no one will be able to see the data besides the two of us. The anonymous data will be analysed and finalised in a published research report. You are very welcome to view the report if you wish - our contact details are written at the end of this form.

The form will take approximately 20 min to fill out. Thank you so much for your time and effort!

Asante, Zoë Wyon & Sofia Sundbom

Click the 'NEXT' button to start the questionnaire

*Required

Introduction

1. Your age *

Please write in numbers

2. Have you graduated from university? *

Mark only one oval.

No, I am still a student

Yes

3. Do you have a job or similar? *

Mark only one oval.

Unemployed *After the last question in this section, skip to question 10.*

Employed

Self--employed

Field practice/internship

Volunteer work

Other:

4. What is your field of study? *

Mark only one oval.

Social sciences

Agriculture

Business (Marketing, accounting, finance)

Education

Engineering

Environmental sciences

Health and medicine

IT and Computer science

Law

Sports and Games

Other:

5. Have you done any of the following activities after attending the TGEE boot camp? *

Tick all that apply.

Mentor for TGEE boot camp

Arranged a mini--boot camp

None of the above

Other:

6. Which year did you attend the TGEE boot camp? *

Mark only one oval.

2015

2016

2017

2018

7. Do you have access to a computer? *

Mark only one oval.

Own computer

Shared computer

No access

Other:

Work related questions

Please mark how well you agree or disagree with the following statements

8. It was easier for me to get the job/start own business/field practice/volunteer work after attending the boot camp *

Mark only one oval per row.

Strongly agree Agree Indifferent Disagree Strongly disagree

9. I use the computer skills practiced at the TGEE boot camp in my job/own business/field practice/volunteer work *

Mark only one oval per row.

	Daily	Weekly	Monthly	Less frequently or never
MS Office (Word, Excel, PowerPoint)	◯	◯	◯	◯
E-mailing	◯	◯	◯	◯
Information gathering	◯	◯	◯	◯

Reflections

Please answer honestly and thoroughly.

10. What was the reason that you applied for the TGEE boot camp? What did you want to get out from it? *

Please be as specific as possible. If your reason was to learn computer skills, why did you want to learn computer skills?

11. Have you used the computer skills that you learned on the boot camp? *

Mark only one oval.

Yes

No

12. How have you used your computer skills that you learned at TGEE boot camp?

You can choose as many boxes as you like. Choose "Other" if you are missing an option Tick all that apply.

At work/own business/field practice/volunteer work

In school

For personal reasons

Other:

13. Which of the following alternatives have you used the MOST in the following settings: *

Choose 'Not applicable' if you have not used any of the options in the stated settings
Mark only one oval per row.

	MS Office	Information gathering	E-mail	Social media (Facebook, Twitter, Instagram, Whatsapp etc.)	Not applicable
At work/own business/field practice/volunteer work	◯	◯	◯	◯	◯
At school	◯	◯	◯	◯	◯
For personal reasons	◯	◯	◯	◯	◯

14. Have you experienced any challenges when using or trying to use your skills that you learned on the boot camp? Please give examples. *

15. What did you not like about the camp? What can be improved? *

Please think about this question and answer truthfully, this answer will help TGEE to become even better. Remember that your answers are anonymous.

Social aspects

16. How many people have you shared your computer skills with? *

Mark only one oval.

0 *After the last question in this section, skip to question 23.*

1-5

6-10

More than 10

17. Have you recommended the TGEE boot camp to someone? *

Mark only one oval.

Yes

No

18. By attending the TGEE boot camp, I feel included in a network with my fellow participants *

Mark only one oval per row.

Strongly agree Agree Indifferent Disagree Strongly disagree

19. Have you reached out to or have you been contacted by your fellow former TGEE boot camp participants about... *

Tick all that apply.

Job opportunities

Further computer/IT knowledge

Information about other computer/IT courses

Personal reasons

I have not reached out or been contacted by any former participants

Other:

Social aspects

20. Who have you shared your computer knowledge with?

Tick all that apply.

Family

Friends

Other:

21. What was the reason for sharing your knowledge? *

Describe the situation where you shared your knowledge, please be very specific.

22. How did you share your knowledge? What did you teach them?

If you for example arranged a mini-IT boot camp, talked someone etc. Did you share MS Word, PowerPoint, Excel or how to search for information or something else?

IT interest

Please mark how well you agree or disagree with the following statements

23. The TGEE boot camp increased my interest in computers and IT *

Mark only one oval per row.

Strongly agree Agree Indifferent Disagree Strongly disagree

24. I feel confident about my IT knowledge *

Mark only one oval per row.

Strongly agree Agree Indifferent Disagree Strongly disagree

25. I feel confident about my ability to learn more about IT *

Mark only one oval per row.

Strongly agree Agree Indifferent Disagree Strongly disagree

26. Have you continued to learn more about computers and/or IT after the bootcamp? *

It can be both things that you started learning at the TGEE boot camp or completely new areas

Mark only one oval.

Yes

No *After the last question in this section, skip to question 31.*

27. What do you need in order to continue to learn about computers and IT? *

28. Would you use an online learning platform to further deepen your IT knowledge? *

Mark only one oval.

Yes

No

Maybe

IT interest continued

29. What have you continued learning? *

Choose all the boxes that apply. Choose "Other" if you are missing an option Tick all that apply.

MS Office (Word, Excel or PowerPoint)

Internet & Information Searching

Webpage creation (front end)

Programming (back end)

Other:

30. Why did you want to deepen your IT knowledge? *

Please be as specific as possible.

Last questions

31. What do you feel is the benefit of learning about computers and IT? *

Choose all the boxes that apply. Choose "Other" if you are missing an option Tick all that apply.

It can help me qualify for jobs

It can help me at work or school

I can search for information

It can help me to create my own webpage, blog or similar to share with others

I can keep in touch with others on social media or similar

I can run my own business (market the business towards customers, create a budget etc.)

Other:

32. Do you have any other input or comments?

Have the boot camp affected you in any other way than mentioned in this form? Do you have any other input that we should know?

Appendix C Interview guides

Appendix C.1 - Interview guide former participants

Appendix C.2 - Interview guide company representatives

C.1 Interview guide former participants

Theme	Question	Sub question
-	Have you graduated from university?	
-		Do you have a job?
-	Do you have access to computer?	
-	Which year did you attend TGEE boot camp?	
-	Have you been a mentor?	
Impact	How has attending the TGEE boot camp affected you?	
Impact	What did you gain from taking the course?	
		Do you use any of your skills in your personal life? Professional life? Which ones? How?
Objectives	5 Whys on why they wanted to take the course/learn ICT	
Course syllabus	What did you miss in the course? What would you change about it? What could be improved?	
		Was it something at the boot camp you would have liked to spend more time on? Less time on?
Course syllabus	Do you feel that H2H has a good understanding of your needs and your background?	

Impact / Employability	Did your employer ask for any specific skills when you applied for a job? Which ones?	Do you believe the course increased your chances of getting a job?
		How are you sure that it was the boot camp and not your other skills and personality that helped you get a job?
Impact/ Human capital	Is there anything about yourself that has changed after taking the course?	Do you feel enabled enough in ICT to impact your own life situation or your community? Why/Why not?
Impact/ Human capital		Can you still see an effect of the course on your life even years after?
Impact/ Human capital		Have you continued to teach yourself what you believed to be missing in the course?
Impact/ Cultural capital	How do you access information in your daily life?	
		For example, if you need to know the population of Sweden - how would you go about to get that information?
Impact/ Shared knowledge	Do you feel that you learned enough to teach others the same?	
Impact/Shared knowledge	What would make you arrange a mini-IT boot camp? What would you need? Why would you do it/not do it?	
Impact/ Shared knowledge	Has your IT skills affected people in your surroundings? Family, friends. How?	

Impact/ Shared knowledge	Why would you recommend/ not recommend a friend to attend the boot camp?	
		Have you recommended a friend? Why/Why not?
Impact/ Social capital	Do you view yourself as someone who knows about ICT? Does others view you like that?	
Learning	In which way have you continued learning?	
Learning	What is your preferred way to learn new skills? To develop existing skills?	
Challenges	What challenges did you face before taking the course?	
Challenges	What challenges did you face during the course?	
Challenges	What challenges have you experienced after the course?	
		Is it anything stopping you from practicing your skills or using them? What? Why?
		How can you overcome these challenges?
Challenges	Do you experience the same challenges as other women around you?	
Challenges	Which external challenges do you face in your work life? ICT related	
Needs	What do you need in order for you to best retain the benefits of the course?	

Needs	How do you access IT? Has that changed? Why is this hard/easy?	
View of ICT	Is there a difference between men and women when it comes to IT knowledge?	Why do you think it is important that women learn about ICT?
		Why do you think women to a lesser extent than men learn about IT?
View of ICT	What were your impression on computers and IT skills before attending the boot camp?	
View of ICT	What is your impression on computers and IT skills after attending the boot camp?	
View of ICT	What is at stake if you would NOT learn about ICT?	
View of ICT	What potential do you see that IT skills could have on your life? Both the potential of the skills you have and do not have (yet)	
View of ICT	Do you feel included in the digital society?	Do you feel that you can impact your own living situation?
		How would you use digital tools to change your life or your community?

C.2 Interview guide company representatives

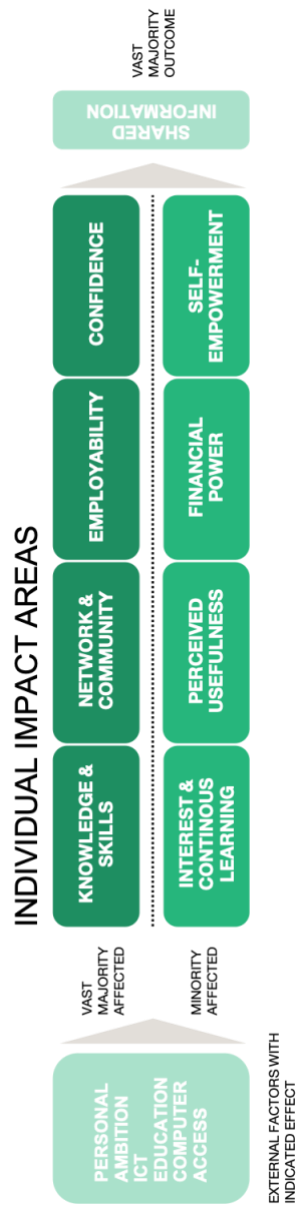| Theme	Questions
Employability	Besides role specific qualities, what are you looking for in a candidate?
	To what extent do you use ICT (MS Office, mail, information gathering etc.) in your work/the work here?
	Would you consider an ICT education from Help to Help to contribute to a candidate's employability? Why/Why not?
	Has it ever occurred that a worker does not have sufficient ICT knowledge? If yes, what did you do then?
	What ICT skills are necessary to have while working for you?
Skills gap	Do you receive enough qualified applications for the positions you need to fill?
	Do you think the candidate's ICT knowledge are sufficient for your company? Why/Why not?
Gender digital divide	What do you believe to be the best solution to make sure women, to the same extent as men, get educated within ICT and are included in the knowledge society?
	What is the man/woman ratio at your company? And the ratio on the applicants to your company?
Challenges	Which challenges for women regarding ICT do you see today?

Appendix D Impact areas

Figure 14 from section 5.3 Impact areas found in the case study based on Bourdieu`s theory, 1986; 1984, combined with parts of Gigler`s ICT impact chain, 2011. Authors` illustration.